# International Health Alerts 2023-3 Contents

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13. Health Policy and Planning, Vol. 38 (4), 2023: 567 – 570
Tracking development assistance for mental health: time for better data
Valentina Iemmi, *Corresponding author. Department of Health Policy, London School of Economics and Political Science. E-mail: v.iemmi@lse.ac.uk

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Affiliations Université Paris-Saclay, UVSQ, Inserm, CESP, Anti-infective evasion and pharmacoepidemiology team, Montigny-Le-Bretonneux, France, Institut Pasteur, Université Paris Cité, Epidemiology and Modelling of Antibiotic Evasion (EMAE), Paris, France. Corresponding author: bich-tram.huynh@pasteur.fr

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19. BMJ Global Health 2023;8:e013136. Editorial
Essential public health functions: the key to resilient health systems
Squires N, Garfield R, Mohamed-Ahmed O, et al
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Ties Boerma

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Misimi Kakoti, et al. *Corresponding author. The George Institute for Global Health India, Jasola District Centre, New Delhi 110025, India. E-mail: mkakoti@georgeinstitute.org.in

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Ingrid Eshun-Wilson, et al.
Affiliations Division of Infectious Diseases, School of Medicine, Washington University in Saint Louis, Missouri, USA, Department of Global

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Hilberdink CE, Normandie Univ, UNICAEN, INSERM, U1237, PhIND "Physiopathology and Imaging of Neurological Disorders", NEUROPRESAGE Team, (Institut Blood and Brain @ Caen-Normandie), GIP Cyceron, Caen, France
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b. Lancet 2023;402(10397):250-64
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Interventions to address global inequity in diabetes: international progress
Walker AF et al., Department of Health Services Research, Management and Policy, University of Florida, Gainesville, FL, USA

c. Global Inequity in Diabetes 3
Disparities in diabetes prevalence and management by race and ethnicity in the USA: defining a path forward
Saria Hassan, et al.

40. TMIH 2023;28(5):367-73
Unmasking a silent killer: Prevalence of diagnosed and undiagnosed diabetes mellitus among people living with HIV in rural South Africa
Annemiek E M de Vries 1 , Zanele Xaba 1 , Sehulong R Moraba 2 , Luise Goerlitz 2 3 , Hugo A Tempelman 2 , Kerstin Klipstein-Grobusch 1 4 , Lucas E Hermans 2 5 6 , Karine Scheuermaier 7 , Walter L J M Devillé 1 2 , Alinda G Vos 1 5

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7 Wits Sleep Laboratory, Brain Function Research Group, School of Physiology, University of the Witwatersrand, Johannesburg, South Africa.

## Sexual and Reproductive Health , including Maternal health

41. Lancet 2023;401(10385):1327-8
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Uganda's “anti-homosexuality” bill already affecting care
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Chandyo RK et al., Department of Community Medicine, Kathmandu Medical College, Kathmandu, Nepal

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CRADLE-4 Study Group
Beardmore-Gray A et al., Department of Women and Children's Health, School of Life Course Sciences, King's College London, London, UK <alice.1.beardmore-gray@kcl.ac.uk>

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Risk factors for inadequate and excessive gestational weight gain in 25 low- and middle-income countries: An individual-level participant meta-analysis
Darling AM, et al.
Affiliation Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Harvard University, Boston, Massachusetts, USA. Mail: adarling@hsph.harvard.edu (AMD); Wafaie W. Fawzi : mina@hsph.harvard.edu (WWF)

45. TMIH 2023;28(8):677-87
Pulmonary oedema in the course of severe maternal outcome in South Africa: A cohort study combined with clinical audit
Anke Heitkamp 1 2 , Evelien Sandberg 3 , Ashley Moodley 1 , Jonathan Burke 4 , Jos van Roosmalen 3 5 , Stefan Gebhardt 1 , Linda Vollmer 1 , Johanna I de Vries 2 , Thomas van den Akker 3 5 , Gerhard Theron 1

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4 Department of Anaesthesiology and Critical Care, Stellenbosch University and Tygerberg Academic Hospital, Cape Town, South Africa.
5 Athena Institute, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands.

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Commercial Determinants of Health 1
Defining and conceptualising the commercial determinants of health
Gilmore AB et al., Department for Health, University of Bath, Bath, UK <abcg20@bath.ac.uk>

b. Lancet 2023;401(10383):1214-1228
Commercial Determinants of Health 2

Conceptualising commercial entities in public health: beyond unhealthy commodities and transnational corporations
Lacy-Nichols J et al., Centre for Health Policy, Melbourne School of Population and Global Health, University of Melbourne, VIC, Australia <jlacy@unimelb.edu.au>

1c. Lancet 2023;401(10383):1229-1240
Commercial Determinants of Health 3
Commercial determinants of health: future directions

Friel S et al., Menzies Centre for Health Governance, School of Regulation and Global Governance, The Australian National University, Acton, ACT, Australia <sharon.friel@anu.edu.au>

# International Health Alerts 2023-3 Abstracts

## Child health, including Neonatal care

1. BMJ Global Health 2023;8:e010728. Original research

Kangaroo mother care for preterm or low birth weight infants: a systematic review and meta-analysis
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Abstract

Importance The Cochrane review (2016) on kangaroo mother care (KMC) demonstrated a significant reduction in the risk of mortality in low birth weight infants. New evidence from large multi-centre randomised trials has been available since its publication.
Objective Our systematic review compared the effects of KMC vs conventional care and early (ie, within 24 hours of birth) vs late initiation of KMC on critical outcomes such as neonatal mortality.
Methods Eight electronic databases, including PubMed®, Embase, and Cochrane CENTRAL, from inception until March 2022, were searched. All randomised trials comparing KMC vs conventional care or early vs late initiation of KMC in low birth weight or preterm infants were included.
Data extraction and synthesis The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and was registered with PROSPERO.
Main outcomes and measures The primary outcome was mortality during birth hospitalization or 28 days of life. Other outcomes included severe infection, hypothermia, exclusive breastfeeding rates, and neurodevelopmental impairment. Results were pooled using fixed-effect and random-effects meta-analyses in RevMan 5.4 and Stata 15.1 (StataCorp, College Station, TX).
Results In total, 31 trials with 15 559 infants were included in the review; 27 studies compared KMC with conventional care, while four compared early vs late initiation of KMC. Compared with conventional care, KMC reduces the risks of mortality (relative risk (RR) 0.68; 95% confidence interval (CI) 0.53 to 0.86; 11 trials, 10 505 infants; high certainty evidence) during birth hospitalisation or 28 days of age and probably reduces severe infection until the latest follow-up (RR 0.85, 95% CI 0.79 to 0.92; nine trials; moderate certainty evidence). On subgroup analysis, the reduction in mortality was noted irrespective of gestational age or weight at enrolment, time of initiation, and place of initiation of KMC (hospital or community); the mortality benefits were greater when the daily duration of KMC was at least 8 hours per day than with shorter-duration KMC. Studies comparing early vs late-initiated KMC demonstrated a reduction in neonatal mortality (RR 0.77, 95% CI 0.66 to 0.91; three trials, 3693 infants; high certainty evidence) and a probable decrease in clinical sepsis until 28-days (RR 0.85, 95% CI 0.76 to 0.96; two trials; low certainty evidence) following early initiation of KMC.
Conclusions and relevance The review provides updated evidence on the effects of KMC on mortality and other critical outcomes in preterm and low birth weight infants. The findings suggest that KMC should preferably be initiated within 24 hours of birth and provided for at least 8 hours daily.

2. Lancet 2023;401(10385):1313

Editorial
Routine immunisations: reversing the decline

Over the past 3 years, the COVID-19 pandemic has shown the power and potential of vaccination in real time. But it has also disrupted health services and caused supply chain challenges, resulting in stagnation and backsliding of routine vaccinations.

To prevent further setbacks, World Immunization Week 2023, from April 24 to 30, calls for a catch-up to return to pre-pandemic vaccination levels. But what are the prospects of doing so?
Central to any effort to improve global immunisation rates is Gavi, the Vaccine Alliance. The organisation works with the public and private sector to secure access to critical vaccines in low-income countries.
In August, Muhammad Ali Pate— formerly at the World Bank and Health Minister for Nigeria—will replace Seth Berkley as CEO. Pate says his priorities are to support countries to scale up critical routine immunisation programmes, reach more zero-dose children, expand access to new vaccines, transform primary health-care systems, and help fight outbreaks and future pandemics.
Whether or not these promises come to pass, a key lesson from the COVID-19 pandemic is the difficulty of ensuring global vaccine equity. While high-income countries hoarded vaccines, low-income and middle-income countries were left behind. COVAX, the global initiative to ensure fair and equitable distribution of COVID-19 vaccines, failed to deliver. The new proposed treaty on pandemic preparedness and response aims to avoid repetition of these failings but it is often vague, woolly, idealistic, and lacking in practical details. For Pate to fulfil his aim to do better in future pandemics— and to make new vaccines routinely available to all who need them—will require far more muscular and clearly articulated approaches to equity.
One challenge Pate did not mention is vaccine hesitancy, which continues to threaten childhood immunisation.
Without tackling vaccine hesitancy, any attempt to boost coverage rates will struggle.
Countries are facing many challenges in improving routine childhood immunisations. Reversing the downward trends will require action across several fronts. Pate's new leadership of Gavi—if he can fulfil his agenda— could be a timely chance to refresh.

3. Lancet 2023;401(10389)

This issue contains a Series of four papers about small, vulnerable newborns

a. Lancet 2023;401(10389):1692-1706
Small, Vulnerable Newborns 1
Small vulnerable newborns-big potential for impact
UNICEF–WHO Low Birthweight Estimates Group
Ashorn P et al., Center for Child, Adolescent and Maternal Health Research, Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland; Department of Paediatrics, Tampere University Hospital, Tampere, Finland <per.ashorn@tuni.fi>

Key messages
Newborns who are preterm, small for gestational age (SGA), or have low birthweight (LBW) account for most neonatal deaths worldwide; these conditions are also associated with stillbirth and life-long health adversities among those who survive their early weeks. Prevention of preterm birth, SGA, and LBW would lead to major advancements in global health and economic and social development. However, there has been little progress in prevention, despite several globally expressed commitments in the past 30 years. This can be explained by the inadequate response of the global community to four challenges, consisting of problem definition, framing of the problem, coalition-building, and governance. Major impact is possible with adequate response to these challenges. To facilitate an improved problem- framing and response, we propose a new definition with a conceptual framework, bringing preterm birth, SGA, and LBW together under a broader umbrella term—the small vulnerable newborn. Interventions that focus on the health of women and fetuses can reduce newborn vulnerability, stillbirth, and maternal ill-health, leading to thriving individuals, families, and nations.

b. Lancet 2023;401(10389):1707-1719
Small, Vulnerable Newborns 2
Small babies, big risks: global estimates of prevalence and mortality for vulnerable newborns to accelerate change and improve counting
WHO/UNICEF Preterm Birth Estimates Group; National Vulnerable Newborn Measurement Group; Subnational Vulnerable Newborn Measurement Group

Lawn JE et al., Maternal, Adolescent, Reproductive & Child Health (MARCH) Centre, London School of Hygiene & Tropical Medicine, London, UK <joy.lawn@lshtm.ac.uk>

c. Lancet 2023;401(10389):1720-32
Small, Vulnerable Newborns 3
Biological and pathological mechanisms leading to the birth of a small vulnerable newborn
Lancet Small Vulnerable Newborn Steering Committee
Hunter PJ et al., UCL Great Ormond Street Institute of Child Health, University College London, London, UK <patricia.hunter@ucl.ac.uk>

d. Lancet 2023;401(10389):1733-44
Small, Vulnerable Newborns 4
Evidence-based antenatal interventions to reduce the incidence of small vulnerable newborns and their associated poor outcomes
Lancet Small Vulnerable Newborn Steering Committee
Hofmeyr GJ et al., Department of Obstetrics and Gynaecology, University of Botswana, Gaborone, Botswana; Effective Care Research Unit, University of the Witwatersrand, Johannesburg, South Africa; Department of Obstetrics and Gynaecology, Walter Sisulu University, East London, South Africa

Key messages
Package of proven antenatal interventions
The eight contacts recommended by WHO during pregnancy provide a means to implement quality antenatal care, including interventions to reduce the incidence of small vulnerable births and stillbirths. Proven antenatal interventions, including multiple micronutrient supplements, balanced protein and energy supplements, aspirin, treatment of syphilis, education for smoking cessation, prevention of malaria in pregnancy, treatment of asymptomatic bacteriuria, and progesterone provided vaginally could reduce preterm births and small-for-gestational-age births, and should be scaled up. Antenatal corticosteroids and delayed cord clamping can reduce the complications of preterm births and associated mortality.
Potential interventions
If additional research supports their efficacy for reducing the incidence of small vulnerable births, omega-3 fatty acids supplements, zinc supplements (or higher doses of zinc in multiple micronutrient supplements), and calcium supplements would provide substantial additional benefits.
Effects and cost
If full coverage (90%) of eight interventions with proven efficacy is achieved in 2030 in 81 low-income and middle- income countries, more than 5 million preterm and small-for- gestational age births, over half a million stillbirths, and nearly half a million neonatal deaths could be prevented at a cost of US$1·1 billion. If three additional interventions with potential benefits are proven efficacious and added to full coverage antenatal care in 2030, more than 8 million preterm or small- for-gestational-age births, and more than half a million stillbirths and neonatal deaths could be prevented at a cost of $4·1 billion.
Accelerating progress towards targets
Implementation of proven interventions in antenatal care could bring the neonatal mortality rate in these 81 countries from 25·1 deaths per 1000 livebirths in 2023 to 20·1 deaths per 1000 livebirths in 2030, a 20% reduction, and could reduce the prevalence of low birthweight by 17·9%— more than half of the World Health Assembly's 30% reduction target for 2030. Implementation of the proven and potential interventions could reduce the neonatal mortality rate to 18·3 per 1000 livebirths, helping to achieve the Sustainable Development Goal target of 12 or fewer deaths per 1000 livebirths, and could reduce the prevalence of low birthweight by 28·6%, nearly meeting the World Health Assembly's 30% reduction target.

