International Health Alerts 2024-3 Contents

14. BMJ 2024;386:e078243 Research
Effectiveness of modified vaccinia Ankara-Bavarian Nordic vaccine against mpox infection: emulation of a target trial

15. Emerg Infect Dis. 2024 Sep;30(9):1799-1808.
Mpox Epidemiology and Risk Factors, Nigeria, 2022

16. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 805-818
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17. Lancet 2024;403(10447):18
World Report
African mpox surges show lack of vaccine access

18. Lancet 2024;404(10453):683–91
Efficacy and safety of emodepside compared with albendazole in adolescents and adults with hookworm infection in Pemba Island, Tanzania: a double-blind, superiority, phase 2b, randomised controlled trial

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World Report
Mpox puts Gavi's new pandemic fund to the test

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21. Lancet Glob Health. 2024 Oct;12(10):e1730-e1736.
Improving Ebola virus disease outbreak control through targeted post-exposure prophylaxis

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Perspective: Preventing and Controlling Global Antimicrobial Resistance — Implementing a Whole-System Approach (Abridged)

23. PLoS Med (May 2024) 21(5): e1004386
Prolonged mass azithromycin distributions and macrolide resistance determinants among preschool children in Niger: A sub-study of a cluster-randomized trial (MORDOR)

24. TMIH 2024;29(7):541-83 doi: 10.1111/tmi.14002
Rickettsia africae infections in sub-Saharan Africa: A systematic literature review of epidemiological studies and summary of case reports

25. TMIH 2024;29(7):594-8 doi: 10.1111/tmi.13998
Evaluation of a rapid diagnostic test for detection of Vibrio cholerae O1 in the Democratic Republic of the Congo: Preventative intervention for cholera for 7 days (PICHA7 program)

Health Policy

26. Am J Trop Med Hyg. 2024 Jun 11;111(2):387-390.
Rapid and Comprehensive Screening for Urogenital and Gastrointestinal Schistosomiasis with Handheld Digital Microscopy Combined with Circulating Cathodic Antigen Testing

27. BMJ Global Health 2024;9:e015310. Commentary
Claims data from health insurance programmes in sub-Saharan Africa: an untapped resource to promote Universal Health Coverage

28. BMJ Global Health 2024;9:e014870. Practice
Messy but worth it: human-centred design as applied within a successful vaccine-promotive campaign

29. BMJ Global Health 2024;9:e014970. Original research
Determinants of translating routine health information system data into action in Mozambique: a qualitative study

30. BMJ Global Health 2024;9:e015624. Commentary
Qualified, skilled or trained delivery care

provider: a conundrum of who, where and when

31. Health Policy and Planning, Vol. 39 (7), August 2024, Pages 693–709
Human resource challenges in health systems: evidence from 10 African countries

32. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 841-853
From PERFORM to PERFORM2Scale: lessons from scaling-up a health management strengthening intervention to support Universal Health Coverage in three African countries

33. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 864-877
Community case management to accelerate access to healthcare in Mali: a realist process evaluation nested within a cluster randomized trial

Health System Performance

34. Bull World Health Organ. 2024 Jul 1; 102(7): 458–458A.
Editorial: Policy approaches to health system performance assessment

HIV/AIDS

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36. Lancet Glob Health. 2024 Sep;12(9):e1400-e1412.
Population size, HIV prevalence, and antiretroviral therapy coverage among key populations in sub-Saharan Africa: collation and synthesis of survey data, 2010-23

37. N Engl J Med July 2024;391:343-355
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38. TMIH 2024;29(9):792-800 doi: 10.1111/tmi.14031
Trends and correlates in HIV viral load monitoring and viral suppression among adolescents and young adults in Dar es Salaam, Tanzania

Malaria

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40. Lancet Glob Health. 2024 Sep;12(9):e1456-e1469.
Community-based strategies to increase coverage of intermittent preventive treatment of malaria in pregnancy with sulfadoxine-pyrimethamine in sub-Saharan Africa: a systematic review, meta-analysis, meta-ethnography, and economic assessment

Mental Health

41. BMJ 2024;386:e081458 Editorials
Poor mental health among Nigeria's displaced young people

Non-communicable diseases

42. PLoS Med (May 2024) 21(5): e1004394
Predicted impact of banning nonessential, energy-dense food and beverages in schools in Mexico: A microsimulation study

Sexual Reproductive Health and Rights

43. BMJ Global Health 2024;9:e015349. Original research
At-home specimen self-collection as an additional testing strategy for chlamydia and gonorrhoea: a systematic literature review and meta-analysis

44. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 831-840
From political priority to service delivery: complexities to real-life priority of abortion services in Ethiopia

45. PLoS Med (May 2024) 21(5): e1004364
Global, regional, and national burden of heatwave-related

mortality from 1990 to 2019: A three-stage modelling study.

46. PLoS Med July 2024, 21(7): e1004421.
Association between achieving adequate antenatal care and health-seeking behaviors: A study of Demographic and Health Surveys in 47 low- and middle-income countries.

47. PLoS Med August 2024, 21(8): e1004446.
Antenatal care quality and detection of risk among pregnant women: An observational study in Ethiopia, India, Kenya, and South Africa.

Surgery

48. Lancet Glob Health. 2024 Sep 5:S2214-109X(24)00318-8.
Mechanisms and causes of death after abdominal surgery in low-income and middle-income countries: a secondary analysis of the FALCON trial

Tuberculosis

49. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 854-863
Estimation of potential social support requirement for tuberculosis patients in India

Mental Health

50. BMJ 2024;386:e081458 Editorials
Poor mental health among Nigeria's displaced young people

Miscellaneous

51. BMJ 2024;386:e080474 Research
Effect of laughter exercise versus 0.1% sodium hyaluronic acid on ocular surface discomfort in dry eye disease: non-inferiority randomised controlled trial

International Health Alerts 2024-3 Abstracts

Child Health

1. Am J Trop Med Hyg. 2024 Aug 6:tpmd230656.

Pulse Oximetry Accuracy in Children with Dark Skin Tones: Relevance to Acute Lower Respiratory Infection Care in Low- and Middle-Income Countries
Shubhada Hooli et al, Division of Emergency Medicine, Department of Pediatrics, Baylor College of Medicine, Houston, Texas.
Acute lower respiratory infections (ALRI) are the leading post-neonatal cause of death in children under 5 years old. There is a high prevalence of pediatric ALRI-related hypoxemia in low- and middle-income countries. The WHO defines clinically meaningful hypoxemia in children as a SpO2 (peripheral oxygen saturation) <90%. Multiple studies put this convention into question and found SpO2 of 90% to 92% to be associated with child ALRI mortality. An evolving body of evidence suggests that pulse oximeters systematically overestimate oxygen saturation in individuals with dark skin tones. We conducted a narrative review of pediatric studies evaluating pulse oximeter accuracy in children without COVID-19. Four studies, one prospective, examined pulse oximeter accuracy in children of varying ages with dark skin tones. All studies had limitations that affect their generalizability. There is evidence that certain pulse oximeters may overestimate oxygen saturation in children with dark skin tones. Further prospective research is urgently needed to identify affected populations and clinical implications. Despite recognized challenges, we strongly urge continued and expanded use of pulse oximetry as its use will save lives.

2. MJ Global Health 2024;9:e013393.

Original research
Adolescent and youth-friendly health interventions in low-income and middle-income countries: a scoping review
Jakobsson C, Sanghavi R, Nyamiobo J, et al
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Abstract
Background Adolescents comprise one-sixth of the world's population, yet there is no clear understanding of the features that promote adolescent-friendly services (AFS). The lack of clarity and consistency around a definition presents a gap in health services.
Methods The review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews guidelines. We conducted a scoping review of peer-reviewed empirical studies to explore AFS in low-income and middle-income countries (LMICs) published between January 2000 and December 2022. The databases searched were CAB Direct (n=11), CINAHL (n=50), Cochrane Databases (n=1103), Embase (n=1164), Global Health Medicus (n=3636) and PsycINFO (n=156). The title, abstract and full text were double screened by three independent reviewers. Three independent reviewers assessed the study's quality using the Joanna Briggs Initiative Quality Appraisal and Cochrane Risk of Bias 2 tools.
Results We identified the key components, barriers and facilitators of AFS. The following emerged from our review: a non-judgmental environment, culturally appropriate and responsive interventions and a focus on supporting marginalised communities often living in high-poverty settings. Using these

components, we have extended guidance around a possible framework and tool assessing quality of AFS.
Interpretation As LMICs are heterogeneous and unique, it was assumed that the operational definition of 'adolescent-friendly' might vary depending on different contexts, but there must be core components that remain consistent. Possible limitations of our review include a lack of grey literature. Potential future implications include training healthcare providers, testing these attributes for service improvement and future development and localisation of policy guide.
Key highlights Our review has mapped the research framing of AFS and provided a comprehensive review of barriers and facilitators to implementing a holistic outlook of AFS set-up in a tightly controlled research and real-world context. Our paper is one of the few efforts to synthesise behavioural and mental health elements underpinning AFS.

Health Policy and Planning, Vol. 39 (7), August 2024, Pages 710-721
The impacts of task shifting on the management and treatment of malnourished children in Northern Kenya: a cluster-randomized controlled trial
Hermann Pythagore Pierre Donfouet, et al. Corresponding author. Health, Nutrition and Population (HNP), Washington, USA. E-mail: hdonfouet@worldbank.org

Treating children with acute malnutrition can be challenging, particularly regarding access to healthcare facilities during treatment. Task shifting, a strategy of transferring specific tasks to health workers with shorter training and fewer qualifications, is being considered as an effective approach to enhancing health outcomes in primary healthcare. This study aimed to assess the effectiveness of integrating the treatment of acute malnutrition by community health volunteers into integrated community case management in two sub-counties in northern Kenya (Loima and Isiolo). We conducted a two-arm non-inferiority cluster-randomized controlled trial across 20 community health units. Participants were children aged 6–59 months with uncomplicated acute malnutrition. In the intervention group, community health volunteers used simplified tools and protocols to identify and treat eligible children at home and provided the usual integrated community case management package. In the control group, community health volunteers provided the usual integrated community case management package only (screening and referral of the malnourished children to the health facilities). The primary outcome was recovery (MUAC ≥12.5 cm for 2 consecutive weeks). Results show that children in the intervention group were more likely to recover than those in the control group [73 vs 50; risk difference (RD) = 26% (95% CI 12 to 40) and risk ratio (RR) = 2 (95% CI 1.2 to 1.9)]. The probability of defaulting was lower in the intervention group than in the control group: RD = −21% (95% CI −31 to −10) and RR = 0.3 (95% CI 0.2 to 0.5). The intervention reduced the length of stay by about 13 days, although this was not statistically significant and varied substantially by sub-county. Integrating the treatment of acute malnutrition by community health volunteers into the integrated community case management programme led to better malnutrition treatment outcomes. There is a need to integrate acute malnutrition treatment into integrated community case management and review policies to allow community health volunteers to treat uncomplicated acute malnutrition.

3. Lancet 2024;403(10445):2682

World Report
Challenges for infant schistosomiasis treatment
Devi S.

(Abbreviated)
The approval of a new drug has been lauded, but there are substantial obstacles to its widespread use.

Neglected tropical disease experts have warned of obstacles in treating the estimated 24 million infected preschoolers in Africa with the parasitic disease schistosomiasis, following WHO's approval of a formulation of the drug praziquantel for preschool children aged 2–5 years.
About 240 million people worldwide have schistosomiasis, also known as bilharzia, and several million people have severe morbidity as a consequence, says WHO.
WHO added the paediatric praziquantel formulation to its List of Prequalified Medicinal Products on May 6, 2024, following a positive scientific opinion issued by the European Medicines Agency in December, 2023. The formulation was developed over a decade by the Pediatric Praziquantel Consortium, a team of public and private partners including the pharmaceutical company Merck.
Merck donates up to 250 million praziquantel tablets a year to WHO for schoolchildren in sub-Saharan Africa. However, the Pediatric Praziquantel Consortium plans to sell the formulation at cost to governments and donors, with pharmaceutical companies donating their expenses and charging no fees to local manufacturing companies.
The formulation is an important development, but funding and distribution mechanisms will take time to develop.
The development of praziquantel for preschoolers is not a silver bullet and other strategies against schistosomiasis are needed.

4. Lancet 2024;403(10447):19

Perspectives/Profile
Nahya Salim Masoud: improving newborn health in Tanzania
Samarasekera U.

(Abbreviated)
Working to improve newborn survival in sub-Saharan Africa is a priority for Masoud (Director of Research, Publications and Innovation, and Senior Lecturer, Paediatrician, and Epidemiologist at Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam, Tanzania) through her work with the Newborn Essential Solutions and Technologies (NEST360) programme, an international alliance that supports governments in Africa to implement a package of care, including affordable techno- logies, clinician and biomedical technician training, and locally owned data, for the delivery of high quality small and sick newborn care. NEST360 began in 2019, when Masoud and UK and US collaborators were considering new approaches to reduce the high burden of newborn deaths in sub-Saharan Africa. "Neonatal mortality contributes to almost 50% of under 5 mortality" in the region, Masoud explains. "But we believed if we invest in quality neonatal care in hospitals, then we can reach most newborns and make an impact on those who are small and sick." That year NEST360 was launched in partnership with governments to "support and invest in neonatal care units to deliver quality neonatal care in Tanzania, Malawi, Nigeria, and Kenya", explains Masoud, who is NEST360 Alliance Steering Committee Deputy Chair globally and the Clinical Lead and Co-principal Investigator for NEST360 in Tanzania. By the end of 2023, 67 hospitals in the four countries were implementing NEST360 and about 300 000 babies had received quality care.
Masoud highlights that the mortality rate for newborns in Tanzania in 2024 is 24 deaths per 1000 livebirths, with over 46000 newborn deaths each year. But the country's goal, to meet the UN Sustainable Development Goals, is for no more than 12 deaths per 1000 livebirths by 2030.