4. PLoS Med 20(6): e1004179. (2023)
Patterns of antibiotic use, pathogens, and prediction of mortality in hospitalized neonates and young infants with sepsis: A global neonatal sepsis observational cohort study (NeoOBS).

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Background
There is limited data on antibiotic treatment in hospitalized neonates in low- and middle-income countries (LMICs). We aimed to describe patterns of antibiotic use, pathogens, and clinical outcomes, and to develop a severity score predicting mortality in neonatal sepsis to inform future clinical trial design.
Methods and findings
Hospitalized infants <60 days with clinical sepsis were enrolled during 2018 to 2020 by 19 sites in 11 countries (mainly Asia and Africa). Prospective daily observational data was collected on clinical signs, supportive care, antibiotic treatment, microbiology, and 28-day mortality. Two prediction models were developed for (1) 28-day mortality from baseline variables (baseline NeoSep Severity Score); and (2) daily risk of death on IV antibiotics from daily updated assessments (NeoSep Recovery Score). Multivariable Cox regression models included a randomly selected 85% of infants, with 15% for validation.
A total of 3,204 infants were enrolled, with median birth weight of 2,500 g (IQR 1,400 to 3,000) and postnatal age of 5 days (IQR 1 to 15). 206 different empiric antibiotic combinations were started in 3,141 infants, which were structured into 5 groups based on the World Health Organization (WHO) AWaRe classification. Approximately 25.9% (n = 814) of infants started WHO first line regimens (Group 1—Access) and 13.8% (n = 432) started WHO second-line cephalosporins (cefotaxime/ceftriaxone) (Group 2—"Low" Watch). The largest group (34.0%, n = 1,068) started a regimen providing partial extended-spectrum beta-lactamase (ESBL)/pseudomonal coverage (piperacillin-tazobactam, ceftazidime, or fluoroquinolone-based) (Group 3—"Medium" Watch), 18.0% (n = 566) started a carbapenem (Group 4—"High" Watch), and 1.8% (n = 57) a Reserve antibiotic (Group 5, largely colistin-based), and 728/2,880 (25.3%) of initial regimens in Groups 1 to 4 were escalated, mainly to carbapenems, usually for clinical deterioration (n = 480; 65.9%).
A total of 564/3,195 infants (17.7%) were blood culture pathogen positive, of whom 62.9% (n = 355) had a gram-negative organism, predominantly Klebsiella pneumoniae (n = 132) or Acinetobacter spp. (n = 72). Both were commonly resistant to WHO-recommended regimens and to carbapenems in 43 (32.6%) and 50 (71.4%) of cases, respectively. MRSA accounted for 33 (61.1%) of 54 Staphylococcus aureus isolates.
Overall, 350/3,204 infants died (11.3%; 95% CI 10.2% to 12.5%), 17.7% if blood cultures were positive for pathogens (95% CI 14.7% to 21.1%, n = 99/564). A baseline NeoSep Severity Score had a C-index of 0.76 (0.69 to 0.82) in the validation sample, with mortality of 1.6% (3/189; 95% CI: 0.5% to 4.6%), 11.0% (27/245; 7.7% to 15.6%), and 27.3% (12/44; 16.3% to 41.8%) in low (score 0 to 4), medium (5 to 8), and high (9 to 16) risk groups, respectively, with similar performance across subgroups. A related NeoSep Recovery Score had an area under the receiver operating curve for predicting death the next day between 0.8 and 0.9 over the first week. There was significant variation in outcomes between sites and external validation would strengthen score applicability.
Conclusion
Antibiotic regimens used in neonatal sepsis commonly diverge from WHO guidelines, and trials of novel empiric regimens are urgently needed in the context of increasing antimicrobial resistance (AMR). The baseline NeoSep Severity Score identifies high mortality risk criteria for trial entry, while the NeoSep Recovery Score can help guide decisions on regimen change. NeoOBS data informed the NeoSep1 antibiotic trial (ISRCTN48721236), which aims to identify novel first- and second-line empiric antibiotic regimens for neonatal sepsis.

## Climate change and Health

5. BMJ 2023;381:p1331 Editorials

Effect of climate related flooding on health and healthcare worldwide

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Continuing lack of preparation is a serious cause for concern

The negative effects of the climate crisis—including flooding, heatwaves, crop failures, and climate related conflict—are already a reality in many parts of the world. As politicians and other leaders drag their feet over climate mitigation strategies, these and other crises such as drought and biodiversity collapse will only get worse over time, with cascading risks and increasing uncertainty.

Healthcare delivery

The climate crisis also poses a substantial risk to the delivery of healthcare. As well as damage to health infrastructure caused by heatwaves, flooding, wildfires, or conflicts, demand will increase because of extreme weather events and the expanding ranges of vectorborne diseases. The resilience of healthcare systems worldwide is an increasing concern. Flooding is one of the big risks to health and healthcare and will become more important as the crisis deepens and extreme weather events become more frequent. Also of concern are deliberate flooding incidents, as recently seen in southern Ukraine with the destruction of the Kakhovka dam.

Health relevant infrastructure in its wider sense includes not only hospitals but also urgent care centres and triage services (such as NHS 111 in the UK), primary care facilities, laboratories, and roads, railways, and other transport links. Learning from previous flooding events and understanding their effects on health and healthcare delivery will be vital to increase resilience and shift decision makers from a disaster response approach to prevention and long term risk management.

Vulnerability

The vulnerability of a population to the health effects of flooding depends on numerous factors. These include the baseline health of a population; the severity and frequency of flooding; the location of housing, workplaces, and critical infrastructure; the use of flood warning systems and evacuation; and the speed of response measures and access to healthcare.

Most deaths linked to flooding are the result of drowning or injuries; 7398 such deaths were recorded internationally in 2022. Other health effects include infections and mental health conditions such as stress and anxiety, which can be followed by chronic anxiety, depression, and post-traumatic stress disorder. In the longer term, population displacement and ongoing problems with water supply and sanitation will lead to further health consequences such as waterborne diseases, including cholera and other diarrhoeal diseases. Demand for healthcare increases after substantial flooding events in both the short and the longer term, although evidence on the long term effect on healthcare is limited.

When healthcare facilities or other critical infrastructure are affected by flooding directly, providing emergency and routine healthcare becomes a challenge. Populations at greatest risk include those in resource poor settings where health infrastructure is already fragile and access to healthcare limited. One recent example is the devastating flooding in Pakistan in 2022. More than three million people and 900 health facilities were affected, and over 1100 people died. Although Pakistan contributes only 1% of all global carbon emissions, it is already disproportionately affected by climate change because of its high exposure to natural hazards as well as social vulnerability from poverty.

Internationally, the vulnerability of healthcare systems to flooding has been recognised repeatedly. Although detailed data are not available for many countries, most are likely to be underprepared for the effects of the climate crisis, including clear risks to healthcare systems.

## Communicable diseases

6. Am J Trop Med Hyg. 2023 Aug 7;tpmd220808.

Resurgence of Malaria Transmission and Incidence after Withdrawal of Indoor Residual Spraying in the District of Koulikoro, Mali

Moussa Keïta et al

In Mali, malaria vector control relies mostly on long-lasting insecticidal nets and indoor residual spraying (IRS). From 2008 to 2016, an IRS program was implemented in the district of Koulikoro. After a significant reduction in malaria indicators, IRS was stopped in 2016. This study evaluated the effect of IRS withdrawal on entomological parameters of malaria transmission and incidence in children aged 6 months to 10 years in the district of Koulikoro. Entomological parameters of malaria transmission during the last year of IRS

implementation in 2016 were compared with those obtained 2 years after IRS withdrawal in 2018 in two villages of Koulikoro. Mosquito vectors were collected by mouth aspiration and pyrethrum spray catches in the villages to monitor these transmission parameters. A sharp increase (10.8 times higher) in vector abundance after IRS withdrawal was observed. The infection rate of Anopheles gambiae sensu lato to Plasmodium falciparum increased from zero during IRS implementation to 14.8% after IRS withdrawal. The average entomological inoculation rate, which was undetectable before, was 1.22 infected bites per person per month 2 years after IRS was withdrawn, and the cumulative malaria incidence rate observed after IRS was 4.12 times (15.2% versus 3.7%) higher than that observed in 2016 in the villages before IRS withdrawal. This study showed a resurgence of malaria transmission and incidence in the Koulikoro health district after IRS was withdrawn. Thus, to manage the potential consequences of malaria transmission resurgence, alternative approaches are needed when stopping successful malaria control interventions.

7. BMJ Global Health 2023;8:e012638. Analysis

Social determinants of visceral leishmaniasis elimination in Eastern Africa

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Abstract
Visceral leishmaniasis is a vector-borne, protozoan disease with severe public health implications. Following the successful implementation of an elimination programme in South Asia, there is now a concerted endeavour to replicate these efforts in Eastern Africa based on the five essential elimination pillars of case management, integrated vector management, effective surveillance, social mobilisation and operational research. This article highlights how key social determinants (SD) of health (poverty, sociocultural factors and gender, housing and clustering, migration and the healthcare system) operate at five different levels (socioeconomic context and position, differential exposure, differential vulnerability, differential outcomes and differential consequences). These SD should be considered within the context of increasing the success of the five-pillar elimination programme and reducing inequity in health.
Conclusion
This article explores the inter-relationship between key social determinants of health (such as poverty, sociocultural factors and gender, housing and clustering, migration and the HCS) and the five pillars of the VL elimination programme in the pipeline for Eastern Africa: case management, vector control, surveillance, social mobilisation and operational research.

8. Lancet. 2023 May 27;401(10390):1822-1824.

Review: Mpox neglect and the smallpox niche: a problem for Africa, a problem for the world

Ifedayo Adetifa et al

Mpox (formerly known as monkeypox) is a zoonotic viral disease endemic in parts of Africa. In May, 2022, the world was alerted to circulation of monkeypox virus in many high-income countries outside of Africa. Continued spread resulted in a WHO declaration of a Public Health Emergency of International Concern. Although there has been much attention on the global outbreak, most of the focus has been on high-income countries outside of Africa, despite the fact that monkeypox virus has been causing disease in parts of Africa for at least 50 years. Furthermore, the long-term consequences of this event, especially the risk that mpox fills the niche vacated through smallpox eradication, have not been sufficiently considered. The heart of the problem is the historical neglect of mpox in Africa where the disease is endemic, and the actual and potential consequences if this neglect is left uncorrected.

9. Clinical Trial Lancet. 2023 Jun 24;401(10394):2138-2147.

Safety and immunogenicity of a single-shot live-attenuated chikungunya vaccine: a double-blind, multicentre, randomised, placebo-controlled, phase 3 trial

Martina Schneider et al

Background: VLA1553 is a live-attenuated vaccine candidate for active immunisation and prevention of disease caused by chikungunya virus. We report safety and immunogenicity data up to day 180 after vaccination with VLA1553.

Methods: This double-blind, multicentre, randomised, phase 3 trial was done in 43 professional vaccine trial sites in the USA. Eligible participants were healthy volunteers aged 18 years and older. Patients were excluded if they had history of chikungunya virus infection or immune-mediated or chronic arthritis or arthralgia, known or suspected defect of the immune system, any inactivated vaccine received within 2 weeks before vaccination with VLA1553, or any live vaccine received within 4 weeks before vaccination with VLA1553. Participants were randomised (3:1) to receive VLA1553 or placebo. The primary endpoint was the proportion of baseline negative participants with a seroprotective chikungunya virus antibody level defined as 50% plaque reduction in a micro plaque reduction neutralisation test (µPRNT) with a µPRNT50 titre of at least 150, 28 days after vaccination. The safety analysis included all individuals who received vaccination. Immunogenicity analyses were done in a subset of participants at 12 pre-selected study sites. These participants were required to have no major protocol deviations to be included in the per-protocol population for immunogenicity analyses. This trial is registered at ClinicalTrials.gov, NCT04546724.
Findings: Between Sept 17, 2020 and April 10, 2021, 6100 people were screened for eligibility. 1972 people were excluded and 4128 participants were enrolled and randomised (3093 to VLA1553 and 1035 to placebo). 358 participants in the VLA1553 group and 133 participants in the placebo group discontinued before trial end. The per-protocol population for immunogenicity analysis comprised 362 participants (266 in the VLA1553 group and 96 in the placebo group). After a single vaccination, VLA1553 induced seroprotective chikungunya virus neutralising antibody levels in 263 (98·9%) of 266 participants in the VLA1553 group (95% CI 96·7-99·8; p<0·0001) 28 days post-vaccination, independent of age. VLA1553 was generally safe with an adverse event profile similar to other licensed vaccines and equally well tolerated in younger and older adults. Serious adverse events were reported in 46 (1·5%) of 3082 participants exposed to VLA1553 and eight (0·8%) of 1033 participants in the placebo arm. Only two serious adverse events were considered related to VLA1553 treatment (one mild myalgia and one syndrome of inappropriate antidiuretic hormone secretion). Both participants recovered fully.
Interpretation: The strong immune response and the generation of seroprotective titres in almost all vaccinated participants suggests that VLA1553 is an excellent candidate for the prevention of disease caused by chikungunya virus.

10. Lancet. 2023 Jul 22;402(10398):313-335

The unfinished agenda of communicable diseases among children and adolescents before the COVID-19 pandemic, 1990-2019: a systematic analysis of the Global Burden of Disease Study 2019

GBD 2019 Child and Adolescent Communicable Disease Collaborators

Background: Communicable disease control has long been a focus of global health policy. There have been substantial reductions in the burden and mortality of communicable diseases among children younger than 5 years, but we know less about this burden in older children and adolescents, and it is unclear whether current programmes and policies remain aligned with targets for intervention. This knowledge is especially important for policy and programmes in the context of the COVID-19 pandemic. We aimed to use the Global Burden of Disease (GBD) Study 2019 to systematically characterise the burden of communicable diseases across childhood and adolescence.
Methods: In this systematic analysis of the GBD study from 1990 to 2019, all communicable diseases and their manifestations as modelled within GBD 2019 were included, categorised as 16 subgroups of common diseases or presentations. Data were reported for absolute count, prevalence, and incidence across measures of cause-specific mortality (deaths and years of life lost), disability (years lived with disability [YLDs]), and disease burden (disability-adjusted life-years [DALYs]) for children and adolescents aged 0-24 years. Data were reported across the Socio-demographic Index (SDI) and across time (1990-2019), and for 204 countries and territories. For HIV, we reported the mortality-to-incidence ratio (MIR) as a measure of health system performance.
Findings: In 2019, there were 3·0 million deaths and 30·0 million years of healthy life lost to disability (as measured by YLDs), corresponding to 288·4 million DALYs from communicable diseases among children and adolescents globally (57·3% of total communicable disease burden across all ages). Over time, there has been a shift in communicable disease burden from young children to older children and adolescents (largely driven by the considerable reductions in children younger than 5 years and slower progress elsewhere), although

children younger than 5 years still accounted for most of the communicable disease burden in 2019. Disease burden and mortality were predominantly in low-SDI settings, with high and high-middle SDI settings also having an appreciable burden of communicable disease morbidity (4·0 million YLDs in 2019 alone). Three cause groups (enteric infections, lower-respiratory-tract infections, and malaria) accounted for 59·8% of the global communicable disease burden in children and adolescents, with tuberculosis and HIV both emerging as important causes during adolescence. HIV was the only cause for which disease burden increased over time, particularly in children and adolescents older than 5 years, and especially in females. Excess MIRs for HIV were observed for males aged 15-19 years in low-SDI settings.
Interpretation: Our analysis supports continued policy focus on enteric infections and lower-respiratory-tract infections, with orientation to children younger than 5 years in settings of low socioeconomic development. However, efforts should also be targeted to other conditions, particularly HIV, given its increased burden in older children and adolescents. Older children and adolescents also experience a large burden of communicable disease, further highlighting the need for efforts to extend beyond the first 5 years of life. Our analysis also identified substantial morbidity caused by communicable diseases affecting child and adolescent health across the world.

11. TMIH 2023;28(5):357-66

Shorter regimens improved treatment outcomes of multidrug-resistant tuberculosis patients in Tanzania in 2018 cohort

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Objective: In 2018, shorter treatment regimens (STR) for people with drug-resistant tuberculosis (DR-TB) were introduced in Tanzania and included kanamycin, high-dose moxifloxacin, prothionamide, high-dose isoniazid, clofazimine, ethambutol and pyrazinamide. We describe treatment outcomes of people diagnosed with DR-TB in a cohort initiating treatment in 2018 in Tanzania.
Methods: This was a retrospective cohort study conducted at the National Centre of Excellence and decentralised DR-TB treatment sites for the 2018 cohort followed from January 2018 to August 2020. We reviewed data from the National Tuberculosis and Leprosy Program DR-TB database to assess clinical and demographic information. The association between different DR-TB regimens and treatment outcome was assessed using logistic regression analysis. Treatment outcomes were described as treatment complete, cure, death, failure or lost to follow-up. A successful treatment outcome was assigned when the patient achieved treatment completion or cure.
Results: A total of 449 people were diagnosed with DR-TB of whom 382 had final treatment outcomes: 268 (70%) cured; 36 (9%) treatment completed; 16 (4%) lost to follow-up; 62 (16%) died. There was no treatment failure. The treatment success rate was 79% (304 patients). The 2018 DR-TB treatment cohort was initiated on the following regimens: 140 (46%) received STR, 90 (30%) received the standard longer regimen (SLR), 74 (24%) received a new drug regimen. Normal nutritional status at baseline [adjusted odds ratio (aOR) = 6.57, 95% CI (3.33-12.94), $p < 0.001$] and the STR [aOR = 2.67, 95% CI (1.38-5.18), $p = 0.004$] were independently associated with successful DR-TB treatment outcome.
Conclusion: The majority of DR-TB patients on STR in Tanzania achieved a better treatment outcome than on SLR. The acceptance and implementation of STR at decentralised sites promises greater treatment success. Assessing and improving nutritional status at baseline and introducing new shorter DR-TB treatment regimens may strengthen favourable treatment outcomes.

## Community health

12. Am J Trop Med Hyg. 2023 Apr 17;108(6):1175-1182.

Feasibility of Training Community Health Workers to Use Smartphone-Attached Microscopy for Point-of-Care Visualization of Soil-Transmitted Helminths in the Peruvian Amazon

Eve Ameen et al

Affiliations expand

The prevalence of soil-transmitted helminths (STH) is high in communities within the Peruvian Amazon despite repeated mass-drug administration, demanding alternative strategies of control. Smartphone-attached microscopy (SAM) permits visualization of STH from a small portable microscope through a smartphone screen, potentially providing an inexpensive and rapid method of STH visualization in communities where diagnostic laboratories with microscopes are inaccessible. In this study, a total of 45 community health workers who work within the health systems of Loreto, Peru, attended a 1-day training session with lectures and practicums on STH and SAM. Participants received a pre- and post-intervention questionnaire. Post-intervention, participants were significantly more confident using SAM and identifying parasite images, symptoms, transmission, and treatment ($P \leq 0.0045$). Post-intervention, participants correctly labeled a median of five of seven SAM apparatus components and five of eight steps of Kato-Katz technique, were less likely to choose taking medicine to prevent parasite infection ($P = 0.0075$), and were more likely to select Kato-Katz technique as a type of diagnostic test ($P < 0.0001$). Most participants felt ready to use SAM in their communities and stated that it could help rural communities far from health centers or laboratories (24%); provide faster identification, results, diagnosis (19%); permit at-home or on-the-spot visualization (14%); and save money (14%). Results show that community health workers show a high level of willingness and competency to learn about both STH and SAM and may be a yet-unexplored practical method of augmenting STH visualization, bringing healthcare to communities in Loreto with poor access to diagnostic laboratories and clinics.

## Development Assistance for Health, Global Health Policies & North-South partnerships

13. Health Policy and Planning, Vol. 38 (4), 2023: 567 – 570

Tracking development assistance for mental health: time for better data

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Conclusion:

Accurate financial data are crucial to sustainable mental health financing in LMICs. With mental health needs expected to increase in LMICs partly driven by the coronavirus disease pandemic and its policy response, improving DAMH estimates is urgent to support decision makers at both global and country levels. Current estimates are inaccurate due to four groups of limitations, which reflect customary challenges and trade-offs in producing financial figures from secondary data collected across different organizations and over time, such as limited resources, different classifications and confidentiality issues. This Commentary identifies opportunities to enhance their accuracy at different stages of the estimation process. It is time for better data.

Key messages

Sustainable mental health financing requires accurate financial data, especially in low- and middle-income countries (LMICs) where most people with mental disorders live but resources are extremely limited. Development assistance for mental health (DAMH) constitutes a critical source of funding for mental health in LMICs. However, tracking DAMH is complex, and estimates are inaccurate.
Four groups of limitations at different stages of the estimation process currently hinder the accuracy of DAMH estimates.
Several opportunities might be leveraged to improve them. This is crucial to support decision makers at both the global and country levels and to strengthen mental health financing in LMICs.

## Essential drugs and Antimicrobial Resistance

14. Am J Trop Med Hyg. 2023 Jun 20;109(2):228-240.

Health, Economic, and Social Impacts of Substandard and Falsified Medicines in Low- and Middle-Income Countries: A Systematic Review of Methodological Approaches
Raimat Korede Salami et al
Little is known about the adverse health, economic, and social impacts of substandard and falsified medicines (SFMs). This systematic review aimed to identify the methods used in studies to measure the impact of SFMs in low- and middle-income countries (LMICs), summarize their findings, and identify gaps in the reviewed literature. A search of eight databases for published papers, and a manual search of references in the relevant literature were conducted using synonyms of SFMs and LMICs. Studies in the English language that estimated the health, social, or economic impacts of SFMs in LMICs published before June 17, 2022 were considered eligible. Search results generated 1,078 articles, and 11 studies were included after screening and quality assessment. All included studies focused on countries in sub-Saharan Africa. Six studies used the Substandard and Falsified Antimalarials Research Impact model to estimate the impact of SFMs. This model is an important contribution. However, it is technically challenging and data demanding, which poses challenges to its adoption by national academics and policymakers alike. The included studies estimate that substandard and falsified antimalarial medicines can account from 10% to ~40% of total annual malaria costs, and SFMs affect rural and poor populations disproportionately. Evidence on the impact of SFMs is limited in general and nonexistent regarding social outcomes. Further research needs to focus on practical methods that can serve local authorities without major investments in terms of technical capacity and data collection.

15. Lancet 2023;401(10393):2023-5

Comment
Improving access to medicines for non-communicable diseases, including mental health conditions
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At the High-Level Meeting on Universal Health Coverage at the UN General Assembly in 2019, global leaders made a commitment to set targets to prevent and control non-communicable diseases (NCDs), including mental, neurological, and substance use (MNS) conditions. At that time, focused actions were proposed to improve access to essential medicines for NCDs, supported by WHO, including leveraging the WHO Model Lists of Essential Medicines to develop and update national essential medicines lists, developing further normative guidance, establishing and using prequalification programmes, advocating for affordability and fair pricing, enhancing demand forecasting, and expanding pooled procurement, guided by global strategic frameworks and WHO technical guidance.
Since then, the COVID-19 pandemic has introduced substantial disruptions, including stock-outs of essential medicines and limited access to health facilities in many settings. Despite these challenges, WHO and the global health community have made some advancements, including landmark resolutions and country action

strengthening the prevention and control of diabetes and epilepsy and other neurological disorders; updating the Model Lists of Essential Medicines and Priority Medical Devices based on emerging evidence on comparative effectiveness, safety, and cost-effectiveness; and launching prequalification programmes for biotherapeutic products and corresponding similar biotherapeutic products. Regular dialogues with the private sector are also making progress. In September, 2022, the first human insulins were prequalified by WHO, which include updated storage conditions by the manufacturer that can improve the use of these essential medicines under conditions with limited access to refrigeration, such as in many humanitarian settings. New partnerships will also make it possible to provide more quality-assured medicines to low-income and middle-income countries (LMICs).
However, there is still a long way to go. Here we outline three ways in which we need to move forward, recognising that interventions will be best delivered through strong health systems that can deliver high-quality, longitudinal care.
First, there is a need to expand local production of NCD medicines where possible and appropriate.
At the 74th World Health Assembly in 2021, 108 countries, including 54 African countries, co-sponsored a resolution to strengthen local production of medicines to improve access, a call that has been repeated by the Africa Centres for Disease Control and Prevention.
Second, it is crucial to advance universal health coverage (UHC) to ensure financial protection from the cost of medicines, diagnostics, and other health products.
Essential medicines remain poorly covered in many countries' health insurance systems and high out-of-pocket spending persists even in many countries with higher UHC. As many countries discuss the future of health system design, adequate coverage for pharmaceutical expenses in national health insurance plans and benefit packages must be an urgent consideration and placed as high priority in political discourse.
Third, there needs to be a focus on improving access to medicines, diagnostics, and other health products for the lowest income countries. For example, the absence of essential psychotropic medicines from many national Essential Medicines lists needs to be addressed.
In 2025, global leaders will meet again at the UN General Assembly to discuss progress towards combating NCDs and MNS conditions, including towards the nine voluntary global NCD targets. The global community must take bold, decisive, and sustained action between now and then to achieve meaningful progress, and thereby save and improve hundreds of millions of lives over the next decade.