5. Lancet 2024;404(10449):277–93

Seminar
Neonatal bacterial sepsis

Strunk T et al., King Edward Memorial Hospital, Perth, WA, Australia <tobias.strunk@health.wa.gov.au>

Neonatal sepsis remains one of the key challenges of neonatal medicine, and together with preterm birth, causes almost 50% of all deaths globally for children younger than 5 years. Compared with advances achieved for other serious neonatal and early childhood conditions globally, progress in reducing neonatal sepsis has been much slower, especially in low-resource settings that have the highest burden of neonatal sepsis morbidity and mortality. By contrast to sepsis in older patients, there is no universally accepted neonatal sepsis definition. This poses substantial challenges in clinical practice, research, and health-care management, and has direct practical implications, such as diagnostic inconsistency, heterogeneous data collection and surveillance, and inappropriate treatment, health-resource allocation, and education. As the clinical manifestation of neonatal sepsis is frequently non-specific and the current diagnostic standard blood culture has performance limitations, new improved diagnostic techniques are required to guide appropriate and warranted antimicrobial treatment. Although antimicrobial therapy and supportive care continue as principal components of neonatal sepsis therapy, refining basic neonatal care to prevent sepsis through education and quality improvement initiatives remains paramount.
Introduction (abbreviated): In early 2017, WHO launched the Maternal and Neonatal Sepsis Initiative to target this common cause of maternal and neonatal morbidity and mortality. The neonatal period has the highest lifetime risk of sepsis, and as a result, neonatal sepsis carries a huge medical, societal, and economic burden globally. This Seminar is focused on bloodstream infections caused by bacteria in newborns and refers to this condition as neonatal sepsis. This condition, most-commonly defined by a positive microbial culture in a symptomatic patient, remains a considerable global challenge, and together with preterm birth is responsible for the largest number of deaths in the first month of life. However, population-based data are scarce, especially for low-income and middle-income countries (LMICs), and rarely contain microbiology information, instead summarising neonatal sepsis as a presumed serious bacterial infection (pSBI) on the basis of broad clinical criteria (danger signs). Consequently, available data are heterogeneous and considerable uncertainty remains regarding actual neonatal sepsis incidence and mortality. Despite the methodological limitations, neonatal sepsis remains a major challenge globally, with the latest estimates suggestive of up to 5 million cases and about 800 000 deaths each year. Compared with high-resource settings, neonatal sepsis incidence in LMICs is many times higher (28·2–39·3 vs 0·3–0·8 per 1000 livebirths), as is substantial sepsis-related mortality (about 18% vs 0–8%). Combined, neonatal sepsis and other serious infections cause at least 25% of all neonatal deaths globally and increase the morbidity and mortality of other neonatal conditions. Since 1990, the progress achieved in reducing under-5 mortality (from 93·0 to 37·7 per 1000 livebirths between 1990 and 2019) in LMICs has outpaced improvements in neonatal mortality, which now comprise almost 50% of deaths in children younger than 5 years.
Future directions (abbeviated): Future neonatal sepsis research requires the urgent development of a universal disease definition and harmonised international data collection through a core set of neonatal sepsis outcomes. Not all cases of neonatal sepsis will be preventable. That new therapeutic opportunities are developed and evaluated to address inflammatory injury and metabolic perturbation to improve survival and long-term outcomes is therefore an imperative. Importantly, the burden of sepsis disproportionately affects newborns in LMICs, thus preventive and therapeutic modalities should ideally be simple and affordable to be suitable for implementation in most settings.

6. Lancet 2024;404(10451):492–4

Viewpoint
Differentiating mortality risk of individual infants and children to improve survival: opportunity for impact

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Children are not born equal in their likelihood of survival. The risk of mortality is highest during and shortly after birth. In the immediate postnatal period and beyond, perinatal events, nutrition, infections, family and environmental exposures, and health services largely determine the risk of death. We argue that current public health programmes do not fully acknowledge this spectrum of risk or respond accordingly. As a result, opportunities to improve the care, survival, and development of children in resource-poor settings are overlooked. Children at high risk of mortality are underidentified and commonly treated using guidelines that do not differentiate care according to the magnitude or drivers of those risks. Children at low risk of mortality are often provided with more intensive care than needed, disproportionately using limited health-care resources with minimal or no benefits. Declines in newborn, infant, and child mortality rates globally are slowing, and further reductions are likely to be incrementally more difficult to achieve once simple, high impact interventions have been universally implemented. Currently, 63 countries have rates of neonatal mortality that are off track to meet the Sustainable Development Goal 2030 target of 12 deaths per 1000 livebirths or less, and 54 countries have rates of mortality in children younger than 5 years that are off track to meet the target of 25 deaths per 1000 livebirths or less. If these targets are to be met, a change of approach is needed to address infant and child mortality and for health-care systems to more efficiently address residual mortality.

7. Lancet Glob Health. 2024 Aug;12(8):e1359-e1364. Review

Hypoxaemia and risk of death among children: rethinking oxygen saturation, risk-stratification, and the role of pulse oximetry in primary care
Hamish R Graham et al, Melbourne Children's Global Health, Murdoch Children's Research Institute, University of Melbourne, Royal Children's Hospital, Melbourne, VIC, Australia

Pulse oximeters are essential for assessing blood oxygen levels in emergency departments, operating theatres, and hospital wards. However, although the role of pulse oximeters in detecting hypoxaemia and guiding oxygen therapy is widely recognised, their role in primary care settings is less clear. In this Viewpoint, we argue that pulse oximeters have a crucial role in risk-stratification in both hospital and primary care or outpatient settings. Our reanalysis of hospital and primary care data from diverse low-income and middle-income settings shows elevated risk of death for children with moderate hypoxaemia (ie, peripheral oxygen saturations [SpO2] 90-93%) and severe hypoxaemia (ie, SpO2 <90%). We suggest that moderate hypoxaemia in the primary care setting should prompt careful clinical re-assessment, consideration of referral, and close follow-up. We provide practical guidance to better support front-line health-care workers to use pulse oximetry, including rethinking traditional binary SpO2 thresholds and promoting a more nuanced approach to identification and emergency treatment of the severely ill child..
Hypoxaemia and risk of death among children: rethinking oxygen saturation, risk-stratification, and the role of pulse oximetry in primary care
Hamish R Graham et al, Melbourne Children's Global Health, Murdoch Children's Research Institute, University of Melbourne, Royal Children's Hospital, Melbourne, VIC, Australia; Department of
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clinical re-assessment, consideration of referral, and close follow-up. We provide practical guidance to better support front-line health-care workers to use pulse oximetry, including rethinking traditional binary SpO2 thresholds and promoting a more nuanced approach to identification and emergency treatment of the severely ill child.

8. Lancet Glob Health. 2024 Oct;12(10):e1611-e1619.

Respiratory syncytial virus infection among children younger than 2 years admitted to a paediatric intensive care unit with extended severe acute respiratory infection in ten Gavi-eligible countries: the Dina N Abdelrahman et al. RSV GOLD-ICU Network study

Methods: The RSV GOLD-ICU Network study is a 2-year prospective, multicountry, observational study of children younger than 2 years admitted to a PICU with eSARI. The study was conducted at 12 referral hospitals in Bolivia, Cameroon, The Gambia, Ghana, Haiti, Mozambique, Nepal, Nigeria, Sudan, and Tanzania. For comparison with a high-income country, patients were also included from two referral hospitals in the Netherlands. Children were eligible for inclusion if they were aged between 4 days and 2 years, admitted to a PICU, and met the WHO eSARI definition. RSV infection was confirmed within 72 h of PICU admission via a molecular point-of-care test at LMIC study sites and via a PCR test at the Dutch study sites. Clinical data were extracted from admission charts of patients; underlying conditions that were identified at admission were classified as comorbidities. Socioeconomic and demographic data were collected via a written, structured, parental questionnaire.
Findings: Between April 28, 2021, and Sept 30, 2023, we included 2118 children who were admitted to a PICU with eSARI in the ten participating countries. 614 (29·0%; range 23·0-38·2) of 2118 children tested positive for RSV and 608 were included in descriptive analyses as six medical files were lost at one study site and data could not be retrieved. Among all 608 children infected with RSV, 379 (62%) were male and 229 (38%) were female. Median age at testing was 3·0 months (IQR 1·3-7·7). 30 (5%) of 608 children died from RSV infection. RSV fatality occurred at seven of ten participating LMIC study sites and was highest in Tanzania (seven [27%] of 26 children). Median age at testing of children who died with RSV infection was 1·8 months (IQR 1·1-4·2).
Interpretation: To our knowledge, this is the first prospective, multicountry study reporting data from children admitted to a PICU with life-threatening RSV infection in Gavi-eligible countries. As there is no access to intensive care for most children in LMICs, RSV prevention is urgently needed.

9. Lancet Glob Health . 2024 Sep;12(9):e1506-e1516.

Improving effective coverage of medical-oxygen services for neonates and children in health facilities in Uganda: a before-after intervention study
Hamish R Graham 1et al, Melbourne Children's Global Health, Murdoch Children's Research Institute, University of Melbourne, Royal Children's Hospital, Parkville, VIC, Australia; Department of Paediatrics, University College Hospital, Ibadan, Nigeria.

Background: Medical oxygen services are essential for the care of acutely unwell patients. We aimed to assess the effects of a multilevel, multicomponent health-system intervention on hypoxaemia detection, oxygen therapy, and mortality among neonates and children attending level IV health centres and hospitals in Uganda.
Methods: For this before-after intervention study, we included children who attended paediatric or neonatal wards of 24 level IV health centres and seven general or regional referral hospitals in the Busoga and North Buganda regions of Uganda between June 1, 2020, and June 30, 2022. All neonates younger than 1 month and children aged 1 month to 14 years were eligible for inclusion. We excluded neonates who were not sick but stayed in the maternity ward for routine postnatal care. The

intervention involved clinical training, mentorship, and supportive supervision; provision of pulse oximeters and cylinder-based oxygen sources; biomedical-capacity support; and support to develop and disseminate oxygen supply strategies, oxygen therapy guidelines, and lists of essential oxygen supplies. Trained research assistants extracted individual patient data from case notes using a standardised electronic data collection form. Data were collected on health-facility details, age, sex, clinical signs and symptoms, admission diagnoses, pulse oximetry readings, oxygen therapy details, and final patient outcome. The primary outcome was the proportion of admitted neonates and children with a pulse oximetry oxygen saturation reading documented in their patient case notes on day 1 of health-facility admission (ie, pulse oximetry coverage). We used mixed-effects logistic regression to evaluate the effect of the intervention.
Findings: We obtained data on 71 997 eligible neonates and children admitted to 31 participating health facilities; the primary analysis included 10 001 patients in the pre-intervention period (ie, June 1 to Oct 30, 2020) and 51 329 patients in the post-intervention period (ie, March 1, 2021, to June 30, 2022). Because 1356 patients had missing data for sex, 4365 (46·7%) of 9347 in the pre-intervention group and 22 831 (46·2%) of 49 410 in the post-intervention group were female; 4982 (53·3%) in the pre-intervention group and 26 579 (53·8%) in the post-intervention group were male. The proportion of neonates and children with pulse oximetry at admission increased from 2365 (23·7%) of 10 001 in the pre-intervention period to 45 029 (87·7%) of 51 328 in the post-intervention period. Adjusted analysis indicated greater likelihood of a patient receiving pulse oximetry during the post-intervention period compared with the pre-intervention period (adjusted odds ratio 40·10, 95% CI 37·38-42·93; p<0·0001).
Interpretation: Large-scale improvements in hospital oxygen services are achievable and have the potential to improve clinical outcomes. Governments should be encouraged to develop national oxygen plans and focus investment on interventions that have been shown to be effective, including the introduction of pulse oximetry into routine hospital care and clinical and biomedical mentoring and support.

10. Lancet Glob Health. 2024 Sep;12(9):e1485-e1497.

Re-evaluating the impact and cost-effectiveness of pneumococcal conjugate vaccine introduction in 112 low-income and middle-income countries in children younger than 5 years: a modelling study
Cynthia Chen et al, Saw Swee Hock School of Public Health, National University of Singapore and National University Health System, Singapore ephchc@nus.edu.sg.

Background: Streptococcus pneumoniae has been estimated to cause 9·18 million cases of pneumococcal pneumonia, meningitis, and invasive non-pneumonia non-meningitis disease and 318 000 deaths among children younger than 5 years in 2015. We estimated the potential impact and cost-effectiveness of pneumococcal conjugate vaccine (PCV) introduction.
Methods: We updated our existing pseudodynamic model to estimate the impact of 13-valent PCV (PCV13) in 112 low-income and middle-income countries by adapting our previously published pseudodynamic model with new country-specific evidence on vaccine coverage, burden, and post-introduction vaccine impact from WHO-UNICEF estimates of national immunisation coverage and a global burden study. Deaths, disability-adjusted life-years (DALYs), and cases averted were estimated for children younger than 5 years born between 2000 and 2030. We used specific PCV coverage in each country and a hypothetical scenario in which coverage increased to diphtheria-tetanus-pertussis (DTP) levels. We conducted probabilistic uncertainty analyses.
Findings: Using specific vaccine coverage in countries, we estimated that PCV13 could prevent 697 000 (95% credibility interval 359 000-1 040 000) deaths, 46·0 (24·0-68·9) million DALYs, and 131 (89·0-172) million cases in 112 countries between 2000 and 2030. PCV was estimated to prevent 5·3% of pneumococcal deaths in children younger than 5 years during 2000-30. The incremental cost

of vaccination would be I$851 (510-1530) per DALY averted. If PCV coverage were increased to DTP coverage in 2020, PCV13 could prevent an additional 146 000 (75 500-219 000) deaths.
Interpretation: The inclusion of real-world evidence from lower-income settings revealed that delays in PCV roll-out globally and low PCV coverage have cost many lives. Countries with delays in vaccine introduction or low vaccine coverage have experienced many PCV-preventable deaths. These findings underscore the importance of rapidly scaling up PCV to achieve high coverage and maximise vaccine impact.

11. TMIH 2024;29(8):706-14 doi: 10.1111/tmi.14022

Understanding pre-hospital disease management of fever and diarrhoea in children-Care pathways in rural Tanzania
Lamshöft MM et al., Department for Infectious Disease Epidemiology, Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany

Objective: Many children in sub-Saharan Africa die from infectious diseases like malaria, pneumonia, and diarrhoea that can be prevented by early diagnosis, effective and targeted treatment. This study aimed to gain insights into case management practices by parents before they present their children to hospital.
Methods: We conducted a cross-sectional study among 332 parents attending a district hospital with their under-fives symptomatic with fever and/or diarrhoea between November 2019 and July 2020 in rural Tanzania. Timely and targeted treatment was defined as seeking health care within 24 h of fever onset, and continued fluid intake in case of diarrhoea.
Results: The main admission diagnoses were acute respiratory infections (61.8%), malaria (25.3%), diarrhoea (18.4%) and suspected sepsis (8.1%). The majority of children (91%) received treatment prior to admission, mostly antipyretics (75.6%), local herbal medicines (26.8%), and antibiotics (17.8%)-half of them without prescription from a clinician. For diarrhoea, the use of oral rehydration solution was rare (9.0%), although perceived as easily accessible and affordable. 49.4% of the parents presented their children directly to the hospital, 23.2% went to a pharmacy/drug shop and 19.3% to a primary health facility first. Malaria symptoms began mostly 3 days before the hospital visit; only 25.4% of febrile children visited any health facility within 24 h of disease onset. Prior use of local herbal medicine (AOR = 3.2; 95% CI 1.4-7.3), visiting the pharmacy (adjusted Odds Ratio [AOR] = 3.1; 95% confidence interval [CI]: 1.0-9.8), the dispensary being the nearest health facility (AOR = 3.0; 95% CI: 1.5-6.2), and financial difficulties (AOR = 2.2; 95% CI 1.1-4.5) were associated with delayed treatment.
Conclusion: This study suggests that antipyretics and antibiotics dispensed at pharmacies/drug shops, as well as use of local herbal medicines, delay early diagnosis and treatment, which can be life-threatening. Pharmacies/drug shops could be integrated as key focal points for sensitising community members on how to respond to paediatric illnesses and encourage the use of oral rehydration solutions.

Communicable diseases

12. Am J Trop Med Hyg. 2024 Jul 30:tpmd230905.

Managing Lymphedema Induced by Lymphatic Filariasis: Implementing and Improving Care at the Individual and Programmatic Levels
Charles D Mackenzie et al, Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD), Task Force for Global Health, Atlanta, Georgia.

Providing and improving the care of patients suffering from lymphedema remains an essential goal for the clinical management of populations affected by lymphatic filariasis. Although the Essential Package of Care (EPC) recommended by the WHO leads to important positive benefits for many of these lymphedema patients, it is important to continue to address the challenges that remain both in quantifying these effects and in ensuring optimal care. This report, based on the authors' scientific and field experience, focuses on the impact and significance of lymphedema, its clinical presentation, current treatment approaches, and the importance of lymphedema care to the Global Program to Eliminate Lymphatic Filariasis. It emphasizes specific practical issues related to managing lymphedema, such as the importance of beginning treatment in the condition's early stages and the development of effective approaches to assess patients' progress toward improving both their clinical status and their overall quality of life. Priorities for research are also examined, particularly the need for tools to identify patients and to assess disease burden in endemic communities, the creation of EPC accessibility to as many patients as possible (i.e., targeting 100% "geographic coverage" of care), and the empowerment of patients to ensure the sustainability, and ultimately the provision of care from sectors of the national public health systems of endemic countries.

13. BMJ 2024;386:q1803 Opinion

Mpox outbreaks in Africa—we must avert another failure of global solidarity
Ifedayo MO Adetifa, Correspondence to M Pai madhukar.pai@mcgill.ca

We need authentic global solidarity, equity, and urgent support for African countries to mitigate mpox outbreaks, write Ifedayo MO Adetifa and Madhukar Pai

On 13 August 2024, the Africa Centres for Disease Control and Prevention (Africa CDC) declared the ongoing mpox outbreak a public health emergency of continental security. This outbreak is driven by the emergence of a new clade 1b variant that is better adapted to human-to-human transmission. On 14 August, the World Health Organization (WHO) declared the current outbreak a public health emergency of international concern (PHEIC) under the International Health Regulations (2005).

Amid another widespread epidemic is another unfolding story of vaccine inequity, and yet another looming failure of global solidarity. We have seen this before, and it does not end well for anyone.

Will we repeat the same mistakes?

Having observed covid-19 and previous epidemics, we have every reason to worry that high income nations will make the same mistakes again—from vaccine hoarding to unfair travel bans and anti-Black racism. We are concerned that the rest of the world will once again resort to performative charity, and fail to act in authentic solidarity with Africa. The region is always last in line for access to lifesaving tools, as we saw with HIV/AIDS, Ebola in West Africa, covid-19, and the mpox outbreak in 2022.

Whenever outbreaks have appeared to be limited to Africa, we have seen the world do little, and take action only when high income nations are directly affected. Until Ebola affected people in the US and Europe, it barely registered as a problem for leaders and funders in the Global North, and this was replayed in 2022 when mpox clade IIb was declared a PHEIC. Once these diseases affected people in rich nations, millions of dollars were poured into finding cures and vaccines. We simply cannot do this again with the ongoing mpox crisis in Africa.

Vaccine inequity is already evident, with Africa CDC reporting a need for approximately 10 million vaccine doses to control the outbreak, of which only about 280 000 are available, ie, less than 3% of the estimated need, even as wealthy countries hoard, stockpile, and refuse to share vaccines. These same countries hoarded covid-19 vaccines, actively blocked or delayed the patent waiver that could have enabled Global South countries to manufacture covid-19 vaccines during the pandemic, and eroded the equity clauses in the draft pandemic accord after lobbying by big pharmaceutical companies.

14. BMJ 2024;386:e078243 Research

Effectiveness of modified vaccinia Ankara-Bavarian Nordic vaccine against mpox infection: emulation of a target trial
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Abstract
Objective To estimate the real world effectiveness of modified vaccinia Ankara-Bavarian Nordic (MVA-BN) vaccine against mpox infection.
Design Emulation of a target trial.
Setting Linked databases in Ontario, Canada.
Participants 9803 men aged ≥18 years with a history of being tested for syphilis and a laboratory confirmed bacterial sexually transmitted infection (STI) in the previous year, or who filled a prescription for HIV pre-exposure prophylaxis in the previous year. On each day between 12 June 2022 and 27 October 2022, those who had been vaccinated 15 days previously were matched 1:1 with unvaccinated men by age, geographical region, past HIV diagnosis, number of bacterial STI diagnoses in the previous three years, and receipt of any non-MVA-BN vaccine in the previous year.
Main outcome measure The main outcome measure was vaccine effectiveness ((1–hazard ratio)×100) of one dose of subcutaneously administered MVA-BN against laboratory confirmed mpox infection. A Cox proportional hazards model was used to estimate hazard ratios to compare the rate of laboratory confirmed mpox between the two groups.
Results 3204 men who received the vaccine were matched to 3204 unvaccinated controls. A total of 71 mpox infections were diagnosed, with 0.09 per 1000 person days (95% confidence interval (CI) 0.05 to 0.13) in the vaccinated group and 0.20 per 1000 person days (0.15 to 0.27) in the unvaccinated group over the study period of 153 days. Estimated vaccine effectiveness of one dose of MVA-BN against mpox infection was 58% (95% CI 31% to 75%).
Conclusion The findings of this study, conducted in the context of a targeted vaccination programme and evolving outbreak of mpox, suggest that one dose of MVA-BN is moderately effective in preventing mpox infection.

15. Emerg Infect Dis. 2024 Sep;30(9):1799-1808.

Mpox Epidemiology and Risk Factors, Nigeria, 2022
Dimie Ogoina et al, Nigerian Infectious Diseases Society (NIDS) mpox study group

To investigate epidemiology of and risk factors for laboratory-confirmed mpox during the 2022 outbreak in Nigeria, we enrolled 265 persons with suspected mpox. A total of 163 (61.5%) were confirmed to have mpox; 137 (84.0%) were adults, 112 (68.7%) male, 143 (87.7%) urban/semi-urban dwellers, 12 (7.4%) self-reported gay men, and 3 (1.8%) female sex workers. Significant risk factors for adults were sexual and nonsexual contact with persons who had mpox, as well as risky sexual behavior. For children, risk factors were close contact with an mpox-positive person and prior animal exposure. Odds of being mpox positive were higher for adults with HIV and lower for those co-infected with varicella zoster virus (VZV). No children were HIV-seropositive; odds of being mpox positive were higher for children with VZV infection. Our findings indicate mpox affects primarily adults in Nigeria, partially driven by sexual activity; childhood cases were driven by close contact, animal exposure, and VZV co-infection.

16. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 805-818

Shifting patterns and competing explanations for infectious disease priority in global health agenda setting arenas
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Gaining status on the global health agenda holds promise for widespread policy adoption and resource allocations that result in improved and more equitable public health outcomes. Smith et al. (2021) introduced an arenas model to address challenges to conceptualizing and measuring the global health agenda in the highly decentralized governance context. According to the pluralistic arenas model, problems are defined and compete for resource allocations in a wide range of overlapping and interacting stakeholder arenas that are central to their address, including but not limited to governments, private industries (e.g. pharmaceutical, unhealthy food and beverages), international aid, media, scientific research and civil society. An arenas model focuses inquiry on who among key collectivities of actors prioritizes which issues, how, when and why, and the intersecting webs of socio-political dynamics that shape agendas. An early application of the model, shows that coronaviruses overtook established (HIV/AIDS), emergent (diabetes) and rising (Alzheimer's disease) global health issues in multiple arenas in 2020, reflecting impacts of the COVID-19 pandemic as a focusing event. This study takes steps to advance more robust inquiry into how and why priority levels may vary within and among global health agenda setting arenas.
The highly decentralized nature of global health governance presents significant challenges to conceptualizing and systematically measuring the agenda status of diseases, injuries, risks and other conditions contributing to the collective disease burden. An arenas model for global health agenda setting was recently proposed to help address these challenges. Further developing the model, this study aims to advance more robust inquiry into how and why priority levels may vary among the array of stakeholder arenas in which global health agenda setting occurs. We analyse order and the magnitude of changes in priority for eight infectious diseases in four arenas (international aid, scientific research, pharmaceutical industry and news media) over a period of more than two decades in relation to five propositions from scholarship. The diseases vary on burden and prominence in United Nations Sustainable Development Goal 3 for health and well-being, including four with specific indicators for monitoring and evaluation (HIV/AIDS, tuberculosis, malaria, hepatitis) and four without (dengue, diarrhoeal diseases, measles, meningitis). The order of priority did not consistently align with the disease burden or international development goals in any arena. Additionally, using new methods to measure the scale of annual change in resource allocations that are indicative of priority reveals volatility at the disease level in all arenas amidst broader patterns of stability.
This study further develops a recently proposed arenas model for global health agenda setting, advancing more robust inquiry into how and why priority levels may vary over time. It challenges existing notions about patterns and scale of policy change over time and prominent models for explaining them. It shows how propositions concerning priority can be investigated through theoretically informed issue selection—using rational, normative and other models. It offers new, systematic methods for investigating patterns over short and long time horizons. These developments are crucial for scholars and proponents working to understand the complex web of interactions—those mechanisms of change—that determine why some problems attract greater resource allocations from a fuller range of relevant stakeholders than others in global and national governance contexts.

17. Lancet 2024;403(10447):18

World Report
African mpox surges show lack of vaccine access
Adepoju P.

(Abbreviated)

Experts say that outbreaks in South Africa and DR Congo illustrate the need for more equitable access to mpox vaccines.
Vastly different mpox outbreaks are surging in South Africa and the Democratic Republic of the Congo. While South Africa battles a high case fatality rate among a specific group, DR Congo faces a widespread epidemic primarily affecting children. Experts say that both outbreaks highlight the need for enhanced surveillance and equitable access to vaccines and treatments.
In South Africa, 16 mpox cases, including three deaths, have been officially confirmed, primarily affecting men who have sex with men (MSM). Meanwhile, DR Congo is grappling with a more extensive outbreak, with more than 7851 cases and 384 deaths reported in 2024 alone, mostly among children younger than 15 years. A new variant of the virus detected in South Kivu province also raises concerns about increased transmissibility and severity, posing additional challenges to containment efforts in DR Congo.
Although tecovirimat is being used for treatment in severe cases, access to vaccines remains a major challenge in South Africa.
Placide Mbala, virologist and head of the epidemiology and global health department at the National Institute of Biomedical Research in Kinshasa: “In the DRC, the most affected people are young adults and sex workers”. Most of our cases are in remote areas, so difficult to access. Most of them can reach the health centre a bit late.”
The underlying cause of the outbreak, according to Mbala, is the decreasing herd immunity due to the cessation of smallpox vaccination.

18. Lancet 2024;404(10453):683–91

Efficacy and safety of emodepside compared with albendazole in adolescents and adults with hookworm infection in Pemba Island, Tanzania: a double-blind, superiority, phase 2b, randomised controlled trial
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Background Human hookworm is a cause of enormous global morbidity. Current treatments have insufficient efficacy and their extensive and indiscriminate distribution could also result in drug resistance. Therefore, we tested the efficacy and safety of emodepside, a strong anthelmintic candidate that is currently undergoing clinical development for onchocerciasis and soil-transmitted helminth infections.
Methods We conducted a double-blind, superiority, phase 2b, randomised controlled clinical trial comparing emodepside and albendazole. Participants in the emodepside group received six 5 mg tablets of emodepside (totalling 30 mg) and one placebo; participants in the albendazole group received one 400 mg tablet of albendazole and six placebos. Participants were recruited from four endemic villages and three secondary schools in Pemba Island, Tanzania. Participants aged 12–60 years were eligible for treatment if they were positive for hookworm infection, and they had 48 or more eggs per gram from four Kato–Katz thick smears and at least two slides had more than one hookworm egg present. Participants’ treatment allocation was stratified by infection intensity and efficacy was measured by cure rate: participants who were hookworm positive and became hookworm negative after treatment. Adverse events were reported at 3 h, 24 h, 48 h, and 14–21 days post-treatment. The trial is registered at ClinicalTrials.gov, NCT05538767.
Findings From Sept 15 to Nov 8, 2022, and from Feb 15 to March 15, 2023, 1609 individuals were screened for hookworm. Of these, 293 individuals were treated: 147 with albendazole and 146 with emodepside. Emodepside demonstrated superiority, with an observed cure rate against hookworm of 96·6%, which was significantly higher compared with albendazole (cure rate 81·2%, odds ratio 0·14, 95% CI 0·04–0·35; p=0·0001). The most common adverse event in the emodepside treatment group was vision blur at 3 h after treatment (57 [39%] of 146). Other common adverse events were vision

blur at 24 h after treatment (55 [38%]), and headache and dizziness at 3 h after treatment (55 [38%] for headache and 43 [30%] for dizziness). In the emodepside treatment group, 298 (93%) of the 319 adverse events were mild. The most commonly reported adverse events in the albendazole treatment group were headache and dizziness at 3 h after treatment (27 [18%] of 147 for headache and 14 [10%] for dizziness). No serious adverse events were reported.
Interpretation This phase 2b clinical trial confirms the high efficacy of emodepside against hookworm infections, solidifying emodepside as a promising anthelmintic candidate. However, although the observed safety events were generally mild in severity, considerations must be made to balance the strong efficacy outcomes with the increased frequency of adverse events compared with albendazole.