16. PLoS Med 20(6): e1004211. (2023)

Inappropriate antibiotic prescribing and its determinants among outpatient children in 3 low- and middle-income countries: A multicentric community-based cohort study.

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Background
Antibiotic resistance is a global public health issue, particularly in low- and middle-income countries (LMICs), where antibiotics required to treat resistant infections are not affordable. LMICs also bear a disproportionately high burden of bacterial diseases, particularly among children, and resistance jeopardizes progress made in these areas. Although outpatient antibiotic use is a major driver of antibiotic resistance, data on inappropriate antibiotic prescribing in LMICs are scarce at the community level, where the majority of prescribing occurs. Here, we aimed to characterize inappropriate antibiotic prescribing among young outpatient children and to identify its determinants in 3 LMICs.
Methods and findings
We used data from a prospective, community-based mother-and-child cohort (BIRDY, 2012 to 2018) conducted across urban and rural sites in Madagascar, Senegal, and Cambodia. Children were included at birth and followed-up for 3 to 24 months. Data from all outpatient consultations and antibiotics prescriptions were recorded. We defined inappropriate prescriptions as antibiotics prescribed for a health event determined not to require antibiotic therapy (antibiotic duration, dosage, and formulation were not considered). Antibiotic appropriateness was determined a posteriori using a classification algorithm

developed according to international clinical guidelines. We used mixed logistic analyses to investigate risk factors for antibiotic prescription during consultations in which children were determined not to require antibiotics. Among the 2,719 children included in this analysis, there were 11,762 outpatient consultations over the follow-up period, of which 3,448 resulted in antibiotic prescription. Overall, 76.5% of consultations resulting in antibiotic prescription were determined not to require antibiotics, ranging from 71.5% in Madagascar to 83.3% in Cambodia. Among the 10,416 consultations (88.6%) determined not to require antibiotic therapy, 25.3% (n = 2,639) nonetheless resulted in antibiotic prescription. This proportion was much lower in Madagascar (15.6%) than in Cambodia (57.0%) or Senegal (57.2%) ($p < 0.001$). Among the consultations determined not to require antibiotics, in both Cambodia and Madagascar the diagnoses accounting for the greatest absolute share of inappropriate prescribing were rhinopharyngitis (59.0% of associated consultations in Cambodia, 7.9% in Madagascar) and gastroenteritis without evidence of blood in the stool (61.6% and 24.6%, respectively). In Senegal, uncomplicated bronchiolitis accounted for the greatest number of inappropriate prescriptions (84.4% of associated consultations). Across all inappropriate prescriptions, the most frequently prescribed antibiotic was amoxicillin in Cambodia and Madagascar (42.1% and 29.2%, respectively) and cefixime in Senegal (31.2%). Covariates associated with an increased risk of inappropriate prescription include patient age greater than 3 months (adjusted odds ratios (aOR) with 95% confidence interval (95% CI) ranged across countries from 1.91 [1.63, 2.25] to 5.25 [3.85, 7.15], $p < 0.001$) and living in rural as opposed to urban settings (aOR ranged across countries from 1.83 [1.57, 2.14] to 4.40 [2.34, 8.28], $p < 0.001$). Diagnosis with a higher severity score was also associated with an increased risk of inappropriate prescription (aOR = 2.00 [1.75, 2.30] for moderately severe, 3.10 [2.47, 3.91] for most severe, $p < 0.001$), as was consultation during the rainy season (aOR = 1.32 [1.19, 1.47], $p < 0.001$). The main limitation of our study is the lack of bacteriological documentation, which may have resulted in some diagnosis misclassification and possible overestimation of inappropriate antibiotic prescription.

Conclusion

In this study, we observed extensive inappropriate antibiotic prescribing among pediatric outpatients in Madagascar, Senegal, and Cambodia. Despite great intercountry heterogeneity in prescribing practices, we identified common risk factors for inappropriate prescription. This underscores the importance of implementing local programs to optimize antibiotic prescribing at the community level in LMICs.

17. PLoS Med 20(6): e1004235. (2023)

Impact of antibiotics on gut microbiome composition and resistome in the first years of life in low- to middle-income countries: A systematic review.

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Background

Inappropriate antimicrobial usage is a key driver of antimicrobial resistance (AMR). Low- and middle-income countries (LMICs) are disproportionately burdened by AMR and young children are especially vulnerable to infections with AMR-bearing pathogens. The impact of antibiotics on the microbiome, selection, persistence, and horizontal spread of AMR genes is insufficiently characterized and understood in children in LMICs. This systematic review aims to collate and evaluate the available literature describing the impact of antibiotics on the infant gut microbiome and resistome in LMICs.

Methods and findings

In this systematic review, we searched the online databases MEDLINE (1946 to 28 January 2023), EMBASE (1947 to 28 January 2023), SCOPUS (1945 to 29 January 2023), WHO Global Index Medicus (searched up to 29 January 2023), and SciELO (searched up to 29 January 2023). A total of 4,369 articles were retrieved across the databases. Duplicates were removed resulting in 2,748 unique articles. Screening by title and abstract excluded 2,666 articles, 92 articles were assessed based on the full text, and 10 studies met the eligibility criteria that included human studies conducted in LMICs among children below the age of 2 that reported gut microbiome composition and/or resistome composition (AMR genes) following antibiotic usage. The included studies were all randomized control trials (RCTs) and were assessed for risk of bias using the

Cochrane risk-of-bias for randomized studies tool. Overall, antibiotics reduced gut microbiome diversity and increased antibiotic-specific resistance gene abundance in antibiotic treatment groups as compared to the placebo. The most widely tested antibiotic was azithromycin that decreased the diversity of the gut microbiome and significantly increased macrolide resistance as early as 5 days posttreatment. A major limitation of this study was paucity of available studies that cover this subject area. Specifically, the range of antibiotics assessed did not include the most commonly used antibiotics in LMIC populations.
Conclusion
In this study, we observed that antibiotics significantly reduce the diversity and alter the composition of the infant gut microbiome in LMICs, while concomitantly selecting for resistance genes whose persistence can last for months following treatment. Considerable heterogeneity in study methodology, timing and duration of sampling, and sequencing methodology in currently available research limit insights into antibiotic impacts on the microbiome and resistome in children in LMICs. More research is urgently needed to fill this gap in order to better understand whether antibiotic-driven reductions in microbiome diversity and selection of AMR genes place LMIC children at risk for adverse health outcomes, including infections with AMR-bearing pathogens.

18. PLoS Med 20(7): e1004264. (2023)
Editorial, Abridged: Antimicrobial Resistance: Addressing a Global Threat to Humanity.
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Antimicrobial resistance (AMR) has been prioritized by the World Health Organization (WHO) as one of the top 10 global public health threats facing humanity. The High-Level Meeting of the UN General Assembly on Antimicrobial Resistance in 2016 officially declared the importance of AMR and solicited countries to commit to their individual AMR National Action Plans. Despite these efforts, drug-resistant infections were estimated to contribute to a devastating 4.95 million deaths globally in 2019, with the bulk of the clinical burden borne by low- and middle-income countries (LMICs), particularly in sub-Saharan Africa. This far exceeds the annual global deaths attributable to tuberculosis (1.5 million), malaria (643,000) and HIV/AIDS (864,000). Without intervention it is estimated that global deaths attributable to AMR could reach 10 million annually by 2050. Here, we discuss the Special Issue commissioned by *PLoS Medicine* dedicated to AMR. These research studies affirm the complexity and multi-faceted dynamics of AMR and the enormous challenge faced in understanding the problem and in designing tractable, equitable and cost-effective interventions to control its spread.
The drivers of AMR are multifactorial but there is no debate that antibiotic overuse has been paramount. Between 2000 and 2015 antibiotic use increased by 65% globally, primarily driven by a substantial increase across LMICs. Bacteria are complex organisms that receive and transfer DNA at an alarming frequency with seemingly little or no cost to themselves; and, contrary to previous dogma, the presence of an antibiotic has little impact on the transfer of mobile bacterial DNA but can select for newly acquired resistant mechanisms. AMR is a One-Health problem, and can spread via humans, animals (domestic and wild), and the environment (water and air). Inadequate access to water, sanitation, and hygiene (WASH) as well as inadequate access to healthcare services (e.g., cost-effective diagnostics) and affordable, appropriate antibiotics have served to accelerate the spread of AMR in LMICs. AMR is a critical public health crisis and a One-Health priority requiring engagement across human, agricultural, and environmental sectors.
This Special Issue attracted several studies focused on neonatal and pediatric infections. Neonates and infants are particularly vulnerable to antibiotic resistant infections. The editorial gives a short overview of the articles included.
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In September 2024, a high-level meeting of the United Nations will be held to discuss AMR and to propose an enhanced framework to that outlined in 2016. Recognition of the magnitude of this problem is urgently required by world leaders and policy makers to ensure adequate global investment in the development of innovative affordable vaccines, antimicrobial agents, diagnostics, and reporting systems. The COVID-19 pandemic has taught us, as a global community, that the planet is small and we are all inter-connected economically, culturally, and socially with the ultimate consequence of what happens in one country soon

appearing in another. It is estimated that the attributable deaths due to COVID-19 since December 2019 numbered 3.2 million and its cost to the global economy is approximately $17 trillion. On the current trajectory, by 2050, not only will AMR perhaps be responsible for 10 million deaths annually it will also cost the global economy over $100 trillion—figures that dwarf the impact of COVID-19 and emphasize the urgent threat of AMR.

## Health systems, Health Systems Financing & Health Policy

19. BMJ Global Health 2023;8:e013136. Editorial

Essential public health functions: the key to resilient health systems

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On 5 May 2023, the WHO declared an end to the designation of COVID-19 as a public health emergency of international concern. While COVID-19 remains a threat to health, the world is ready to move forward from a disease that has dominated life for the past three years. Now is the time to assess whether the commitments made to 'build back better' will incorporate learning from diverse country experiences of responding to COVID-19 and its wider system consequences, and increase the resilience of all countries to future public health challenges.

Health expenditures and life expectancy in most of the world rose between 2000 and 2019; however, the onset of the pandemic resulted in significant and prolonged disruption to essential health services, delaying progress and even reversing gains in life expectancy. This lack of resilience stems from chronic underfunding of public health capacities, even in relatively advanced economies. It is these preventive and promotive public health capacities both within and beyond the health system that are essential if we wish to reduce health risks and the impact of shock events like COVID-19, and thus reduce the burden on secondary and tertiary care that occurs when public health systems fail. Increased mortality and morbidity from non-COVID-related causes were seen in many countries, with an estimated 15 million excess deaths associated with the COVID-19 pandemic in 2020 and 2021 alone. The impact on livelihoods and society has also exacerbated social inequities and negatively impacted on mental health, while misinformation has undermined trust in health services.

Throughout the pandemic, national structures with responsibility for the delivery of public health, including national public health institutions (NPHIs), were key for the rapid development of diagnostics, strengthening of surveillance systems, and the synthesis and generation of evidence to inform policy and practice. However, NPHIs in many countries have a broad range of responsibilities in addition to communicable disease control, including health promotion and tackling inequality, and there is a risk that these functions will be neglected if political priorities in the recovery phase focus exclusively on health protection. It has become increasingly important that we develop greater global consensus on the definition and scope of public health services if system strengthening post-pandemic is to meet the full range of public health challenges. To this end, there has been renewed attention and focus on essential public health functions (EPHFs), with the WHO proposing a unified list of 12 fundamental activities in 2021

Unified list of essential public health functions

- Public health surveillance and monitoring:
- Public health emergency management:
- Public health stewardship:
- Multisectoral planning and financing for public health:
- Health protection:
- Disease prevention:

- Health promotion:
- Community engagement and social participation:
- Public health workforce development:
- Health service quality and equity:
- Public health research and knowledge:
- Access to and use of health products, supplies, equipment and technologies

20. Suppl Am J Trop Med Hyg

Volume 108 (2023): Issue 5_Suppl (May 2023):

Building a Sample Vital Statistics System: Results From Countrywide Mortality Surveillance for Action (COMSA) in Mozambique

Am J Trop Med Hyg. 2023 Apr 10;108(5_Suppl):1-2. ------ Editorial

Addressing the Gaps in Mortality Data: A Case for National Mortality Surveillance

Ties Boerma

If we are serious about improving the fundamentals of public health, a concerted and sustained effort is needed from global donors, international agencies, and country governments to address the painful gap in information on mortality by cause in high-mortality settings. Efforts to improve civil registration and vital statistics in all countries are commendable and necessary but will unlikely solve the mortality statistics gap in the near future. Mortality surveillance systems with verbal autopsy,9 combined with population-based surveys and improved medical certification of the cause of death and reporting by health facilities, are a critical intermediate step toward full birth and death (with cause) registration systems and need to be prioritized. The ability to measure excess mortality due to the COVID-19 pandemic on a regular basis is just one example of the immediate value of such systems for public health.