19. Lancet 2024;404(10455):835-6

World Report
Mpox puts Gavi's new pandemic fund to the test
Usher AD.

(Abbreviated)
Gavi's US$2·5 billion Day Zero Financing Facility aims to avoid delays in acquiring vaccines for new pandemics.
Gavi, the Vaccine Alliance, has a new US$2·5 billion Day Zero Financing Facility that aims to provide the organisation with upfront liquidity to purchase vaccines in the event of a global pandemic. The facility is the first proof of concept of a new collaboration among development finance institutions (DFIs) seeking ways to collaborate on providing pandemic surge financing for medical countermeasures.
With WHO's designation of mpox as a public health emergency of international concern (PHEIC) on Aug 13, 2024, the Gavi fund is already being put to the test. In a sobering echo of 2020, affected countries once again lack access to vaccines and diagnostics and Africa CDC has appealed to global partners to "stand with us in this critical hour". On Aug 26, WHO published its response plan for mpox and is asking donors for $135 million to finance it.
DR Congo and neighbouring countries in Africa have massive financing needs, first and foremost for mpox vaccines, said Lawrence Gostin, Professor of Global Health Law at the O'Neill Institute, Georgetown University. Donations made by the EU and the USA are just a drop in the ocean compared to the needs, he told The Lancet. Gavi can procure vaccines at below-market prices and plays a crucial role. "The new Gavi response fund will have its first major test in effectively delivering affordable vaccines to stem the mpox outbreak on the African continent", he said.
Announced in June, 2024, by Gavi Chief Executive Officer Sania Nishtar, the Day Zero Fund consists of two sources of financing: $2 billion from a DFI credit line not used during the COVID-19 pandemic; and a $500 million First Response Fund derived from leftover donor grants from COVID-19 Vaccines Global Access (COVAX), which was managed by Gavi, bringing total day-zero resources available to $2·5 billion. Although Gavi estimates that the credit line could take 50–100 days to trigger, the First Response Fund consists of cash (rather than credit) and can, according to Gavi Board documents, "make an initial disbursement within 5 days" of WHO's announcement of a PHEIC.
2 weeks into the PHEIC, Gavi has not yet drawn on its new Day Zero Fund for the mpox emergency but is reportedly in discussion with WHO, Africa CDC, countries, and donors.
The idea of Gavi's new facility is that it will "help secure rapid vaccine access for Gavi-eligible countries, building on the lessons from COVID-19", a Gavi spokesperson said. In the first year of the pandemic, donors pledged $2·4 billion to Gavi for the purchase of vaccines for lower- income countries but only $400 million was disbursed. According to research by Ruchir Agarwal, former Head of the International Monetary Fund Pandemic Taskforce, the lack of timely and sufficient financing caused an estimated 60–75% of the delay in the delivery of COVID-19 vaccines to lower-income countries. In

other words, if Gavi had had access to the missing $2 billion in 2020, people in low-income and middle-income countries (LMICs) might have received vaccines sooner, saving countless lives.
This experience prompted the question of how DFIs might engage more broadly in pandemic financing, accelerating access not only to vaccines, but also diagnostics, therapeutics, medical oxygen, and even research and development. At the UN General Assembly next month, nine DFIs—seven representing countries of the G7 plus the European Investment Bank and the International Finance Corporation—plan to sign a memorandum of understanding for an MCM Surge Financing Initiative. It aims to lay the foundation for a first-of-its- kind architecture for DFI collaboration on innovative pandemic financing so that time is not lost waiting for donor pledges to materialise. Although several options are being discussed, next in line after the Gavi facility could be a day zero fund for diagnostics.
Many global health leaders welcome the initiative, while at the same time warning that it will only be one piece in the pandemic financing puzzle. In the discussions between DFIs and global health agencies the option that is furthest along is a liquidity or bridge financing mechanism for diagnostics. Like the Gavi Day Zero Fund, DFI loans would fill the time gap between donor pledges and actual disbursements. It is not obvious which entity might manage such a fund.
When it comes to bridge financing in the DFI model, the loan money is only available as quickly as donors make their pledges.

20. Lancet Glob Health. 2024 Sep;12(9):e1470-e1484.

Long-term effect of pneumococcal conjugate vaccines on invasive pneumococcal disease incidence among people of all ages from national, active, laboratory-based surveillance in South Africa, 2005-19: a cohort observational study
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Background: In South Africa, 7-valent pneumococcal conjugate vaccine (PCV7) was introduced in 2009 and 13-valent PCV (PCV13) was introduced in 2011, both in a two plus one schedule. We evaluated the ongoing effects of PCV on the prevention of invasive pneumococcal disease (IPD) over 15 years of sustained surveillance in South Africa before the COVID-19 pandemic.
Methods: We conducted national, active, laboratory-based surveillance for IPD among all ages in South Africa, including isolate serotyping and susceptibility testing. We fitted linear regression models with vaccine covariates to imputed IPD case counts each year by serotype and age to compare expected and actual IPD cases in 2019, which was the main outcome. Vaccine effects were set to zero to identify expected incidence after the introduction of PCV7 and PCV13.
Findings: From Jan 1, 2005, to Dec 31, 2019, surveillance identified 52 957 IPD cases. Among the 50 705 individuals with age data available, 9398 (18·5%) were infants aged younger than 2 years. Compared with expected case numbers (no vaccination) predicted using all available data, overall IPD rates among children younger than 2 years declined by 76·0% (percentage risk difference; 95% CI -79·0 to -72·8%) in 2019; notably, PCV7 and additional PCV13 serotype IPD rates declined by 95·5% (-97·0 to -93·4%) and 93·8% (-96·2 to-90·5%), respectively, whereas non-vaccine serotypes (NVTs) did not change significantly. Among adults aged 25-44 years, overall IPD declined by 50·4% (-54·2 to -46·3%), and PCV7 and additional PCV13 serotype IPD rates declined by 86·1% (-88·7 to -83·1%) and 77·2% (-80·9 to -73·0%), respectively, whereas NVTs increased by 78·5% (56·8 to 103·4%). Individuals aged older than 64 years also benefited from declines in IPD (-30·2%; -41·9 to -16·2%), but NVTs increased (234·9%; 138·1 to 379·4%).

Interpretation: We documented sustained direct and indirect benefits of PCV across age groups, and NVT increases in adults older than 24 years. Higher valency PCVs would have the added benefit of preventing this residual disease.

21. Lancet Glob Health. 2024 Oct;12(10):e1730-e1736.

Improving Ebola virus disease outbreak control through targeted post-exposure prophylaxis
Elin Hoffmann Dahl et al, Médecins Sans Frontières, Oslo, Norway; Department of Infectious Diseases, Haukeland University Hospital, Bergen, Norway. marie.jaspard@coral.alima.ngo.
Ebola virus disease kills more than half of people infected. Since the disease is transmitted via close human contact, identifying individuals at the highest risk of developing the disease is possible on the basis of the type of contact (correlated with viral exposure). Different candidates for post-exposure prophylaxis (PEP; ie, vaccines, antivirals, and monoclonal antibodies) each have their specific benefits and limitations, which we discuss in this Viewpoint. Approved monoclonal antibodies have been found to reduce mortality in people with Ebola virus disease. As monoclonal antibodies act swiftly by directly targeting the virus, they are promising candidates for targeted PEP in contacts at high risk of developing disease. This intervention could save lives, halt viral transmission, and, ultimately, help curtail outbreak propagation. We explore how a strategic integration of monoclonal antibodies and vaccines as PEP could provide both immediate and long-term protection against Ebola virus disease, highlighting ongoing clinical research that aims to refine this approach, and discuss the transformative potential of a successful PEP strategy to help control viral haemorrhagic fever outbreaks.

22. N Engl J Med August 2024;391:681-685

Perspective: Preventing and Controlling Global Antimicrobial Resistance — Implementing a Whole-System Approach (Abridged)
Don Goldmann, M.D., et al. From the Duke Global Health Innovation Center, Duke University, and Innovations in Healthcare— both in Durham, NC; and the Department of Medicine, Boston Children's Hospital, the Department of Epidemiology, Harvard T.H. Chan School of Public Health, and the Institute for Healthcare Improvement — all in Boston.

Antimicrobial resistance (AMR) remains a major global public health problem despite concerted surveillance, prevention, and control efforts. The World Health Organization (WHO) has identified AMR as one of the top 10 global health threats, with an estimated 1.3 million deaths attributable to bacterial AMR in 2019. The problem was gravest in western sub-Saharan Africa, where AMR-related mortality was 27.3 deaths per 100,000 people. The emergence of AMR anywhere can quickly become a global problem.
Decades of alarm have led to numerous calls to action, reports, guidelines, national action plans, and policy proposals. National and global agencies, foundations, professional societies, governments, networks of experts, and industry collaborations have supported these efforts. Research has shown the importance of environmental and animal reservoirs of AMR and has yielded potentially transformational technologies, including nucleic acid amplification tests, whole-genome sequencing, and automated rapid diagnostics. Programs focused on antimicrobial and diagnostic stewardship have complemented ongoing health care–associated infection prevention and control efforts.
These achievements are impressive, but the current situation is far less encouraging, particularly in low- and middle-income countries (LMICs). National action plans generally haven't been implemented at scale, nor have they stemmed the emergence and spread of increasingly resistant microorganisms. With few exceptions (e.g., reduced prescribing of antimicrobials in a network of private South African hospitals), stewardship guidelines have had limited impact. Basic infection prevention and control are still inadequate in many facilities. Promising diagnostic technologies remain too costly or impractical to use in much of the world. Evolution of AMR continues to outpace the introduction of new

antimicrobials. Surveillance is improving but lags behind global dissemination of resistant pathogens. Insufficient microbiology-laboratory capacity limits timely surveillance, especially in LMICs.
We recently participated in a public–private collaboration (the Surveillance Partnership to Improve Data for Action on Antimicrobial Resistance [SPIDAAR], funded by Pfizer and the Wellcome Trust) aimed at assisting ministries of health (MOHs) and hospitals in Ghana, Kenya, Malawi, and Uganda in implementing, scaling up, and sustaining improved AMR surveillance capacity. This demonstration project evolved from focused detection of AMR in pathogens targeted by the WHO's Global Antimicrobial Resistance and Use Surveillance System (GLASS) program to include broader efforts to leverage real-time AMR data to improve patient care.
Ugandan Ministry of Health Antimicrobial Resistance Surveillance System Data and Information Flow Chart.
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Although success was observed in some domains, progress was hindered by systems-related challenges, such as lack of sustainable financing, supply-chain deficiencies, laboratory-staff turnover, clinician distrust in laboratory services, and failure to use culture results to guide treatment. These observations were in keeping with our previous experience in other countries, where we found that existing fragmented approaches to addressing AMR are unlikely to facilitate timely recognition of resistance trends and sustainable improvements in care.
We believe several steps could be taken to accelerate progress.
First, countries — and the funders and agencies that support them — will need to develop and implement an integrated, whole-system approach to AMR. //
Second, it will be important to recognize that national AMR-surveillance systems differ from systems focused on local detection of AMR and prompt treatment with appropriate antimicrobials, although both depend on accurate laboratory testing. //
Third, countries could better integrate plans for implementation, scale-up, and sustainability into action plans. It will be important to test implementation plans and prototypes in various settings, adapt implementation tactics to local contexts, and address predictable funding, resource, and workforce limitations before attempting to scale up promising programs. In our experience, action plans often rely too heavily on education and training, which are important but are unlikely to be effective unless they are reinforced over time; promote self-efficacy; address overwork, burnout, and turnover among staff members; are supported by adequate resources; provide staff members with sufficient skills and tools to improve their work; and assess knowledge and competency with evaluation frameworks such as Miller's Pyramid.
Fourth, national, regional, and local leaders could create peer-learning systems for AMR teams. Shared learning among teams could promote data transparency and transfer of knowledge regarding innovative approaches to overcoming common barriers. //
Finally, companies, funders, nongovernmental agencies, and countries could accelerate the adoption of "leapfrog" innovations (transformative technologies that can be adapted and implemented in low-resource settings despite barriers) to address challenges inherent to traditional microbiologic methods. The culturing and susceptibility-testing methods often used in hospital laboratories in LMICs are relatively slow and labor-intensive and lack the specificity of strain characterization required for epidemiologic investigation. Policymakers could explore strategies for making new point-of-care and automated methods more widely available in health care facilities and in the field. Experience with new tuberculosis diagnostics (including those with AMR-detection capabilities), malaria diagnosis in the community, and HIV and Covid-19 point-of-care tests suggests that cost-effective deployment is possible. //
Articulating the principles of whole-system improvement is easier than putting them into action. Nonetheless, whole-system approaches can inform planning, implementation, and sustainable scale-up amid other pressing health priorities. While focusing on AMR in SPIDAAR, Malawi had to manage Covid-19, destructive storms, a cholera outbreak, and introduction of wild poliovirus type 1. Whole-system improvement methods are useful for mitigating such intercurrent public health challenges, but

cross-program learning may not always occur. For example, SPIDAAR teams in two countries were largely unaware of national infant and maternal health programs supported by their MOHs.
The basic principles for addressing AMR have been known for decades, and scientific and technological innovations are promising, but implementation has been too slow. The problem of AMR has intensified. Action plans could be more effective if the realities of implementation, scale-up, and sustainability were considered and addressed before the ink is dry.