In the same issue:

- Am J Trop Med Hyg. 2023 Apr 10;108(5_Suppl):78-89.
  Multi-Cause Calibration of Verbal Autopsy-Based Cause-Specific Mortality Estimates of Children and Neonates in Mozambique
  Brian Gilbert et al

- Am J Trop Med Hyg. 2023 Apr 10;108(5_Suppl):40-46.
  Implementing the Countrywide Mortality Surveillance in Action in Mozambique: How Much Did It Cost?
  Safia S et al

- Am J Trop Med Hyg. 2023 Apr 10;108(5_Suppl):17-28.
  Verbal and Social Autopsy of Adult Deaths and Adult Care-Seeking Pattern in Mozambique, 2019-2020
  Md Hafizur Rahman et al

## Health Research

21. Health Policy and Planning, Vol. 38 (4), 2023: 571 – 578

How to do (or not to do)…how to embed equity in the conduct of health research: lessons from piloting the 8Quity tool.

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Global health research reflects and can either perpetuate or challenge the complex power hierarchies and inequities that characterize our health systems and the societies in which they are situated. The imperative to embed equity in health research aligns with broader efforts globally to promote equitable partnerships among researchers, and between researchers and the communities potentially impacted by their research, or with whom knowledge is co-produced. We describe lessons learnt from piloting a heuristic and diagnostic tool for researchers to assess integration of equity considerations into their research practices. The '8Quity' tool comprises eight domains of equity we developed which roughly correspond to the typical stages in the research process—from team formation to capacity strengthening, research ethics and governance to relationships with research partners, participants and stakeholders beyond the project period. Resources that detail how this can be done on a practical level are also shared, corresponding to each of the eight domains. We acknowledge that tools like 8Quity may be helpful, even necessary, but are insufficient for the broader societal changes required to ensure equity in the research enterprise. However, by firmly setting intentions and accountabilities within our research practices, we (as researchers) can play a role, however modest, in turning the tide of the injustices that leave some communities behind.

## HIV

22. PLoS Med 20(3): e1004168. (2023)

Policy forum: Strengthening implementation guidelines for HIV service delivery: Considerations for future evidence generation and synthesis.

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Summary points

With highly effective diagnostic, prevention, and treatment innovations available in HIV programs globally, the HIV field is increasingly turning to implementation and service delivery questions.

Developing guidelines for implementation of interventions is markedly challenged by limitations in primary implementation research design and reporting, as well as difficulties in application of evidence synthesis and guideline development tools originally developed to appraise evidence for efficacy.

Drawing on the processes of developing the WHO HIV service delivery guidelines for testing and treatment between 2018 and 2021, we present challenges and identify areas for future methodological development to improve the incorporation of implementation research across the full spectrum of the evidence generation continuum.

We highlight gaps in design, measurement, and reporting of primary implementation research, as well as underreporting of relevant program data.

We describe how routine application of current evidence synthesis tools may not sufficiently answer implementation questions and propose that methodological tools be optimized to identify high-quality non-randomized evidence and reduce penalization for heterogeneity in meta-analysis of implementation research.

These findings serve as a blueprint for further methodological work to strengthen existing evidence synthesis and guideline development tools for HIV service delivery guidelines and for implementation research more broadly.

23. PLoS Med 20(3): e1004182. (2023)

Policy forum: The future of HIV testing in eastern and southern Africa: Broader scope, targeted services

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Summary points

Scale-up of HIV testing services (HTS), primarily through routine offer of HIV testing in health services, has led to an increase in the proportion of people with HIV who know their status and are accessing HIV treatment.

In eastern and southern Africa (ESA), home to more than half of people living with HIV globally, many countries are close to reaching global targets for HIV treatment and viral suppression, with slower progress towards the global target that 95% of people should know their HIV status. Given this, it is critical to update the approach to HIV testing to reflect changes in the HIV epidemic, the response to it, and to acknowledge ongoing resource constraints.

An expert consultation series defined this updated approach as a shift to "broader scope, targeted services." Over the next decade, HTS in ESA should implement a status-neutral approach that maintains core testing services to reach the greatest number of people with HIV not on treatment, while broadening the scope to support linkage to appropriate prevention and treatment. It is important that HTS programs use a strategic mix of modalities focused on people most likely to have undiagnosed HIV, those who are not on ART, and people who are more vulnerable to HIV acquisition.

Ten key themes for the future of HTS were articulated. The most critical are: promote a status-neutral approach to HTS; realize the potential of HIV self-testing (HIVST); prioritize facility-based HTS; reframe retesting among those previously diagnosed but not currently on antiretroviral therapy (ART) as an opportunity; and involve and invest in community leadership and community-led monitoring (CLM) to ensure HTS meets the needs and preferences of clients.

The country-specific epidemiological context must inform the focus and mix of testing approaches. Testing programs should acknowledge regional transmission dynamics including that the majority of new infections are acquired from people living with HIV for longer than a year, with transmission driven by many who transmit to a few, rather than by a few who transmit to many.

HTS programs should not reduce the volume of HIV testing. Rather HTS programs should broaden the scope of testing to encapsulate both prevention and treatment objectives and prioritize services to the people at the highest risk of HIV.

24. PLoS Med 20(3): e1004169.(2023)

Demand creation for HIV testing services: A systematic review and meta-analysis.

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Background

HIV testing services (HTS) are the first steps in reaching the UNAIDS 95-95-95 goals to achieve and maintain low HIV incidence. Evaluating the effectiveness of different demand creation interventions to increase uptake of efficient and effective HTS is useful to prioritize limited programmatic resources. This review was undertaken to inform World Health Organization (WHO) 2019 HIV testing guidelines and assessed the research question, "Which demand creation strategies are effective for enhancing uptake of HTS?" focused on populations globally.

Methods and findings

The following electronic databases were searched through September 28, 2021: PubMed, PsycInfo, Cochrane CENTRAL, CINAHL Complete, Web of Science Core Collection, EMBASE, and Global Health Database; we searched IAS and AIDS conferences. We systematically searched for randomized controlled trials (RCTs) that compared any demand creation intervention (incentives, mobilization, counseling, tailoring, and digital interventions) to either a control or other demand creation intervention and reported HTS uptake. We pooled trials to evaluate categories of demand creation interventions using random-effects models for meta-analysis and assessed study quality with Cochrane's risk of bias 1 tool. This study was funded by the WHO and registered in Prospero with ID CRD42022296947.

We screened 10,583 records and 507 conference abstracts, reviewed 952 full texts, and included 124 RCTs for data extraction. The majority of studies were from the African (N = 53) and Americas (N = 54) regions. We found that mobilization (relative risk [RR]: 2.01, 95% confidence interval [CI]: [1.30, 3.09], $p < 0.05$; risk difference [RD]: 0.29, 95% CI [0.16, 0.43], $p < 0.05$, N = 4 RCTs), couple-oriented counseling (RR: 1.98, 95% CI

[1.02, 3.86], p < 0.05; RD: 0.12, 95% CI [0.03, 0.21], p < 0.05, N = 4 RCTs), peer-led interventions (RR: 1.57, 95% CI [1.15, 2.15], p < 0.05; RD: 0.18, 95% CI [0.06, 0.31], p < 0.05, N = 10 RCTs), motivation-oriented counseling (RR: 1.53, 95% CI [1.07, 2.20], p < 0.05; RD: 0.17, 95% CI [0.00, 0.34], p < 0.05, N = 4 RCTs), short message service (SMS) (RR: 1.53, 95% CI [1.09, 2.16], p < 0.05; RD: 0.11, 95% CI [0.03, 0.19], p < 0.05, N = 5 RCTs), and conditional fixed value incentives (RR: 1.52, 95% CI [1.21, 1.91], p < 0.05; RD: 0.15, 95% CI [0.07, 0.22], p < 0.05, N = 11 RCTs) all significantly and importantly (≥50% relative increase) increased HTS uptake and had medium risk of bias.
Lottery-based incentives and audio-based interventions less importantly (25% to 49% increase) but not significantly increased HTS uptake (medium risk of bias). Personal invitation letters and personalized message content significantly but not importantly (<25% increase) increased HTS uptake (medium risk of bias).
Reduced duration counseling had comparable performance to standard duration counseling (low risk of bias) and video-based interventions were comparable or better than in-person counseling (medium risk of bias).
Heterogeneity of effect among pooled studies was high. This study was limited in that we restricted to randomized trials, which may be systematically less readily available for key populations; additionally, we compare only pooled estimates for interventions with multiple studies rather than single study estimates, and there was evidence of publication bias for several interventions.
Conclusions
Mobilization, couple- and motivation-oriented counseling, peer-led interventions, conditional fixed value incentives, and SMS are high-impact demand creation interventions and should be prioritized for programmatic consideration. Reduced duration counseling and video-based interventions are an efficient and effective alternative to address staffing shortages. Investment in demand creation activities should prioritize those with undiagnosed HIV or ongoing HIV exposure. Selection of demand creation interventions must consider risks and benefits, context-specific factors, feasibility and sustainability, country ownership, and universal health coverage across disease areas.

## Human Resources for Health

25. Lancet 20239;402(10401):520-1

Perspectives
The art of medicine
Are we training our students to be white saviours in global health?
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In 2012, the Nigerian-American writer and artist Teju Cole called out the culture of white saviourism in the USA and introduced the concept of the White Saviour Industrial Complex (WSIC). The make-up of global health education perpetuates and feeds into the WSIC, with universities in high-income countries (HICs) accounting for a major share of global health programmes. Global health education is in certain respects a growth industry of whiteness that promotes justice only on paper and remains rooted in harmful colonial worldviews.
Those who work in global health in HICs benefit from an imbalance of power that maintains the white supremacist status quo, and consequently an entrenched divide in global health. As global health educators we are then compelled to ask: are we training students to be “white saviours”, irrespective of their ethnicity or country of origin, and how can global health education be reconfigured?
Global health is not “global”: 85% of global health organisations were headquartered in Europe and North America in 2020.
Building on the understanding that global health education requires change, we propose ways to help build an anti-white saviour approach in global health education and to offer counter-narratives to question the status quo. We frame these considerations as seven questions that educators could use to disrupt their own thinking and existing curricular biases.

1. Do we bring the lens of a historian when teaching global health?
2. Are we sufficiently going beyond health?
3. Are we framing decolonising as a process?
4. Are we sufficiently highlighting the expertise of people in LMICs and Indigenous and under- served populations in HICs?
5. Are we advocating for sustainability in our field work?
6. Do we include local in global health?
7. Do we encourage shifting of power?
Thus, the onus is on educators to fulfil our ethical responsibility to support younger generations in transforming global health by dismantling foundations built on white saviourism. This work begins in our classrooms and with ourselves.

## Mental health

26. BJPsych Open 2023;9(4):e125
Afghan mental health and psychosocial well-being: thematic review of four decades of research and interventions
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Background: Four decades of war, political upheaval, economic deprivation and forced displacement have profoundly affected both in-country and refugee Afghan populations.
Aims: We reviewed literature on mental health and psychosocial well-being, to assess the current evidence and describe mental healthcare systems, including government programmes and community-based interventions.
Method: In 2022, we conducted a systematic search in Google Scholar, PTSDpubs, PubMed and PsycINFO, and a hand search of grey literature (N = 214 papers). We identified the main factors driving the epidemiology of mental health problems, culturally salient understandings of psychological distress, coping strategies and help-seeking behaviours, and interventions for mental health and psychosocial support.
Results: Mental health problems and psychological distress show higher risks for women, ethnic minorities, people with disabilities and youth. Issues of suicidality and drug use are emerging problems that are understudied. Afghans use specific vocabulary to convey psychological distress, drawing on culturally relevant concepts of body-mind relationships. Coping strategies are largely embedded in one's faith and family. Over the past two decades, concerted efforts were made to integrate mental health into the nation's healthcare system, train cadres of psychosocial counsellors, and develop community-based psychosocial initiatives with the help of non-governmental organisations. A small but growing body of research is emerging around psychological interventions adapted to Afghan contexts and culture.
Conclusions: We make four recommendations to promote health equity and sustainable systems of care. Interventions must build cultural relevance, invest in community-based psychosocial support and evidence-based psychological interventions, maintain core mental health services at logical points of access and foster integrated systems of care.

27. Br J of Psychiatry 2023;222(6):227-9
The WHO World Mental Health Report: a call for action
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The latest World Health Organization (WHO) World Mental Health Report finds that a staggering one billion people (more than one in eight adults and adolescents) worldwide have a mental disorder. Depression (280 million people) and anxiety (301 million) are the largest groups, but also developmental disorders, attention-deficit hyperactivity disorder, schizophrenia, bipolar and conduct disorders affect millions of people worldwide. The disease burden of these disorders is huge. Mental disorders are the leading cause of 'years lived with disability' (YLDs) across all disorders. One in every six YLDs can be attributed to mental disorder. Further, the actual disease burden of mental disorders is considerably higher because of the marked premature mortality of this group.
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The 2022 World Mental Health Report is a call for action, a line in the sand, reminding us of the incredible costs and suffering from poor mental health around the world. It not only gives a comprehensive overview of the epidemiology, disease burden and care demand, it also presents myriad exemplar projects from around the world, showing successful models of intervention to improve mental health in communities. It gives guidelines on how to increase political support and raise financial resources and how to develop seamless prevention, mental health promotion and treatment services. The report does have some weaknesses. For example, it lacks a clear analysis of why the basic problems that were noted in the previous report have not been not adequately addressed, and evidence for the effectiveness of some interventions could have been presented more clearly. However, despite these limitations, it is an important resource for policymakers, but also for clinicians and researchers working in LMICs and global mental health. The report is broad and comprehensive, but presents the needed actions in a positive and constructive way, although the success of the report in terms of changing mental health will depend very much on worldwide and national challenges inside and outside the health sector that can only be solved in the political arena.
As clinicians and researchers we should invest more in developing methods and tools to help with deinstitutionalisation and build community services. We should develop evidence-based digital tools and self-help treatments that can be easily adapted to a local context and invest more in the development of task-sharing interventions and training packages to teach nurses and lay health counsellors to use such interventions.
We commend the report and urge policymakers, politicians, clinicians, researchers and community partnerships to galvanise their collective national and international efforts. We all must act to assure progress over the next 5, 10 and 20 years.

28. Cambridge Prisms: Global Mental Health 2023;10:E28. doi:10.1017/gmh.2023.22
Preventing the onset of depressive disorders in low-and middle-income countries: An overview
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Depressive disorders constitute an important and costly public health problem and worldwide most of the disease burden is suffered in low-and middle-income countries (LMICs). Treatments only have limited possibilities to reduce the disease burden of depressive disorders. Prevention may be one of the alternative ways to further reduce the disease burden of depressive disorders. In this paper, the results of a subgroup analysis of a previous meta-analysis on the effect of preventive interventions on the incidence of depressive disorders was undertaken. Only 6% of all trials examining the possibility to prevent the onset of major depression have been conducted in LMICs, and these studies find significantly smaller effects than those in high-income settings. It is too early, therefore, to consider implementing and disseminating preventive interventions in LMICS. However, in optimal conditions and assuming that evidence-based preventive interventions will be developed, investments should be made into treatment, universal, selective and indicated prevention, as well as in social institutions focusing on larger risk factors for mental health problems.

29. Cambridge Prisms: Global Mental Health 2023;10:E31. doi:10.1017/gmh.2023.23
Co-developed implementation guidelines to maximize acceptability, feasibility, and usability of mobile phone supervision in Kenya
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Opportunities exist to leverage mobile phones to replace or supplement in-person supervision of lay counselors. However, contextual variables, such as network connectivity and provider preferences, must be considered. Using an iterative and mixed methods approach, we co-developed implementation guidelines to support the implementation of mobile phone supervision with lay counselors and supervisors delivering a culturally adapted trauma-focused cognitive behavioral therapy in Western Kenya. Guidelines were shared and discussed with lay counselors in educational outreach visits led by supervisors. We evaluated the impact of guidelines and outreach on the acceptability, feasibility, and usability of mobile phone supervision. Guidelines were associated with significant improvements in acceptability and usability of mobile phone supervision. There was no evidence of a significant difference in feasibility. Qualitative interviews with lay counselors and supervisors contextualized how guidelines impacted acceptability and feasibility – by setting expectations for mobile phone supervision, emphasizing importance, increasing comfort, and sharing strategies to improve mobile phone supervision. Introducing and discussing co-developed implementation guidelines significantly improved the acceptability and usability of mobile phone supervision. This approach may provide a flexible and scalable model to address challenges with implementing evidence-based practices and implementation strategies in lower-resourced areas.

30. Cambridge Prisms: Global Mental Health 2023;10:E32. doi:10.1017/gmh.2023.28 Bereavement issues and prolonged grief disorder: A global perspective
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Et al

The death of a loved one – bereavement – is a universal experience that marks the human mental health condition. Grief – the cognitive, emotional, and behavioral responses to bereavement – is thus experienced by virtually everyone at some point in life, while mourning is a process through which grievers come to terms with the loss envisioning life without the deceased. Although distress subsides over time among most bereaved individuals, a minority will develop a condition recently identified as prolonged grief disorder (PGD). The present review provides a global perspective on bereavement, grief reactions, and PGD. Although the loss of a loved one and grief reactions are in general experienced consistently across different cultures, differences and variations in their expression may exist across cultures. Especially within specific populations that may be more at risk for PGD, possibly due to risk factors associated with the mechanisms of loss (e.g., refugees, migrants, and conflict survivors). The diagnostic criteria for PGD are mostly based on Western grieving populations, and cultural adaptations of PGD treatments are limited. Therefore, cross-cultural development and validation of PGD screening/assessment is critical to support future research on grief reactions and PGD, especially in non-Western contexts, and concerning the potential future global changes and challenges that appear to have a major impact on PGD. More transcultural research on PGD is needed to contextualize and will lead to culture-bound symptom identification of PGD, and the adaptation of current treatment protocols, which may ultimately improve health at the individual level, and health-care systems.

31. Cambridge Prisms: Global Mental Health 2023;10:1-21. doi:10.1017/gmh.2023.30
Responding to the impact of COVID-19 on the mental health and well-being of health workers in LMICs
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The COVID-19 pandemic has worsened mental health among health workers around the world. With a projected global shortage of 10.2 million health workers by 2030, further exacerbated by COVID-19, taking

action to support health worker mental health needs to be an integral component of investments to overcome this gap and build resiliency of systems for the future. Health workers are functioning in highly stressful environments at great personal risk to provide services that improve quality of life and save lives. To reduce burnout and early exits from the workforce, health workers must be protected and equipped to work in supportive environments, manage stress, and access mental health services when needed. This article explores the impact of COVID-19 on health worker mental health and proposes actions for health systems and workplaces to support health workers which draw on available evidence and examples of USAID-supported partner activities.

32. JAMA 2023;80(5):425-31

Prevalence of Perinatal Depression in Low- and Middle-Income Countries: A Systematic Review and Meta-analysis

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Importance: Women who experience depression during or within a year of pregnancy are at increased risk of morbidity and mortality. Although those living in low- and middle-income countries are thought to be at increased risk of perinatal depression, the true prevalence remains unclear.
Objective: To determine the prevalence of depression among individuals living in low- and middle-income countries during pregnancy and up 1 year post partum.
Data sources: MEDLINE, Embase, PsycINFO, CINAHL, Web of Science, and the Cochrane Library were searched from database inception until April 15, 2021.
Study selection: Studies were included that reported the prevalence of depression using a validated method during pregnancy or up to 12 months post partum in countries defined by the World Bank as low, lower-middle, and upper-middle income.
Data extraction and synthesis: This study followed Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) reporting guideline. Two reviewers independently assessed study eligibility, extracted data, and assessed studies for bias. Prevalence estimates were calculated using a random-effects meta-analysis model. Subgroup analyses were performed among women who were considered at increased risk of developing perinatal depression.
Main outcomes and measures: Point prevalence of perinatal depression was the main outcome measured as percentage point estimates with corresponding 95% CIs.
Results: The search identified 8106 studies, of which data were extracted from 589 eligible studies reporting outcomes of 616 708 women from 51 countries. The pooled prevalence of perinatal depression across all studies was 24.7% (95% CI, 23.7%-25.6%). The prevalence of perinatal depression varied slightly by country income status. The highest prevalence was found in lower-middle-income countries, with a pooled prevalence of 25.5% (95% CI, 23.8%-27.1%; 197 studies from 23 countries including 212 103 individuals). In upper-middle-income countries, the pooled prevalence was 24.7% (95% CI, 23.6%-25.9%; 344 studies from 21 countries including 364 103 individuals) and in low-income countries, the pooled prevalence was 20.7% (95% CI, 18.4%-23.0%; 50 studies from 7 countries including 40 502 individuals). The East Asia and the Pacific region had the lowest prevalence of perinatal depression at 21.4% (95% CI, 19.8%-23.1%) and was significantly increased in the Middle East and North Africa at 31.5% (95% CI, 26.9%-36.2%; between-group comparison: $P < .001$). In subgroup analyses, the highest prevalence of perinatal depression was found among women who experienced intimate partner violence, at 38.9% (95% CI, 34.1%-43.6%). revalence of depression was also high among women with HIV (35.1% [95% CI, 29.6%-40.6%]) and those who had experienced a natural disaster (34.8% [95% CI, 29.4%-40.2%]).
Conclusions and relevance: This meta-analysis found that depression was common in low- and middle-income countries, affecting 1 in 4 perinatal women. Accurate estimates of the prevalence of perinatal depression in low- and middle-income countries are essential in informing policy, allocating scarce resources, and directing further research to improve outcomes for women, infants, and families.

33. Lancet. 2023 Aug 19;402(10402):656-666.
Review: Transforming mental health systems globally: principles and policy recommendations
Vikram Patel et al
A burgeoning mental health crisis is emerging globally, regardless of each country's human resources or spending. We argue that effectively responding to this crisis is impeded by the dominant framing of mental ill health through the prism of diagnostic categories, leading to an excessive reliance on interventions that are delivered by specialists; a scarcity of widespread promotive, preventive, and recovery-oriented strategies; and failure to leverage diverse resources within communities. Drawing upon a series of syntheses, we identify five principles to transform current practices; namely, address harmful social environments across the life course, particularly in the early years; ensure that care is not contingent on a categorical diagnosis but aligned with the staging model of mental illness; empower diverse front-line providers to deliver psychosocial interventions; embrace a rights-based approach that seeks to provide alternatives to violence and coercion in care; and centre people with lived experience in all aspects of care. We recommend four policy actions which can transform these principles into reality: a whole of society approach to prevention and care; a redesign of the architecture of care delivery to provide a seamless continuum of care, tailored to the severity of the mental health condition; investing more in what works to enhance the impact and value of the investments; and ensuring accountability through monitoring and acting upon a set of mental health indicators. All these actions are achievable, relying-for the most part-on resources already available to every community and country. What they do require is the acceptance that business as usual will fail and the solutions to transforming mental health-care systems are already present within existing resources.

34. Lancet Psychiatry 2023;10(6):452-64
Gone Too Soon: priorities for action to prevent premature mortality associated with mental illness and mental distress
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Globally, too many people die prematurely from suicide and the physical comorbidities associated with mental illness and mental distress. The purpose of this Review is to mobilise the translation of evidence into prioritised actions that reduce this inequity. The mental health research charity, MQ Mental Health Research, convened an international panel that used roadmapping methods and review evidence to identify key factors, mechanisms, and solutions for premature mortality across the social-ecological system. We identified 12 key overarching risk factors and mechanisms, with more commonalities than differences across the suicide and physical comorbidities domains. We also identified 18 actionable solutions across three organising principles: the integration of mental and physical health care; the prioritisation of prevention while strengthening treatment; and the optimisation of intervention synergies across social-ecological levels and the intervention cycle. These solutions included accessible, integrated high-quality primary care; early life, workplace, and community-based interventions co-designed by the people they should serve; decriminalisation of suicide and restriction of access to lethal means; stigma reduction; reduction of income, gender, and racial inequality; and increased investment. The time to act is now, to rebuild health-care systems, leverage changes in funding landscapes, and address the effects of stigma, discrimination, marginalisation, gender violence, and victimisation.

## Miscellaneous

35. Lancet 2023;401(10385):1382-98
Seminar
Clinical aspects of snakebite envenoming and its treatment in low-resource settings

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There is increasing recognition of the public health importance of snakebite envenoming. Worldwide annual incidence is likely to be 5 million bites, with mortality exceeding 150 000 deaths, and the resulting physical and psychological morbidity leads to substantial social and economic repercussions. Prevention through community education by trained health workers is the most effective and economically viable strategy for reducing risk of bites and envenoming. Clinical challenges to effective treatment are most substantial in rural areas of low-resource settings, where snakebites are most common. Classic skills of history taking, physical examination, and use of affordable point-of-care tests should be followed by monitoring of evolving local and systemic envenoming. Despite the profusion of new ideas for interventions, hyperimmune equine or ovine plasma-derived antivenoms remain the only specific treatment for snakebite envenoming. The enormous interspecies and intraspecies complexity and diversity of snake venoms, revealed by modern venomics, demands a radical redesign of many current antivenoms.