23. PLoS Med (May 2024) 21(5): e1004386

Prolonged mass azithromycin distributions and macrolide resistance determinants among preschool children in Niger: A sub-study of a cluster-randomized trial (MORDOR)
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Background
Randomized controlled trials found that twice-yearly mass azithromycin administration (MDA) reduces childhood mortality, presumably by reducing infection burden. World Health Organization (WHO) issued conditional guidelines for mass azithromycin administration in high-mortality settings in sub-Saharan Africa given concerns for antibiotic resistance. While prolonged twice-yearly MDA has been shown to increase antibiotic resistance in small randomized controlled trials, the objective of this study was to determine if macrolide and non-macrolide resistance in the gut increases with the duration of azithromycin MDA in a larger setting.
Methods and findings
The Macrolide Oraux pour Réduire les Décès avec un Oeil sur la Résistance (MORDOR) study was conducted in Niger from December 2014 to June 2020. It was a cluster-randomized trial of azithromycin (A) versus placebo (P) aimed at evaluating childhood mortality. This is a sub-study in the MORDOR trial to track changes in antibiotic resistance after prolonged azithromycin MDA. A total of 594 communities were eligible. Children 1 to 59 months in 163 randomly chosen communities were eligible to receive treatment and included in resistance monitoring. Participants, staff, and investigators were masked to treatment allocation.
At the conclusion of MORDOR Phase I, by design, all communities received an additional year of twice-yearly azithromycin treatments (Phase II). Thus, at the conclusion of Phase II, the treatment history (1 letter per 6-month period) for the participating communities was either (PP-PP-AA) or (AA-AA-AA). In Phase III, participating communities were then re-randomized to receive either another 3 rounds of azithromycin or placebo, thus resulting in 4 treatment histories: Group 1 (AA-AA-AA-AA-A, N = 51), Group 2 (PP-PP-AA-AA-A, N = 40), Group 3 (AA-AA-AA-PP-P, N = 27), and Group 4 (PP-PP-AA-PP-P, N = 32).
Rectal swabs from each child (N = 5,340) were obtained 6 months after the last treatment. Each child contributed 1 rectal swab and these were pooled at the community level, processed for DNA-seq, and analyzed for genetic resistance determinants. The primary prespecified outcome was macrolide resistance determinants in the gut. Secondary outcomes were resistance to beta-lactams and other antibiotic classes. Communities recently randomized to azithromycin (groups 1 and 2) had significantly more macrolide resistance determinants than those recently randomized to placebo (groups 3 and 4) (fold change 2.18, 95% CI 1.5 to 3.51, Punadj < 0.001). However, there was no significant increase in macrolide resistance in communities treated 4.5 years (group 1) compared to just the most recent 2.5 years (group 2) (fold change 0.80, 95% CI 0.50 to 1.00, Padj = 0.010), or between communities that had been treated for 3 years in the past (group 3) versus just 1 year in the past (group 4) (fold change 1.00, 95% CI 0.78 to 2.35, Padj = 0.52). We also found no significant differences for beta-lactams or other antibiotic classes.
The main limitations of our study were the absence of phenotypic characterization of resistance, no complete placebo arm, and no monitoring outside of Niger limiting generalizability.

Conclusions
In this study, we observed that mass azithromycin distribution for childhood mortality among preschool children in Niger increased macrolide resistance determinants in the gut but that resistance may plateau after 2 to 3 years of treatment. Co-selection to other classes needs to be monitored.

24. TMIH 2024;29(7):541-83 doi: 10.1111/tmi.14002

Rickettsia africae infections in sub-Saharan Africa: A systematic literature review of epidemiological studies and summary of case reports
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Rickettsia africae is a tick-borne bacteria known to cause African tick bite fever (ATBF). While the disease was first described more than 100 years ago, knowledge of transmission risk factors and disease burden remain poorly described. To better understand the burden of R. africae, this article reviewed and summarized the published literature related to ATBF epidemiology and clinical management. Using a systematic approach, consistent with the PRISMA guidelines, we identified more than 100 eligible articles, including 65 epidemiological studies and 41 case reports. Most reports described R. africae in ticks and livestock, while human studies were less common. Human disease case reports were exclusively among returning travellers from non-endemic areas, which limits our disease knowledge among at-risk populations: people living in endemic regions. Substantial efforts to elucidate the ATBF risk factors and clinical manifestations among local populations are needed to develop effective preventative strategies and facilitate appropriate and timely diagnosis.

25. TMIH 2024;29(7):594-8 doi: 10.1111/tmi.13998

Evaluation of a rapid diagnostic test for detection of Vibrio cholerae O1 in the Democratic Republic of the Congo: Preventative intervention for cholera for 7 days (PICHA7 program)
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Objective: Globally, there are estimated to be 2.9 million cholera cases annually. Early detection of cholera outbreaks is crucial for resource allocation for case management and for targeted interventions to be delivered to stop the spread of cholera. In resource limited settings such as Eastern Democratic Republic of the Congo (DRC), there is often limited laboratory capacity for analysing stool samples for cholera by bacterial culture. Therefore, rapid diagnostic tests (RDTs) for cholera present a promising tool to rapidly test stool samples in a health facility setting for cholera. Our objective is to evaluate the Crystal VC O1 RDT for cholera detection compared with bacterial culture and polymerase chain reaction (PCR) for Vibrio cholerae.
Methods: From March 2020 to December 2022, stool samples were collected from 644 diarrhoea patients admitted to 94 health facilities in Bukavu in Eastern DRC. Patient stool samples were analysed by Crystal VC O1 RDT for cholera and by bacterial culture and PCR for V. cholerae O1.
Results: Twenty six percent of diarrhoea patients (166/644) had stool samples positive for cholera by RDT, and 24% (152/644) had stool samples positive for V. cholerae O1 by bacterial culture or PCR. The overall specificity and sensitivity of the Crystal VC O1 RDT by direct testing was 94% (95% confidence interval [CI]: 92%-96%) and 90% (95% CI, 84%-94%), respectively, when compared with either a positive result by bacterial culture or PCR.
Conclusion: Our findings suggest that the Crystal VC O1 RDT presents a promising tool for cholera surveillance in this cholera endemic setting in sub-Saharan Africa.

Health Policy

26. Am J Trop Med Hyg. 2024 Jun 11;111(2):387-390.

Rapid and Comprehensive Screening for Urogenital and Gastrointestinal Schistosomiasis with Handheld Digital Microscopy Combined with Circulating Cathodic Antigen Testing
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Novel methods are required to aid the monitoring of schistosomiasis control and elimination initiatives through mass drug administration. Portable digital and mobile phone microscopy is a promising tool for this purpose. This cross-sectional study evaluated the diagnostic operating characteristics of a converted mobile phone microscope (the SchistoScope) for the detection of Schistosoma haematobium eggs, as determined by community-based field workers and expert microscopists, compared with a field gold standard of light microscopy. Three hundred sixty-five urine samples were evaluated by conventional light microscopy, with 49 (13.4%) positive for S. haematobium. Compared with light microscopy, the sensitivity and specificity of S. haematobium detection by field microscopists trained to use the SchistoScope were 26.5% (95% CI: 14.9-41.1%) and 98.4% (95% CI: 96.3-99.5%), respectively. The sensitivity and specificity of S. haematobium detection by expert microscopists using the SchistoScope was 74% (95% CI: 59.7-85.4%) and 98.1% (95% CI: 95.9-99.3%), respectively, compared with light microscopy. The sensitivity rose to 96.1% and 100% when evaluating for egg counts greater than five and 10 eggs per 10 mL, respectively. A point-of-care circulating cathodic anion (POC CCA) test was used to evaluate Schistosoma mansoni; however, there were too few positive samples to reliably comment on diagnostic characteristics. This study demonstrated that a "urine-only" approach to rapidly screen for schistosomiasis at the point of sample collection can be conducted with mobile phone microscopy (S. haematobium) coupled with POC CCA (S. mansoni). Such an approach may aid in streamlined schistosomiasis control and elimination initiatives.

27. BMJ Global Health 2024;9:e015310. Commentary

Claims data from health insurance programmes in sub-Saharan Africa: an untapped resource to promote Universal Health Coverage
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What is the problem?
In the effort to advance towards Universal Health Coverage (UHC), several African countries are implementing public health insurance programmes to increase financial risk protection, reduce catastrophic health expenditure and broaden access to services for treatment and prevention of disease. In sub-Saharan Africa (SSA), 8 out of 49 countries have implemented some form of national-level contributory public health insurance system, and at least 7 others have passed legislation or are in the process of planning a national health insurance programme. However, programmes face challenges with low enrolment, limited uptake of services and uncertain financial sustainability. These programmes can greatly benefit from analyses to identify opportunities for improvement and to support national policymaking.
Summary box
Many sub-Saharan African countries are implementing national public health insurance programmes to achieve Universal Health Coverage. However, insurance programmes face challenges including low enrolment and questions around financial sustainability. Despite the availability of claims data, few analyses of these data exist in the published literature.

Analyses of claims data are hindered by inadequate technological infrastructure, privacy concerns and challenges with data quality and representativeness. Additionally, the potential of these data to provide valuable insights for programmes may not fully be acknowledged.
We highlight examples of analyses of national health insurance programmes in Ghana, Tanzania, Indonesia and the USA that used claims data that provided insight into programme sustainability, quality of care and distributional equity of health services.
We urge national health insurance programmes in sub-Saharan Africa to invest in developing their infrastructure for analysing their claims data, to partner with external organisations where beneficial, and to consider making samples of their claims data available for research to provide insights towards sustainably achieving Universal Health Coverage.

28. BMJ Global Health 2024;9:e014870. Practice

Messy but worth it: human-centred design as applied within a successful vaccine-promotive campaign
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Abstract
Human-centred design (HCD) is an approach to problem-solving that prioritises understanding and meeting the needs of the end-users. Researchers and designers practice empathic listening as users share their perspectives, thereby enabling a variety of stakeholders to cocreate effective solutions. While a valuable and, in theory, straightforward process, HCD in practice can be chaotic: Practitioners often struggle to navigate an excess of (often conflicting) ideas and to strike a balance between problem-understanding and problem-solving. In this practice paper, we outline our own experiences with HCD, which ultimately resulted in the development of a successful video-based intervention to bolster vaccine confidence in the Philippines. We highlight the use of 'radical circles' to overcome roadblocks and navigate tensions. Radical circles entail groups of individuals with divergent opinions and identities engaging in critical analysis of a given idea, actively challenging standard ways of thinking, and ultimately, generating solutions. Employing radical circles enabled us to innovate and adapt to new perspectives that emerged along the non-linear HCD pathway. Our incorporation of radical circles into HCD methodology demonstrates its potential as a powerful complementary step in the meaning-making process. In our view, radical circles could enrich HCD processes and provide a solution to design overcrowding, leading to meaningful, transformative and successful interventions.

29. BMJ Global Health 2024;9:e014970. Original research

Determinants of translating routine health information system data into action in Mozambique: a qualitative study
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Abstract
Introduction Routine health information systems (RHISs) are an essential source of data to inform decisions and actions around health facility performance, but RHIS data use is often limited in low and middle-income country contexts. Determinants that influence RHIS data-informed decisions and actions are not well understood, and few studies have explored the relationship between RHIS data-informed decisions and actions.
Methods This qualitative thematic analysis study explored the determinants and characteristics of successful RHIS data-informed actions at the health facility level in Mozambique and which determinants were influenced by the Integrated District Evidence to Action (IDEAs) strategy. Two rounds of qualitative data were collected in 2019 and 2020 through 27 in-depth interviews and 7 focus

group discussions with provincial, district and health facility-level managers and frontline health workers who participated in the IDEAs enhanced audit and feedback strategy. The Performance of Routine Information System Management-Act framework guided the development of the data collection tools and thematic analysis.Results Key behavioural determinants of translating RHIS data into action included health worker understanding and awareness of health facility performance indicators coupled with health worker sense of ownership and responsibility to improve health facility performance. Supervision, on-the-job support and availability of financial and human resources were highlighted as essential organisational determinants in the development and implementation of action plans. The forum to regularly meet as a group to review, discuss and monitor health facility performance was emphasised as a critical determinant by study participants.
Conclusion Future data-to-action interventions and research should consider contextually feasible ways to support health facility and district managers to hold regular meetings to review, discuss and monitor health facility performance as a way to promote translation of RHIS data to action.

30. BMJ Global Health 2024;9:e015624. Commentary

Qualified, skilled or trained delivery care provider: a conundrum of who, where and when
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In the global maternal and newborn health (MNH) literature, care providers have been classified in several ways, engendering the question—whether providers who care for the mother and her newborn(s) have the necessary training and skills to provide quality care. This question underscores the importance of clearly defining who provided care. A specific definition not only facilitates correct interpretation of findings but helps understand potential reasons behind successes or failures of MNH interventions. Additionally, in low- and middle-income countries (LMICs), providers who routinely attend deliveries often receive varying levels of training, even within the same classifications. This inconsistency can result in incomparable estimates of skilled birth attendance, an indicator used to reference MNH care globally.
Summary box
This commentary highlights various definitions of maternal and newborn health care providers used globally and demonstrates the considerable effect of a definition on study findings.
Standard definitions (eg, qualified, skilled or trained) are helpful, but the use of these terms alone might give a spurious sense of consistency, when nuanced characteristics of providers could be lacking in a specific setting.
We recommend that provider definitions should explicitly state who (designations) are involved, where (context) and when (any relevant time-specific systemic changes that could potentially impact service delivery) to complement the standard definitions.

31. Health Policy and Planning, Vol. 39 (7), August 2024, Pages 693–709

Human resource challenges in health systems: evidence from 10 African countries
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Sub-Saharan Africa has fewer medical workers per capita than any region of the world, and that shortage has been highlighted consistently as a critical constraint to improving health outcomes in the region. This paper draws on newly available, systematic, comparable data from 10 countries in the region to explore the dimensions of this shortage. We find wide variation in human resources performance metrics, both within and across countries. Many facilities are barely staffed, and effective

staffing levels fall further when adjusted for health worker absences. However, caseloads—while also varying widely within and across countries—are also low in many settings, suggesting that even within countries, deployment rather than shortages, together with barriers to demand, may be the principal challenges. Beyond raw numbers, we observe significant proportions of health workers with very low levels of clinical knowledge on standard maternal and child health conditions. This study highlights that countries may need to invest broadly in health workforce deployment, improvements in capacity and performance of the health workforce, and on addressing demand constraints, rather than focusing narrowly on increases in staffing numbers.

32. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 841-853

From PERFORM to PERFORM2Scale: lessons from scaling-up a health management strengthening intervention to support Universal Health Coverage in three African countries
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Strengthening management and leadership competencies among district and local health managers has emerged as a common approach for health systems strengthening and to achieve Universal Health Coverage (UHC). While the literature is rich with localized examples of initiatives that aim to strengthen the capacity of district or local health managers, particularly in sub-Saharan Africa, considerably less attention is paid to the science of 'how' to scale-up these initiatives. The aim of this paper is thus to examine the 'process' of scaling-up a management strengthening intervention (MSI) and identify new knowledge and key lessons learned that can be used to inform the scale-up process of other complex health interventions, in support of UHC. Qualitative methods were used to identify lessons learned from scaling-up the MSI in Ghana, Malawi and Uganda. We conducted 14 interviews with district health management team (DHMT) members, three scale-up assessments with 20 scale-up stakeholders, and three reflection discussions with 11 research team members. We also kept records of activities throughout MSI and scale-up implementation. Data were recorded, transcribed and analysed against the Theory of Change to identify both scale-up outcomes and the factors affecting these outcomes. The MSI was ultimately scaled-up across 27 districts. Repeated MSI cycles over time were found to foster greater feelings of autonomy among DHMTs to address longstanding local problems, a more innovative use of existing resources without relying on additional funding and improved teamwork. The use of 'resource teams' and the emergence of MSI 'champions' were instrumental in supporting scale-up efforts. Challenges to the sustainability of the MSI include limited government buy-in and lack of sustained financial investment.

33. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 864-877

Community case management to accelerate access to healthcare in Mali: a realist process evaluation nested within a cluster randomized trial
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The Proactive Community Case Management (ProCCM) trial in Mali reinforced the health system across both arms with user fee removal, professional community health workers (CHWs) and upgraded primary health centres (PHCs)—and randomized village-clusters to receive proactive home visits by CHWs (intervention) or fixed site-based services by passive CHWs (control). Across both arms, sick children's 24-hour treatment and pregnant women's four or more antenatal visits doubled, and under-5 mortality halved, over 3 years compared with baseline. In the intervention arm, proactive CHW home visits had modest effects on children's curative and women's antenatal care utilization,

but no effect on under-5 mortality, compared with the control arm. We aimed to explain these results by examining implementation, mechanisms and context in both arms We conducted a process evaluation with a mixed method convergent design that included 79 in-depth interviews with providers and participants over two time-points, surveys with 195 providers and secondary analyses of clinical data. We embedded realist approaches in novel ways to test, refine and consolidate theories about how ProCCM worked, generating three context-intervention-actor-mechanism-outcome nodes that unfolded in a cascade. First, removing user fees and deploying professional CHWs in every cluster enabled participants to seek health sector care promptly and created a context of facilitated access. Second, health systems support to all CHWs and PHCs enabled equitable, respectful, quality healthcare, which motivated increased, rapid utilization. Third, proactive CHW home visits facilitated CHWs and participants to deliver and seek care, and build relationships, trust and expectations, but these mechanisms were also activated in both arms. Addressing multiple structural barriers to care, user fee removal, professional CHWs and upgraded clinics interacted with providers' and patients' agency to achieve rapid care and child survival in both arms. Proactive home visits expedited or compounded mechanisms that were activated and changed the context across arms.

Health System Performance

34. **Bull World Health Organ.** 2024 Jul 1; 102(7): 458–458A.

Editorial: Policy approaches to health system performance assessment
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Improving health system performance is a priority for policy-makers. As the population ages and the burden of chronic disease grows, governments are spending more on health-care provision. Unpredictable and catastrophic threats such as pandemics, extreme weather events and sociopolitical crises require resilient and adaptable health systems. Therefore, policy-makers need reliable and timely information to identify the strengths and weakness of health systems and a broad evidence base to help them shape policy approaches to achieve health system goals.
Health system performance assessment is a comprehensive evaluation process designed to measure how well a health system achieves its objectives and identify opportunities for improvement. The multifaceted nature of health systems, the diversity of data and stakeholders involved, and the dynamic and context-dependent environment in which health systems operate make these assessments a complex endeavour. While efforts to embed health system performance assessment in decision-making have recently intensified, innovative approaches that transform evidence into actionable policies are still needed.
Assessing performance requires identifying all components of a health system – and its boundaries. A clear framework for health system performance assessment can help identify which elements within the health system are important to measure, how these are linked to the system's ability to deliver objectives and what broader factors may affect performance.
In this theme issue, a perspective outlines the progress made in collecting information on the structure and functions of health systems, noting the gaps and arguing for more harmonization of information collected across health system performance assessment tools.
Another reveals the intersections with other sectors and advocates for a holistic view of these assessments, emphasizing that achieving health system goals can enhance overall societal well-being. To understand the effects of multisectoral interventions on health system performance, an article explores available literature. The specific challenges in using a health systems performance assessment framework to assess public health systems are also considered, as well as how to adapt these frameworks to country contexts and policy cycles.

A robust health system performance assessment is inextricably linked to data availability and quality. While measures of health inputs such as number of facilities may be broadly available across countries, quality metrics and patient-reported outcomes are not. A study reviews the indicator availability for primary care monitoring across five South Asian countries, highlighting existing data pockets and gaps, as well as issues with timeliness and harmonization. Another examines the use of DHIS2 – a web-based health management information system platform used in over 80 countries – for health service evaluation in three regions in Ethiopia, highlighting its potential for health system performance assessment at subnational level. A research study presents data from the People's Voice Survey to compare utilization, experience and confidence in health systems across 16 countries, exploring how people's perspectives can inform health system performance assessments. The use of the Hospital Consumer Assessment of Health Providers and Systems survey for performance assessment in Odisha, India is explored in another article. The paper finds that the factors influencing personal experience may vary even when the same tool is used, suggesting a need for caution in comparing such metrics across countries and even population groups within countries. Health systems performance assessments can provide evidence that can inform policy, as explored by one article presenting a country-level assessment from Oman. The complexities of health systems have led researchers to use analytic approaches to evaluate policies. An article outlines different methods that can be used, as well as promising new data sources, by leveraging digital technologies and big data for data collection and analysis. Health system comparisons are often used as a tool for drawing insights on the relative performance of health systems; one of the perspectives urges researchers to make better use of existing information on health system characteristics to identify the appropriate cross-country comparators for the questions being asked. Finally, an article provides a useful illustration of cross-country analysis that can examine and compare health system resilience. The articles in this issue highlight the importance of regular health systems performance assessment to inform policies that advance progress on health system objectives globally, and offer insights on associated data, methods and applications.

Articles in this theme issue:

Research

- Routine data in a primary care performance dashboard, Ethiopia; Catherine Arsenault, et al.
- Assessing the WHO-UNICEF primary health-care measurement framework; Bangladesh, India, Nepal, Pakistan and Sri Lanka; Neha Purohit, et al.
- Population assessment of health system performance in 16 countries; Margaret E Kruk, et al.
- Resilience dimensions in health system performance assessments, European Union; Milena Vainieri, et al.
- Patient satisfaction and value based purchasing in hospitals, Odisha, India; Liana Woskie, et al.

Systematic Reviews

- Multisectoral interventions and health system performance: a systematic review; I Nyoman Sutarsa, et al.

Lessons from the Field

- Health system performance assessment and reforms, Oman; Taavi Lai, et al.

Perspectives

- Health system evaluation: new options, opportunities and limits; Kevin Croke, et al.
- Performance assessment to improve public health systems; Jochen O Mierau, et al.
- How health systems contribute to societal goals; Rachel Greenley, et al.
- Analysis of health system characteristics needed before performance assessment; Ruth Waitzberg, et al.
- Policy questions as a guide for health systems' performance comparisons; Irene Papanicolas, et al.

HIV/AIDS

35. Lancet Glob Health. 2024 Aug;12(8):e1244-e1260.

HIV incidence among women engaging in sex work in sub-Saharan Africa: a systematic review and meta-analysis
Harriet S Jones et al, Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, UK. harriet.jones@lshtm.ac.uk.

Background: Women who engage in sex work in sub-Saharan Africa have a high risk of acquiring HIV infection. HIV incidence has declined among all women in sub-Saharan Africa, but trends among women who engage in sex work are poorly characterised. We synthesised data on HIV incidence among women who engage in sex work in sub-Saharan Africa and compared these with the total female population to understand relative incidence and trends over time.
Methods: We searched MEDLINE, Embase, Global Health, and Google Scholar from Jan 1, 1990, to Feb 28, 2024, and grey literature for studies that reported empirical estimates of HIV incidence among women who engage in sex work in any sub-Saharan Africa country. We calculated incidence rate ratios (IRRs) compared with total female population incidence estimates matched for age, district, and year, did a meta-analysis of IRRs, and used a continuous mixed-effects model to estimate changes in IRR over time.
Findings: From 32 studies done between 1985 and 2020, 2194 new HIV infections were observed among women who engage in sex work over 51 490 person-years. Median HIV incidence was 4·3 per 100 person years (IQR 2·8-7·0 per 100 person-years). Incidence among women who engage in sex work was eight times higher than matched total population women (IRR 7·8 [95% CI 5·1-11·8]), with larger relative difference in western and central Africa (19·9 [9·6-41·0]) than in eastern and southern Africa (4·9 [3·4-7·1]). There was no evidence that IRRs changed over time (IRR per 5 years: 0·9 [0·7-1·2]).
Interpretation: Across sub-Saharan Africa, HIV incidence among women who engage in sex work remains disproportionately high compared with the total female population. However, constant relative incidence over time indicates HIV incidence among women who engage in sex work has declined at a similar rate. Location-specific data for women who engage in sex work incidence are sparse, but improved surveillance and standardisation of incidence measurement approaches could fill these gaps. Sustained and enhanced HIV prevention for women who engage in sex work is crucial to address continuing inequalities and ensure declines in new HIV infections.

36. Lancet Glob Health. 2024 Sep;12(9):e1400-e1412.

Population size, HIV prevalence, and antiretroviral therapy coverage among key populations in sub-Saharan Africa: collation and synthesis of survey data, 2010-23
Oliver Stevens et al, MRC Centre for Global Infectious Disease Analysis, School of Public Health, Imperial College London, London, UK. o.stevens@imperial.ac.uk.

Background: Key population HIV programmes in sub-Saharan Africa require epidemiological information to ensure equitable and universal access to effective services. We aimed to consolidate and harmonise survey data among female sex workers, men who have sex with men, people who inject drugs, and transgender people to estimate key population size, HIV prevalence, and antiretroviral therapy (ART) coverage for countries in mainland sub-Saharan Africa.
Methods: Key population size estimates, HIV prevalence, and ART coverage data from 39 sub-Saharan Africa countries between 2010 and 2023 were collated from existing databases and verified against source documents. We used Bayesian mixed-effects spatial regression to model urban key population size estimates as a proportion of the gender-matched, year-matched, and area-matched population

aged 15-49 years. We modelled subnational key population HIV prevalence and ART coverage with age-matched, gender-matched, year-matched, and province-matched total population estimates as predictors.
Findings: We extracted 2065 key population size data points, 1183 HIV prevalence data points, and 259 ART coverage data points. Across national urban populations, a median of 1·65% (IQR 1·35-1·91) of adult cisgender women were female sex workers, 0·89% (0·77-0·95) were men who have sex with men, 0·32% (0·31-0·34) were men who injected drugs, and 0·10% (0·06-0·12) were women who were transgender. HIV prevalence among key populations was, on average, four to six times higher than matched total population prevalence, and ART coverage was correlated with, but lower than, the total population ART coverage with wide heterogeneity in relative ART coverage across studies. Across sub-Saharan Africa, key populations were estimated as comprising 1·2% (95% credible interval 0·9-1·6) of the total population aged 15-49 years but 6·1% (4·5-8·2) of people living with HIV.
Interpretation: Key populations in sub-Saharan Africa experience higher HIV prevalence and lower ART coverage, underscoring the need for focused prevention and treatment services. In 2024, limited data availability and heterogeneity constrain precise estimates for programming and monitoring trends. Strengthening key population surveys and routine data within national HIV strategic information systems would support more precise estimates.

37. N Engl J Med July 2024;391:343-355

Review Article: HIV-Associated Tuberculosis
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Untreated human immunodeficiency virus (HIV) infection mark¬edly increases the risk of tuberculosis, which remains the most common cause of hospitalization and death globally among people with HIV infec¬tion in the era of antiretroviral therapy (ART). Challenges related to diagnosing tuberculosis in people with HIV infection can result in diagnostic delays. Drug– drug interactions and immune reconstitution inflammatory syndrome (IRIS) complicate cotreatment of tuberculosis and HIV infection. Short regimens of rifa¬pentine-based preventive therapy are effective, but access to these regimens is limited. This review covers recent advances in research and international guide¬lines, with a focus on clinical issues in adults living in countries where the HIV and tuberculosis disease burden is high.
Key points:
• Almost half of inpatients with human immunodeficiency virus (HIV)–associated tuberculosis in countries with a high disease burden of HIV and tuberculosis have mycobacteremia, and features of sepsis are commonly present.
• Tuberculosis can be diagnosed rapidly with the use of molecular tests (e.g., the Xpert MTB/RIF assay) in sputum and a LAM assay in urine, which together detect more than two thirds of cases in unselected inpatients with HIV infection. Empirical tuberculosis treatment based on clinical and radiographic features is often needed in cases of severe illness, pending the results of mycobacterial cultures.
• Initiation of antiretroviral therapy in patients being treated for tuberculosis can cause the paradoxical tuberculosis-associated immune reconstitution inflammatory syndrome, manifested as new, recurrent, or worsening symptoms and signs of tuberculosis. The syndrome can be managed or prevented with glucocorticoids.
• Isoniazid therapy and newer regimens (including rifapentine and isoniazid) are similarly effective in preventing tuberculosis in people with HIV infection, but the shorter rifamycin-based regimens are associated with fewer hepatotoxic effects and are more likely to be completed than the isoniazid-based regimens.