## Multimorbidity and Chronic care

36. PLoS Med 20(4): e1004229 (2023)
Multimorbidity: Addressing the next global pandemic.
The PLOS Medicine Editors, Affiliation Public Library of Science, San Francisco, California, United States of America and Cambridge, United Kingdom

Advances in translational scientific research and modern medicine have enabled substantial progress to be made in clinical practices around the world. And, while there are no doubts that inequities persist, these advances have contributed to significant improvements in life expectancy globally. It may come as no surprise, considering the advances made, that the number of people being diagnosed as multimorbid—with two or more chronic conditions, either physical, mental or both—has also progressively increased.
In low- and middle-income countries (LMICs) the problem is ever more palpable. Plagued by inequitable access to research facilities, healthcare services, diagnostics, therapeutics and effective policy implementation, progress lags far behind that of high-income countries (HICs). Not only is there a disproportionately high prevalence of chronic multisystem infectious diseases, such as HIV and TB, the prevalence of non-communicable conditions, such as hypertension and diabetes, have also increased over the preceding decades.
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Approaching multimorbidity via individual conditions culminates in increased healthcare utilization and expenditure. Current data estimate that healthcare costs are significantly higher when treating multimorbid individuals and that, with certain combinations of co-existing conditions, costs may be higher still. Excess expenditure has been attributed to a variety of factors including duplicated appointments and investigations across both primary and secondary care, and increased attendance at emergency departments, all without clear evidence of improvement to patients' quality of life or physical health outcomes. Multimorbidity is a major driver of polypharmacy and the associated negative consequences for patients and healthcare systems including adverse drug events, hospital readmissions and even mortality. Given the current global economic climate, maximizing the use of available resources should be a collective priority. A joined-up, multidisciplinary, structured approach to care for multimorbid patients is undoubtedly required and integration of care pathways which involve a diversity of specialist expertise are strongly supported in some circumstances. Theoretically, primary care should serve to integrate diverse involvements by direct engagement with patients. However, considering the paradigm shift towards multimorbidity, arguments certainly exist in favor of ensuring that healthcare professionals obtain and nurture core generalist skills alongside specialist skills to facilitate complete and holistic caregiving in the face of multimorbidity.
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It is vital that researchers, clinicians, and policy makers re-think how research findings can be applied to real-world settings where multimorbidity exists in abundance. In LMICs, research should envision, design and test programs for multimorbid care led by health workers who are abundant, such as community health workers, peers, and volunteers. In HICs research should elucidate novel approaches to measuring multimorbidity and strengthening primary care of multiple chronic conditions, working towards truly human-centered care which integrates multiple treatment and care approaches. The UK NHS and other large healthcare systems should be well placed to characterize multimorbidity in HICs and provide platforms for research on interventions including drug sparing and care provision.
As is the case with most pandemics, the enormity of the problem is growing exponentially, and global action is required. The warning signs are there, and the trend will continue—the healthcare profession needs to be prepared and poised to act.

## Non Communicable Diseases (NCD's)

37. Health Policy and Planning, Vol. 38 (4), 2023: 509–527

Barriers to cervical cancer and breast cancer screening uptake in low- and middle-income countries: a systematic review.

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There is an alarmingly high growth in breast and cervical cancers in low- and middle-income countries. Due to late presentation to doctors, there is a lower cure rate. The screening programmes in low- and middle-income countries are not comprehensive. In this paper, we systematically analyse the barriers to screening through an accessibility framework. We performed a systematic literature search in PubMed, Mendeley and Google Scholar to retrieve all English language studies (quantitative, qualitative and mixed-methods) that contained information on breast and cervical cancer screening in low- and middle-income countries. We only considered publications published between 1 January 2016 and 31 May 2021. The review was guided by Preferred Reporting Items for Systematic Reviews and Meta-Analyses literature search extension (PRISMA-S), an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews. The search yielded a total of 67 articles from low- and middle-income countries in this review. We used a framework on accessibility known as the 5A framework, which distinguishes five aspects of access: approachability, acceptability, availability, affordability and appropriateness, to classify the screening barriers. We added two more aspects: awareness and angst, as they could explain other important barriers to screening. They confirmed how the lack of awareness, cost of the screening service and distance to the screening centre act as major impediments to screening. They also revealed how embarrassment and fear of screening and cultural factors such as lack of spousal or family support could be obstacles to screening. We conclude that more needs to be done by policymakers and governments to improve the confidence of the people in the health systems. Women should be made aware of the causes and risk factors of cancer through evidence-based strategies so that there is an increased adherence to screening.

38. Lancet 2023;402(10397):203-34

Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021

GBD 2021 Diabetes Collaborators

Background: Diabetes is one of the leading causes of death and disability worldwide, and affects people regardless of country, age group, or sex. Using the most recent evidentiary and analytical framework from the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), we produced location-specific, age-specific, and sex-specific estimates of diabetes prevalence and burden from 1990 to 2021, the proportion of type 1 and type 2 diabetes in 2021, the proportion of the type 2 diabetes burden attributable to selected risk factors, and projections of diabetes prevalence through 2050.
Methods: Estimates of diabetes prevalence and burden were computed in 204 countries and territories, across 25 age groups, for males and females separately and combined; these estimates comprised lost years of healthy life, measured in disability-adjusted life-years (DALYs; defined as the sum of years of life lost [YLLs] and years lived with disability [YLDs]). We used the Cause of Death Ensemble model (CODEm) approach to estimate deaths due to diabetes, incorporating 25 666 location-years of data from vital registration and verbal autopsy reports in separate total (including both type 1 and type 2 diabetes) and type-specific models. Other forms of diabetes, including gestational and monogenic diabetes, were not explicitly modelled. Total and type 1 diabetes prevalence was estimated by use of a Bayesian meta-regression modelling tool, DisMod-MR 2.1, to analyse 1527 location-years of data from the scientific literature, survey microdata, and insurance claims; type 2 diabetes estimates were computed by subtracting type 1 diabetes from total estimates. Mortality and prevalence estimates, along with standard life expectancy and disability weights, were used to calculate YLLs, YLDs, and DALYs. When appropriate, we extrapolated estimates to a hypothetical population with a standardised age structure to allow comparison in populations with different age structures. We used the comparative risk assessment framework to estimate the risk-attributable type 2 diabetes burden for 16 risk factors falling under risk categories including environmental and occupational factors, tobacco use, high alcohol use, high body-mass index (BMI), dietary factors, and low physical activity. Using a regression framework, we forecast type 1 and type 2 diabetes prevalence through 2050 with Socio-demographic Index (SDI) and high BMI as predictors, respectively
Findings: In 2021, there were 529 million (95% uncertainty interval [UI] 500-564) people living with diabetes worldwide, and the global age-standardised total diabetes prevalence was 6·1% (5·8-6·5). At the super-region level, the highest age-standardised rates were observed in north Africa and the Middle East (9·3% [8·7-9·9]) and, at the regional level, in Oceania (12·3% [11·5-13·0]). Nationally, Qatar had the world's highest age-specific prevalence of diabetes, at 76·1% (73·1-79·5) in individuals aged 75-79 years. Total diabetes prevalence-especially among older adults-primarily reflects type 2 diabetes, which in 2021 accounted for 96·0% (95·1-96·8) of diabetes cases and 95·4% (94·9-95·9) of diabetes DALYs worldwide. In 2021, 52·2% (25·5-71·8) of global type 2 diabetes DALYs were attributable to high BMI. The contribution of high BMI to type 2 diabetes DALYs rose by 24·3% (18·5-30·4) worldwide between 1990 and 2021. By 2050, more than 1·31 billion (1·22-1·39) people are projected to have diabetes, with expected age-standardised total diabetes prevalence rates greater than 10% in two super-regions: 16·8% (16·1-17·6) in north Africa and the Middle East and 11·3% (10·8-11·9) in Latin America and Caribbean. By 2050, 89 (43·6%) of 204 countries and territories will have an age-standardised rate greater than 10%.
Interpretation: Diabetes remains a substantial public health issue. Type 2 diabetes, which makes up the bulk of diabetes cases, is largely preventable and, in some cases, potentially reversible if identified and managed early in the disease course. However, all evidence indicates that diabetes prevalence is increasing worldwide, primarily due to a rise in obesity caused by multiple factors. Preventing and controlling type 2 diabetes remains an ongoing challenge. It is essential to better understand disparities in risk factor profiles and diabetes burden across populations, to inform strategies to successfully control diabetes risk factors within the context of multiple and complex drivers.

39. Lancet 2023;402(10397)
This issue contains a Series of two papers about Global Inequity in Diabetes (paper 3 appears in The Lancet Diabetes & Endocrinology). All papers in the Series are available at www. thelancet.com/series/global-inequity-diabetes

a. Lancet 2023;402(10397):235-49
Global Inequity in Diabetes 1
The role of structural racism and geographical inequity in diabetes outcomes

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b. Lancet 2023;402(10397):250-64
Global Inequity in Diabetes 2
Interventions to address global inequity in diabetes: international progress
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c. Global Inequity in Diabetes 3
Disparities in diabetes prevalence and management by race and ethnicity in the USA: defining a path forward
Saria Hassan, et al.

40. TMIH 2023;28(5):367-73
Unmasking a silent killer: Prevalence of diagnosed and undiagnosed diabetes mellitus among people living with HIV in rural South Africa
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Objectives: To document the prevalence of impaired glucose tolerance (IGT) and undiagnosed diabetes mellitus (DM) and to identify factors associated with undiagnosed DM in people living with HIV (PLWH).
Methods: Cross-sectional study performed at Ndlovu Medical Center, Limpopo, South Africa including PLWH aged ≥18 years. Between August and November 2017, 356 HIV-positive participants were included. Information was collected on socio-demographics, DM symptoms and risk factors for DM. IGT and DM were diagnosed using random plasma glucose and/or HbA1c. Factors associated with undiagnosed DM were assessed by comparing participants with newly diagnosed DM to participants without DM.
Results: IGT was diagnosed in 172 (48.3%) participants. Twenty-nine (8.1%) participants met the definition of DM, of whom 17 (58.6%) were newly diagnosed. Compared to participants without DM, participants with DM were on average 5 years older, were more likely to have a positive family history for DM, were less physically active and had higher systolic blood pressure, body mass index and waist circumference. Factors associated with undiagnosed DM included age ≥45 years (odds ratio [OR] = 3.59) and physical inactivity (OR = 3.17).
Conclusions: The prevalence of IGT and DM among PLWH is high and more than half of DM cases were undiagnosed. Regular screening for DM in PLWH is recommended, especially in an ageing population with additional cardiovascular disease risk factors.

## Sexual and Reproductive Health , including Maternal health

41. Lancet 2023;401(10385):1327-8
World Report
Uganda's “anti-homosexuality” bill already affecting care
Jerving S

Activists and health-care providers are already seeing the chilling effects of Uganda's proposals to further criminalise homosexuality.
It is not yet law, but a wide-ranging bill against people who are LGBTQ+ in Uganda is already having a chilling effect on access to health services. The bill assigns severe consequences for these people, including the death penalty, as well as for those who provide services (potentially including health workers and staff of non- governmental organisations).
Although Uganda’s penal code already criminalises consensual sex between people born of the same sex, the bill goes much further to criminalise the promotion of sex acts and forces people to incriminate others.
A copy of the bill obtained by The Lancet says that consensual sex between people born of the same sex can put someone in prison for life, and those attempting to “perform a sexual act” can be sentenced to a decade in prison. The court can also order “rehabilitation” of that person. A person would face the death penalty for “aggravated homosexuality”, which includes a “serial offender” of consensual sex, as well as for same-sex relations with someone with a disability, with someone with mental illness, with someone of older age, if a person contracts a terminal illness, and if a person’s partner is under the influence of alcohol, among other circumstances.
If someone has a “reasonable suspicion” that another person has “committed or intends to commit the offence of homosexuality” or other violations, they must report that person or they can receive a fine of 100 million Ugandan Shillings (US $27 000) or 6 months in prison. Lawyers are exempt, but health workers are not.
Health experts warn that the bill could devastate the HIV response in Uganda. They are concerned that health services—such as providing contraceptives and pre-exposure prophylaxis (PrEP), testing for HIV, and drug provision for HIV—could be construed as promotion, as could safe-sex education.
Musho said there is “a rising wave of homophobic ideologies in Africa” driven by coordinated efforts under the guise of child protection, family values, and religion, supported by foreign funding and influence. This threatens the health of populations throughout the region.
Politicians from 22 African nations gathered for the first Inter- Parliamentary Conference on Family Values and Sovereignty in Uganda earlier this year, with anti-LGBTQ+ conversations as the focus. Sharon Slater, President of US-based Family Watch International, attended. The Southern Poverty Law Center labels her organisation as an anti-LGBT hate group with an “intense focus” on pushing their agenda in African nations.
After the conference, Kenyan Member of Parliament George Peter Kaluma submitted a bill largely the same as Uganda’s to the Kenyan National Assembly. He said Kenya “is closely following” Uganda’s actions. Anti-LGBTQ+ legislation is also under consideration in Ghana’s Parliament.