38. TMIH 2024;29(9):792-800 doi: 10.1111/tmi.14031

Trends and correlates in HIV viral load monitoring and viral suppression among adolescents and young adults in Dar es Salaam, Tanzania
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Background: Adolescents and young adults (AYA) living with HIV have been shown to have lower rates of viral load testing and viral suppression as compared to older adults. We examined trends over time and predictors of HIV viral load monitoring and viral suppression among AYA in a large HIV treatment programme in Dar es Salaam, Tanzania.
Methods: We analysed longitudinal data of AYA aged 10-24 years initiated on antiretroviral therapy between January 2017 and October 2022. Trend models were used to assess changes in HIV viral load testing and viral suppression by calendar year. Generalised estimating equations were used to examine the relationship of sociodemographic and clinical factors with HIV viral load testing and viral suppression.
Results: Out of 15,759 AYA, the percentage of those who received a 6-month HIV viral load testing increased from 40.6% in 2017 to 64.7% in 2022 and, a notable annual increase of 5.6% ($p < 0.001$). A higher HIV viral load testing uptake was observed among 20- to 24-year-olds (87.7%) compared to 10- to 19-year-olds (80.2%) ($p < 0.001$). The likelihood of not receiving an HIV viral load test within 12 months of antiretroviral therapy initiation was higher among 10- to 19-year-olds (adjusted odds ratio [aOR] = 1.7; 95% confidence interval [CI] = 1.4-2.0), advanced HIV disease (aOR = 1.3; 95% CI = 1.12-1.53), normal nutrition status at enrolment aOR 2.6 (95% CI = 1.59-4.26) and initiation of non-nucleoside reverse transcriptase inhibitors regimen aOR 1.2 (95% CI = 1.08-1.34). The proportion of AYA with viral suppression increased from 83.0% in 2017 to 94.6% in 2022. Notably, the overall trend in viral suppression increased significantly at 2.4% annually. The risk of not achieving viral suppression was greater among 10- to 14-year-olds (aOR = 2; 95% CI = 1.75-2.43) and 15- to 19-year-olds (aOR = 1.4; 95% CI = 1.24-1.58) as compared to 20-24 years; being male (aOR = 1.16; 95% CI = 1.02-1.32); undernourished (aOR = 1.53; 95% CI = 1.17-1.99); in WHO Stage II (aOR = 1.16; 95% CI = 1.02-1.33) and III (aOR = 1.21; 95% CI = 1.03-1.42) and being on an non-nucleoside reverse transcriptase inhibitors regimen (aOR = 1.32; 95% CI = 1.18-1.48).
Conclusion: HIV viral load testing uptake at 6 months of antiretroviral therapy initiation and viral suppression increased from 2017 to 2022; however, overall HIV viral load testing was suboptimal. Demographic and clinical characteristics can be used to identify AYA at greater risk for not having HIV viral load test and not achieving viral suppression.

Conclusions (last paragraph of the article):
We found a modest increase in HIV viral load testing uptake at 6 months and within 12 months of antiretroviral treatment initiation and a high level of viral suppression approaching the third 95 UNAIDS target among AYA who had HIV viral load results in an urban setting in Tanzania. Notably, despite the increase in HIV viral load testing uptake, it is still suboptimal and requires special attention by the national antiretroviral treatment programme.
Non-uptake of HIV viral load testing within 12 months of antiretroviral treatment initiation was associated with adolescents aged 10–19 years, advanced HIV disease, normal nutrition and initiation of NNRTI-based regimen. Furthermore, non-viral suppression over time was associated with AYA aged 10–19 years, being male, undernourished and being in WHO Stages II and III. We recommend that targeted interventions are needed to improve HIV viral load testing among AYA in order to achieve HIV epidemic control in HIV population.

Malaria

39. Am J Trop Med Hyg. 2024 Jul 9;111(3):490-497.

Modeling the Impact of Proactive Community Case Management on Reducing Confirmed Malaria Cases in Sub-Saharan African Countries
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Malaria continues to be a major source of morbidity and mortality in sub-Saharan Africa. Timely, accurate, and effective case management is critical to malaria control. Proactive community case management (ProCCM) is a new strategy in which a community health worker "sweeps" a village, visiting households at defined intervals to proactively provide diagnostic testing and treatment if indicated. Pilot experiments have shown the potential of ProCCM for controlling malaria transmission; identifying the best strategy for administering ProCCM in terms of interval timings and number of sweeps could lead to further reductions in malaria infections. We developed an agent-based simulation to model malaria transmission and the impact of various ProCCM strategies. The model was validated using symptomatic prevalence data from a ProCCM pilot study in Senegal. Various ProCCM strategies were tested to evaluate the potential for reducing parasitologically confirmed symptomatic malaria cases in the Senegal setting. We found that weekly ProCCM sweeps during a 21-week transmission season could reduce cases by 36.3% per year compared with no sweeps. Alternatively, two initial fortnightly sweeps, seven weekly sweeps, and finally four fortnightly sweeps (13 sweeps total) could reduce confirmed malaria cases by 30.5% per year while reducing the number of diagnostic tests and corresponding costs by about 33%. Under a highly seasonal transmission setting, starting the sweeps early with longer duration and higher frequency would increase the impact of ProCCM, though with diminishing returns. The model is flexible and allows decision-makers to evaluate implementation strategies incorporating sweep frequency, time of year, and available budget.

40. Lancet Glob Health. 2024 Sep;12(9):e1456-e1469.

Community-based strategies to increase coverage of intermittent preventive treatment of malaria in pregnancy with sulfadoxine-pyrimethamine in sub-Saharan Africa: a systematic review, meta-analysis, meta-ethnography, and economic assessment
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Background: Community-based approaches might increase uptake of intermittent preventive treatment of malaria in pregnancy with sulfadoxine-pyrimethamine (IPTp-SP). We assessed the effects of community-based approaches on IPTp-SP and antenatal care coverage, and barriers and facilitators to implementation in sub-Saharan Africa.
Methods: We did a systematic review, meta-analysis, meta-ethnography, and economic assessment. We searched the WHO International Clinical Trials Registry Platform, PubMed, the Malaria in Pregnancy Library database, Medline, Global Health and Global Health Archives, and the Cochrane Library for trials, mixed-methods, qualitative, and cost-effectiveness studies of community health worker promotion of antenatal care, IPTp-SP delivery, or both, with no language restrictions, published before March 21, 2024. Information on interventions, number of IPTp-SP doses, antenatal care visits, and barriers and facilitators were extracted. We did a meta-analysis (random effects) comparing effects on two or more or three or more IPTp-SP doses and one or more or four or more antenatal care visits. We followed Noblit and Hare's method of meta-ethnography to synthesise qualitative findings, using reciprocal translation and line-of-argument synthesis. We developed a theory for increased community IPTp-SP uptake. We also summarised cost and cost-effectiveness studies. This study is registered with PROSPERO, CRD42022364114.

Findings: Of 4753 records screened, we included 23 (0·5%) reporting on 15 studies. Community health worker involvement was associated with an increase in two or more IPTp-SP doses (pooled risk ratio 1·48, [95% CI 1·24-1·75]; 12 sub-studies; I2 94·7%) and three or more IPTp-SP doses (1·73 [1·19-2·50]; ten sub-studies, I2 97·5%), with no decrease in four or more antenatal care visits (1·17 [1·00-1·36]; 13 sub-studies; I2 90·3%). Cluster-randomised controlled trials showed a lower increase in coverage of three or more IPTp-SP doses (1·08 [1·00-1·16]; I2 0·0%; six studies) compared with before-and-after studies (2·86 [1·29-6·33]; I2 98·9%; four studies; subgroup analysis p=0·019). Barriers to community health worker delivery of IPTp-SP included women's fear of side-effects, lack of knowledge, lack of trust in community health workers, and sociocultural factors. Community sensitisation, engagement of husbands, pre-established community health worker networks, and trained and supported community health workers facilitated IPTp-SP delivery by community health workers. Incremental cost-effectiveness ratios ranged from $1·1 to $543 per disability-adjusted life-year averted.
Interpretation: Community-based approaches increased IPTp-SP coverage and might have a positive effect on the number of antenatal care visits in addition to being cost-effective, although we found high heterogeneity among studies. Community sensitisation and engagement in addition to established, trained, and supported community health workers can facilitate acceptability, delivery, and uptake of IPTp-SP delivered by community health workers.

Mental Health

41. BMJ 2024;386:e081458 Editorials

Poor mental health among Nigeria's displaced young people
Oche Joseph Otorkpa, Correspondence to: O J Otorkpa drochejoseph@gmail.com
Targeted interventions are urgently required to deal with this growing crisis
The United Nations Refugee Agency (UNHCR) estimated in June 2024 that Nigerians account for roughly 3% of the world's displaced people. Ongoing conflicts and insecurity in several regions of Nigeria has resulted in the internal displacement of about 3.3 million people—around 1.65% of the total population—with children and young people among the most affected. In 2019, the UN Children's Fund (Unicef) reported that 1.9 million people were displaced in north east Nigeria alone; 60% of these were children, and one in four were under 5 years old.
An analysis of the current response by government and other stakeholders found that although the immediate physical needs of displaced young people have been given some attention, vital mental health support remains inadequate, especially in view of the growing number of violent events.

Non-communicable diseases

42. PLoS Med (May 2024) 21(5): e1004394

Predicted impact of banning nonessential, energy-dense food and beverages in schools in Mexico: A microsimulation study
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Background
Childhood obesity is a growing concern worldwide. School-based interventions have been proposed as effective means to improve nutritional knowledge and prevent obesity. In 2023, Mexico approved a reform to the General Education Law to strengthen the ban of sales and advertising of nonessential energy-dense food and beverages (NEDFBs) in schools and surroundings. We aimed to predict the

expected one-year change in total caloric intake and obesity prevalence by introducing the ban of NEDFBs sales in schools, among school-aged children and adolescents (6 to 17 years old) in Mexico.
Methods and findings
We used age-specific equations to predict baseline fat-free mass (FFM) and fat mass (FM) and then estimated total energy intake (TEI) per day. The TEI after the intervention was estimated under 4 scenarios: (1) using national data to inform the intervention effect; (2) varying law compliance; (3) using meta-analytic data to inform the intervention effect size on calories; and (4) using national data to inform the intervention effect by sex and socioeconomic status (SES). We used Hall's microsimulation model to estimate the potential impact on body weight and obesity prevalence of children and adolescents 1 year after implementing the intervention in Mexican schools. We found that children could reduce their daily energy intake by 33 kcal/day/person (uncertainty interval, UI, kcal/day/person), reducing on average 0.8 kg/person (UI [0.6, 1.0] kg/person) and 1.5 percentage points (pp) in obesity (UI [1.1, 1.9] pp) 1 year after implementing the law. We showed that compliance will be key to the success of this intervention: considering a 50% compliance the intervention effect could reduce 0.4 kg/person (UI [0.3, 0.5] kg/person). Our sensitivity analysis showed that the ban could reduce body weight by 1.3 kg/person (UI [0.8, 1.8] kg/person) and up to 5.4 kg/person (UI [3.4, 7.5] kg/person) in the best-case scenario. Study limitations include assuming that obesity and the contribution of NEDFBs consumed at school remain constant over time, assuming full compliance, and not considering the potential effect of banning NEDFBs in stores near schools.
Conclusions
Even in the most conservative scenario, banning sales of NEDFBs in schools is expected to significantly reduce obesity, but achieving high compliance will be key to its success.

Sexual Reproductive Health and Rights

43. BMJ Global Health 2024;9:e015349. Original research

At-home specimen self-collection as an additional testing strategy for chlamydia and gonorrhoea: a systematic literature review and meta-analysis
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Abstract
Introduction Chlamydia trachomatis (Ct) and Neisseria gonorrhoeae (Ng) infections are often asymptomatic; screening increases early detection and prevents disease, sequelae and further spread. To increase Ct and Ng testing, several countries have implemented specimen self-collection outside a clinical setting. While specimen self-collection at home is highly acceptable to patients and as accurate as specimens collected by healthcare providers, this strategy is new or not being used in some countries. To understand how offering at home specimen self-collection will affect testing uptake, test results, diagnosis and linkage to care, when compared with collection in clinical settings, we conducted a systematic literature review and meta-analysis of peer-reviewed studies.
Methods We searched Medline, Embase, Global Health, Cochrane Library, CINAHL (EBSCOHost), Scopus and Clinical Trials. Studies were included if they directly compared specimens self-collected at home or in other non-clinical settings to specimen collection at a healthcare facility (self or clinician) for Ct and/or Ng testing and evaluated the following outcomes: uptake in testing, linkage to care, and concordance (agreement) between the two settings for the same individuals. Risk of bias (RoB) was assessed using Cochrane Risk of Bias (RoB2) tool for randomised control trials (RCTs).
Results 19 studies, from 1998 to 2024, comprising 15 RCTs with a total of 62 369 participants and four concordance studies with 906 participants were included. Uptake of Ct or Ng testing was 2.61 times higher at home compared with clinical settings. There was a high concordance between specimens collected at home and in clinical settings, and linkage to care was not significantly different between the two settings (prevalence ratio 0.96 (95% CI 0.91–1.01)).

Conclusion Our meta-analysis and systematic literature review show that offering self-collection of specimens at home or in other non-clinical settings could be used as an additional strategy to increase sexually transmitted infection testing in countries that have not yet widely adopted this collection method.

44. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 831-840

From political priority to service delivery: complexities to real-life priority of abortion services in Ethiopia
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Improving access to abortion services has been coined a high priority by the Ethiopian Federal Ministry of Health. Nevertheless, many women are still struggling to access abortion services. The dedicated commitment to expanding abortion services by central authorities and the difficulties in further improving access to the services make for an interesting case to explore the real-life complexities of health priority setting. This article thus explores what it means to make abortion services a priority by drawing on in-depth interviews with healthcare bureaucrats and key stakeholders working closely with abortion service policy and implementation. Data were collected from February to April 2022. Health bureaucrats from 9 of the 12 regional states in Ethiopia and the Federal Ministry of Health were interviewed in addition to key stakeholders from professional organizations and NGOs. The study found that political will and priority to abortion services by central authorities were not necessarily enough to ensure access to the service across the health sector. At the regional and local level, there were considerable challenges with a lack of funding, equipment and human resources for implementing and expanding access to abortion services. The inadequacy of indicators and reporting systems hindered accountability and made it difficult to give priority to abortion services among the series of health programmes and priorities that local health authorities had to implement. The situation was further challenged by the contested nature of the abortion issue itself, both in the general population, but also amongst health bureaucrats and hospital leaders. This study casts a light on the complex and entangled processes of turning national-level priorities into on-the-ground practice and highlights the real-life challenges of setting and implementing health priorities.