42. Lancet 2023;401(10387):1508-17
The effect of vitamin B12 supplementation during pregnancy on infant growth and development in Nepal: a community-based, double-blind, randomised, placebo-controlled trial
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Background: Vitamin B12 is required for healthy infant growth and development, but low and marginal vitamin B12 status is endemic in low-income and middle-income countries. We aimed to measure the effect of vitamin B12 supplementation from early pregnancy until 6 months post partum on infant growth and neurodevelopment.
Methods: In this community-based, double-blind, placebo-controlled trial, we randomly assigned (1:1) 800 pregnant women (aged 20-40 years) who were up to 15 weeks pregnant-recruited from home visits and outpatient departments at three hospitals in Nepal-to daily supplementation with 50 µg oral vitamin B12 or

placebo until 6 months postpartum. Independent scientists generated the list that linked allocation to participants' study identification number. Participants were masked to group assignment and all investigators were masked until data cleaning was completed. The primary outcomes were length-for-age Z score (LAZ) at age 12 months and the cognitive composite score of the Bayley Scales of Infant and Toddler Development (3rd edition) at age 6 months and 12 months. The primary and secondary outcomes, including adverse events, were assessed in the intention-to-treat population, for all participants with available outcome data. This trial is registered with ClinicalTrials.gov, NCT03071666.
Findings: 800 eligible pregnant women were enrolled in the trial between March 28, 2017, and Oct 15, 2020, with 400 women randomly assigned to each group. Follow-up was completed on May 18, 2022. At baseline, 569 (71%) of 800 women had plasma vitamin B12 indicating low or marginal status (<221 pmol/L). We found no effect of vitamin B12 on the primary outcomes. The mean LAZ at age 12 months were-0·57 (SD 1·03) in the B12 group and-0·55 (1.03) in the placebo group (366 infants in the vitamin B12 group vs 363 infants in the placebo group) with a mean difference of-0·02 (95% CI-0·16 to 0·13). The mean cognitive composite scores were 97·7 (SD 10·5) in the B12 group and 97·1 (10·2) in the placebo group, with a mean difference of 0·5 (95% CI-0·6 to 1·7) measured in 364 and 361 infants. Stillbirths or infant deaths occurred in three (1%) of 374 women in the vitamin B12 group and nine (2%) of 379 women in the placebo group.
Interpretation: Although vitamin B12 deficiency was prevalent in our study population and vitamin B12 supplementation from early pregnancy substantially improved vitamin B12 status, supplementation did not improve infant growth or neurodevelopment. Our findings support the current WHO recommendations of no routine vitamin B12 supplementation during pregnancy.

43. Lancet 20239;402(10399):386-96

Planned delivery or expectant management for late preterm pre-eclampsia in low-income and middle-income countries (CRADLE-4): a multicentre, open-label, randomised controlled trial

CRADLE-4 Study Group
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Background: Pre-eclampsia is a leading cause of maternal and perinatal mortality. Evidence regarding interventions in a low-income or middle-income setting is scarce. We aimed to evaluate whether planned delivery between 34+ 0 and 36+ 6 weeks' gestation can reduce maternal mortality and morbidity without increasing perinatal complications in India and Zambia.
Methods: In this parallel-group, multicentre, open-label, randomised controlled trial, we compared planned delivery versus expectant management in women with pre-eclampsia from 34+ 0 to 36+ 6 weeks' gestation. Participants were recruited from nine hospitals and referral facilities in India and Zambia and randomly assigned to planned delivery or expectant management in a 1:1 ratio by a secure web-based randomisation facility hosted by MedSciNet. Randomisation was stratified by centre and minimised by parity, single-fetus pregnancy or multi-fetal pregnancy, and gestational age. The primary maternal outcome was a composite of maternal mortality or morbidity with a superiority hypothesis. The primary perinatal outcome was a composite of one or more of: stillbirth, neonatal death, or neonatal unit admission of more than 48 h with a non-inferiority hypothesis (margin of 10% difference). Analyses were by intention to treat, with an additional per-protocol analysis for the perinatal outcome. The trial was prospectively registered with ISRCTN, 10672137. The trial is closed to recruitment and all follow-up has been completed.
Findings: Between Dec 19, 2019, and March 31, 2022, 565 women were enrolled. 284 women (282 women and 301 babies analysed) were allocated to planned delivery and 281 women (280 women and 300 babies analysed) were allocated to expectant management. The incidence of the primary maternal outcome was not significantly different in the planned delivery group (154 [55%]) compared with the expectant management group (168 [60%]; adjusted risk ratio [RR] 0·91, 95% CI 0·79 to 1·05). The incidence of the primary perinatal outcome by intention to treat was non-inferior in the planned delivery group (58 [19%]) compared with the expectant management group (67 [22%]; adjusted risk difference-3·39%, 90% CI-8·67 to 1·90; non-inferiority p<0·0001). The results from the per-protocol analysis were similar. There was a significant reduction in severe maternal hypertension (adjusted RR 0·83, 95% CI 0·70 to 0·99) and stillbirth (0·25, 0·07 to 0·87) associated

with planned delivery. There were 12 serious adverse events in the planned delivery group and 21 in the expectant management group.
Interpretation: Clinicians can safely offer planned delivery to women with late preterm pre-eclampsia, in a low-income or middle-income country. Planned delivery reduces stillbirth, with no increase in neonatal unit admissions or neonatal morbidity and reduces the risk of severe maternal hypertension. Planned delivery from 34 weeks' gestation should therefore be considered as an intervention to reduce pre-eclampsia associated mortality and morbidity in these settings.

44. PLoS Med 20(7): e1004236. (2023)

Risk factors for inadequate and excessive gestational weight gain in 25 low- and middle-income countries: An individual-level participant meta-analysis

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Background
Many women experience suboptimal gestational weight gain (GWG) in low- and middle-income countries (LMICs), but our understanding of risk factors associated with GWG in these settings is limited. We investigated the relationships between demographic, anthropometric, lifestyle, and clinical factors and GWG in prospectively collected data from LMICs.
Methods and findings
We conducted an individual participant-level meta-analysis of risk factors for GWG outcomes among 138,286 pregnant women with singleton pregnancies in 55 studies (27 randomized controlled trials and 28 prospective cohorts from 25 LMICs). Data sources were identified through PubMed, Embase, and Web of Science searches for articles published from January 2000 to March 2019. Titles and abstracts of articles identified in all databases were independently screened by 2 team members according to the following eligibility criteria: following inclusion criteria: (1) GWG data collection took place in an LMIC; (2) the study was a prospective cohort or randomized trial; (3) study participants were pregnant; and (4) the study was not conducted exclusively among human immunodeficiency virus (HIV)-infected women or women with other health conditions that could limit the generalizability of the results. The Institute of Medicine (IOM) body mass index (BMI)-specific guidelines were used to determine the adequacy of GWG, which we calculated as the ratio of the total observed weight gain over the mean recommended weight gain. Study outcomes included severely inadequate GWG (percent adequacy of GWG <70), inadequate GWG (percent adequacy of GWG <90, inclusive of severely inadequate), and excessive GWG (percent adequacy of GWG >125). Multivariable estimates from each study were pooled using fixed-effects meta-analysis. Study-specific regression models for each risk factor included all other demographic risk factors measured in a particular study as potential confounders, as well as BMI, maternal height, pre-pregnancy smoking, and chronic hypertension. Risk factors occurring during pregnancy were further adjusted for receipt of study intervention (if any) and 3-month calendar period. The INTERGROWTH-21st standard was used to define high and low GWG among normal weight women in a sensitivity analysis. The prevalence of inadequate GWG was 54%, while the prevalence of excessive weight gain was 22%. In multivariable models, factors that were associated with a higher risk of inadequate GWG included short maternal stature (<145 cm), tobacco smoking, and HIV infection. A mid-upper arm circumference (MUAC) of ≥28.1 cm was associated with the largest increase in risk for excessive GWG (risk ratio (RR) 3.02, 95% confidence interval (CI) [2.86, 3.19]). The estimated pooled difference in absolute risk between those with MUAC of ≥28.1 cm compared to those with a MUAC of 24 to 28.09 cm was 5.8% (95% CI 3.1% to 8.4%). Higher levels of education and age <20 years were also associated with an increased risk of excessive GWG. Results using the INTERGROWTH-21st standard among normal weight women were similar but attenuated compared to the results using the IOM guidelines among normal weight women. Limitations of the study's methodology include differences in the availability of risk factors and potential confounders measured in each individual dataset; not all risk factors or potential confounders of interest were available across datasets and data on potential confounders collected across studies.
Conclusions
Inadequate GWG is a significant public health concern in LMICs. We identified diverse nutritional, behavioral, and clinical risk factors for inadequate GWG, highlighting the need for integrated approaches to optimizing

GWG in LMICs. The prevalence of excessive GWG suggests that attention to the emerging burden of excessive GWG in LMICs is also warranted.

45. TMIH 2023;28(8):677-87

Pulmonary oedema in the course of severe maternal outcome in South Africa: A cohort study combined with clinical audit

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Objectives: To describe the incidence and outcomes of pulmonary oedema in women with severe maternal outcome during childbirth and identify possible modifiable factors through audit.
Methods: All women with severe maternal outcome (maternal deaths or near misses) who were referred to Tygerberg referral hospital from health facilities in Metro East district, South Africa, during 2014-2015 were included. Women with severe maternal outcome and pulmonary oedema during pregnancy or childbirth were evaluated using three types of critical incident audit: criterion-based case review by one consultant gynaecologist, monodisciplinary critical incident audit by a team of gynaecologists, multidisciplinary audit with expert review from anaesthesiologists and cardiologists.
Results: Of 32,161 pregnant women who gave birth in the study period, 399 (1.2%) women had severe maternal outcome and 72/399 (18.1%) had pulmonary oedema with a case fatality rate of 5.6% (4/72). Critical incident audit demonstrated that pre-eclampsia/HELLP-syndrome and chronic hypertension were the main conditions underlying pulmonary oedema (44/72, 61.1%). Administration of volumes of intravenous fluids in already sick women, undiagnosed underlying cardiac illness, administration of magnesium sulphate as part of pre-eclampsia management and oxytocin for augmentation of labour were identified as possible contributors to the pathophysiology of pulmonary oedema. Women-related factors (improved antenatal care attendance) and health care-related factors (earlier diagnosis and management) would potentially have improved maternal outcome.
Conclusions: Although pulmonary oedema in pregnancy is rare, among women with severe maternal outcome a considerable proportion had pulmonary oedema (18.1%). Audit identified options for prevention of pulmonary oedema and improved outcome. These included early detection and management of preeclampsia with close monitoring of fluid intake and cardiac evaluation in case of suspected pulmonary oedema. Therefore, a multidisciplinary clinical approach is recommended.

## Social Determinants of Health

46. Lancet 2023;401(10383)

This issue contains a Series of three papers about commercial determinants of health.

a. Lancet 2023;401(10383):1194-1213

Commercial Determinants of Health 1

Defining and conceptualising the commercial determinants of health

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Although commercial entities can contribute positively to health and society there is growing evidence that the products and practices of some commercial actors-notably the largest transnational corporations-are responsible for escalating rates of avoidable ill health, planetary damage, and social and health inequity; these problems are increasingly referred to as the commercial determinants of health. The climate emergency, the non-communicable disease epidemic, and that just four industry sectors (ie, tobacco, ultra-processed food, fossil fuel, and alcohol) already account for at least a third of global deaths illustrate the scale and huge economic cost of the problem. This paper, the first in a Series on the commercial determinants of health, explains how the shift towards market fundamentalism and increasingly powerful transnational corporations has created a pathological system in which commercial actors are increasingly enabled to cause harm and externalise the costs of doing so. Consequently, as harms to human and planetary health increase, commercial sector wealth and power increase, whereas the countervailing forces having to meet these costs (notably individuals, governments, and civil society organisations) become correspondingly impoverished and disempowered or captured by commercial interests. This power imbalance leads to policy inertia; although many policy solutions are available, they are not being implemented. Health harms are escalating, leaving health-care systems increasingly unable to cope. Governments can and must act to improve, rather than continue to threaten, the wellbeing of future generations, development, and economic growth.

b. Lancet 2023;401(10383):1214-1228
Commercial Determinants of Health 2
Conceptualising commercial entities in public health: beyond unhealthy commodities and transnational corporations
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In this paper, which is the second of three papers in a Series on commercial determinants of health, we develop a framework that enables meaningful distinctions among diverse commercial entities through consideration of their practices, portfolios, resources, organisation, and transparency. The framework that we develop permits fuller consideration of whether, how, and to what extent a commercial actor might influence health outcomes.

1c. Lancet 2023;401(10383):1229-1240
Commercial Determinants of Health 3
Commercial determinants of health: future directions
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This paper is about the future role of the commercial sector in global health and health equity. The discussion is not about the overthrow of capitalism nor a full-throated embrace of corporate partnerships. No single solution can eradicate the harms from the commercial determinants of health-the business models, practices, and products of market actors that damage health equity and human and planetary health and wellbeing. But evidence shows that progressive economic models, international frameworks, government regulation, compliance mechanisms for commercial entities, regenerative business types and models that incorporate health, social, and environmental goals, and strategic civil society mobilisation together offer possibilities of systemic, transformative change, reduce those harms arising from commercial forces, and foster human and planetary wellbeing. In our view, the most basic public health question is not whether the world has the resources or will to take such actions, but whether humanity can survive if society fails to make this effort.