45. PLoS Med (May 2024) 21(5): e1004364

Global, regional, and national burden of heatwave-related mortality from 1990 to 2019: A three-stage modelling study.
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Background
The regional disparity of heatwave-related mortality over a long period has not been sufficiently assessed across the globe, impeding the localisation of adaptation planning and risk management towards climate change. We quantified the global mortality burden associated with heatwaves at a spatial resolution of 0.5°×0.5° and the temporal change from 1990 to 2019.
Methods and findings
We collected data on daily deaths and temperature from 750 locations of 43 countries or regions, and 5 meta-predictors in 0.5°×0.5° resolution across the world. Heatwaves were defined as location-specific daily mean temperature ≥95th percentiles of year-round temperature range with duration ≥2

days. We first estimated the location-specific heatwave-mortality association. Secondly, a multivariate meta-regression was fitted between location-specific associations and 5 meta-predictors, which was in the third stage used with grid cell-specific meta-predictors to predict grid cell-specific association. Heatwave-related excess deaths were calculated for each grid and aggregated. During 1990 to 2019, 0.94% (95% CI: 0.68–1.19) of deaths [i.e., 153,078 cases (95% eCI: 109,950–194,227)] per warm season were estimated to be from heatwaves, accounting for 236 (95% eCI: 170–300) deaths per 10 million residents. The ratio between heatwave-related excess deaths and all premature deaths per warm season remained relatively unchanged over the 30 years, while the number of heatwave-related excess deaths per 10 million residents per warm season declined by 7.2% per decade in comparison to the 30-year average. Locations with the highest heatwave-related death ratio and rate were in Southern and Eastern Europe or areas had polar and alpine climates, and/or their residents had high incomes. The temporal change of heatwave-related mortality burden showed geographic disparities, such that locations with tropical climate or low incomes were observed with the greatest decline. The main limitation of this study was the lack of data from certain regions, e.g., Arabian Peninsula and South Asia.
Conclusions
Heatwaves were associated with substantial mortality burden that varied spatiotemporally over the globe in the past 30 years. The findings indicate the potential benefit of governmental actions to enhance health sector adaptation and resilience, accounting for inequalities across communities.

46. PLoS Med July 2024, 21(7): e1004421.

Association between achieving adequate antenatal care and health-seeking behaviors: A study of Demographic and Health Surveys in 47 low- and middle-income countries.
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Background
Antenatal care (ANC) is essential for ensuring the well-being of pregnant women and their fetuses. This study models the association between achieving adequate ANC and various health and health-seeking indicators across wealth quintiles in low- and middle-income countries (LMICs).
Methods and findings
We analyzed data from 638,265 women across 47 LMICs using available Demographic and Health Surveys from 2010 to 2022. Via multilevel logistic regression analyses adjusted for a series of confounding variables and country and wealth quintile fixed effects, we estimated the projected impact of achieving adequate ANC utilization and quality on a series of health and health care indicators: facility birth, postnatal care, childhood immunizations, and childhood stunting and wasting. Achieving adequate levels of ANC utilization and quality (defined as at least 4 visits, blood pressure monitoring, and blood and urine testing) was positively associated with health-seeking behavior across the majority of countries. The strongest association was observed for facility birth, followed by postnatal care and child immunization. The strength of the associations varied across countries and wealth quintiles, with more significant ones observed in countries with lower baseline ANC utilization levels and among the lower wealth quintiles. The associations of ANC with childhood stunting and wasting were notably less statistically significant compared to other indicators. Despite rigorous adjustments for potential confounders, a limitation to the methodology is that it is possible that unobserved variables may still impact outcomes.
Conclusions
Strengthening ANC is associated with improved use of other health care in LMICs. ANC could serve as a critical platform for improving health outcomes for mothers and their children, emphasizing its importance beyond direct impact on maternal and neonatal mortality.

47. PLoS Med August 2024, 21(8): e1004446.

Antenatal care quality and detection of risk among pregnant women: An observational study in Ethiopia, India, Kenya, and South Africa.
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Background
Antenatal care (ANC) is an essential platform to improve maternal and newborn health (MNH). While several articles have described the content of ANC in low- and middle-income countries (LMICs), few have investigated the quality of detection and management of pregnancy risk factors during ANC. It remains unclear whether women with pregnancy risk factors receive targeted management and additional ANC.
Methods and findings
This observational study uses baseline data from the MNH eCohort study conducted in 8 sites in Ethiopia, India, Kenya, and South Africa from April 2023 to January 2024. A total of 4,068 pregnant women seeking ANC for the first time in their pregnancy were surveyed. We built country-specific ANC completeness indices that measured provision of 16 to 22 recommended clinical actions in 5 domains: physical examinations, diagnostic tests, history taking and screening, counselling, and treatment and prevention. We investigated whether women with pregnancy risks tended to receive higher quality care and we assessed the quality of detection and management of 7 concurrent illnesses and pregnancy risk factors (anemia, undernutrition, obesity, chronic illnesses, depression, prior obstetric complications, and danger signs). ANC completeness ranged from 43% in Ethiopia, 66% in Kenya, 73% in India, and 76% in South Africa, with large gaps in history taking, screening, and counselling. Most women in Ethiopia, Kenya, and South Africa initiated ANC in second or third trimesters. We used country-specific multivariable mixed-effects linear regression models to investigate factors associated with ANC completeness. Models included individual demographics, health status, presence of risk factors, health facility characteristics, and fixed effects for the study site. We found that some facility characteristics (staffing, patient volume, structural readiness) were associated with variation in ANC completeness. In contrast, pregnancy risk factors were only associated with a 1.7 percentage points increase in ANC completeness (95% confidence interval 0.3, 3.0, p-value 0.014) in Kenya only. Poor self-reported health was associated with higher ANC completeness in India and South Africa and with lower ANC completeness in Ethiopia. Some concurrent illnesses and risk factors were overlooked during the ANC visit. Between 0% and 6% of undernourished women were prescribed food supplementation and only 1% to 3% of women with depression were referred to a mental health provider or prescribed antidepressants. Only 36% to 73% of women who had previously experienced an obstetric complication (a miscarriage, preterm birth, stillbirth, or newborn death) discussed their obstetric history with the provider during the first ANC visit. Although we aimed to validate self-reported information on health status and content of care with data from health cards, our findings may be affected by recall or other information biases.
Conclusions
In this study, we observed gaps in adherence to ANC standards, particularly for women in need of specialized management. Strategies to maximize the potential health benefits of ANC should target women at risk of poor pregnancy outcomes and improve early initiation of ANC in the first trimester.

Surgery

48. Lancet Glob Health. 2024 Sep 5:S2214-109X(24)00318-8.

Mechanisms and causes of death after abdominal surgery in low-income and middle-income countries: a secondary analysis of the FALCON trial
NIHR Global Health Research Unit on Global Surgery
Background: Death after surgery is devasting for patients, families, and communities, but remains common in low-income and middle-income countries (LMICs). We aimed to use high-quality data from an existing global randomised trial to describe the causes and mechanisms of postoperative mortality in LMICs. To do so, we developed a novel framework, learning from both existing classification systems and emerging insights during data analysis.
Methods: This study was a preplanned secondary analysis of the FALCON trial in 54 hospitals across seven LMICs (Benin, Ghana, India, Mexico, Nigeria, Rwanda, and South Africa). FALCON was a pragmatic, 2 × 2 factorial, randomised controlled trial that compared the effectiveness of two types of interventions for skin preparation (10% aqueous povidone-iodine vs 2% alcoholic chlorhexidine) and sutures (triclosan-coated vs uncoated). Patients who did not have surgery or were lost to follow-up were excluded (n=231). The primary outcomes of the present analysis were the mechanism and cause of death within 30-days of surgery, determined using a modified verbal autopsy strategy from serious adverse event reports. Factors associated with mortality were explored in a mixed-effects Cox proportional hazards model. The FALCON trial is registered with ClinicalTrials.gov, NCT03700749.
Findings: This preplanned secondary analysis of the FALCON trial included 5558 patients who underwent abdominal surgery, of whom 4248 (76·4%) patients underwent surgery in tertiary, referral centres and 1310 (23·6%) underwent surgery in primary referral (ie, district or rural) hospitals. 3704 (66·7%) of 5558 surgeries were emergent. 306 (5·5%) of 5558 patients died within 30 days of surgery. 226 (74%) of 306 deaths were due to circulatory system failure, which included 173 (57%) deaths from sepsis and 29 (9%) deaths from hypovolaemic shock including bleeding. 47 (15%) deaths were due to respiratory failure. 60 (20%) of 306 patients died without a clear cause of death: 45 (15%) patients died with sepsis of unknown origin and 15 (5%) patients died of an unknown cause. 46 (15%) of 306 patients died within 24 h, 111 (36%) between 24 h and 72 h, 57 (19%) between >72 h and 168 h, and 92 (30%) more than 1 week after surgery. 248 (81%) of 306 patients died in hospital and 58 (19%) patients died out of hospital. The adjusted Cox regression model identified age (hazard ratio 1·01, 95% CI 1·01-1·02; p<0·0001), ASA grade III-V (4·93, 3·45-7·03; p<0·0001), presence of diabetes (1·47, 1·04-2·41; p=0·033), being an ex-smoker (1·59, 1·10-2·30; p=0·013), emergency surgery (2·08, 1·45-2·98; p<0·0001), cancer (1·98, 1·42-2·76; p<0·0001), and major surgery (3·94, 2·30-6·75; p<0·0001) as risk factors for postoperative mortality INTERPRETATION: Circulatory failure leads to most deaths after abdominal surgery, with sepsis accounting for almost two-thirds. Variability in timing of death highlights opportunities to intervene throughout the perioperative pathway, including after hospital discharge. A high proportion of patients without a clear cause of death reflects the need to improve capacity to rescue and cure by strengthening perioperative systems.

Tuberculosis

49. Health Policy and Planning, Vol. 39 (8), October 2024, Pages 854-863

Estimation of potential social support requirement for tuberculosis patients in India
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Providing social support to tuberculosis (TB) patients is a recommended strategy as households having TB patients find themselves in a spiral of poverty because of high cost, huge income loss and several other economic consequences associated with TB treatment. However, there are few examples of social support globally. The Indian government introduced the 'Nikshay Poshan Yojana' scheme in 2018 to provide nutritional support for all registered TB patients. A financial incentive of 500 Indian Rupee (6 United States Dollars) per month was proposed to be transferred directly to the registered

beneficiaries' validated bank accounts. We examined the reach, timing, amount of benefit receipt and the extent to which the benefit alleviated catastrophic costs (used as a proxy to measure the impact on permanent economic welfare as catastrophic cost is the level of cost that is likely to result in a permanent negative economic impact on households) by interviewing 1482 adult drug-susceptible TB patients from 16 districts of four states during 2019 to 2023, using the methods recommended by the World Health Organization for estimating household costs of TB nationally. We also estimated the potential amount of social support required to achieve a zero catastrophic cost target. At the end of treatment, 31–54% of study participants received the benefit. In all, 34–60% of TB patients experienced catastrophic costs using different estimation methods and the benefit helped 2% of study participants to remain below the catastrophic cost threshold. A uniform benefit amount of Indian Rupee 10 000 (127 United States Dollars) for 6 months of treatment could reduce the incidence of catastrophic costs by 43%. To improve the economic welfare of TB patients, levels of benefit need to be substantially increased, which will have considerable budgetary impact on the TB programme. Hence, a targeted rather than universal approach may be considered. To maximize impact, at least half of the revised amount should be given immediately after treatment registration.

Mental Health

50. BMJ 2024;386:e081458 Editorials

Poor mental health among Nigeria's displaced young people
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Targeted interventions are urgently required to deal with this growing crisis
The United Nations Refugee Agency (UNHCR) estimated in June 2024 that Nigerians account for roughly 3% of the world's displaced people. Ongoing conflicts and insecurity in several regions of Nigeria has resulted in the internal displacement of about 3.3 million people—around 1.65% of the total population—with children and young people among the most affected. In 2019, the UN Children's Fund (Unicef) reported that 1.9 million people were displaced in north east Nigeria alone; 60% of these were children, and one in four were under 5 years old.
An analysis of the current response by government and other stakeholders found that although the immediate physical needs of displaced young people have been given some attention, vital mental health support remains inadequate, especially in view of the growing number of violent events.

Miscellaneous

51. BMJ 2024;386:e080474 Research

Effect of laughter exercise versus 0.1% sodium hyaluronic acid on ocular surface discomfort in dry eye disease: non-inferiority randomised controlled trial
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Abstract
Objective To assess efficacy and safety of laughter exercise in patients with symptomatic dry eye disease.
Design Non-inferiority randomised controlled trial.
Setting Recruitment was from clinics and community and the trial took place at Zhongshan Ophthalmic Center, Sun Yat-sen University, the largest ophthalmic centre in China, between 18 June 2020 to 8 January 2021.

Participants People with symptomatic dry eye disease aged 18-45 years with ocular surface disease index scores ranging from 18 to 80 and tear film break-up time of eight seconds or less.
Interventions Participants were randomised 1:1 to receive laughter exercise or artificial tears (0.1% sodium hyaluronic acid eyedrop, control group) four times daily for eight weeks. The laughter exercise group viewed an instructional video and participants were requested to vocalise the phrases “Hee hee hee, hah hah hah, cheese cheese cheese, cheek cheek cheek, hah hah hah hah hah hah” 30 times per five minute session. Investigators assessing study outcomes were masked to group assignment but participants were unmasked for practical reasons.
Main outcome measures The primary outcome was the mean change in the ocular surface disease index (0-100, higher scores indicating worse ocular surface discomfort) from baseline to eight weeks in the per protocol population. The non-inferiority margin was 6 points of this index score. Main secondary outcomes included the proportion of patients with a decrease from baseline in ocular surface disease index score of at least 10 points and changes in dry eye disease signs, for example, non-invasive tear break up time at eight weeks.
Results 299 participants (mean age 28.9 years; 74% female) were randomly assigned to receive laughter exercise (n=149) or 0.1% sodium hyaluronic acid (n=150). 283 (95%) completed the trial. The mean change in ocular surface disease index score at eight weeks was −10.5 points (95% confidence interval (CI) −13.1 to −7.82) in the laughter exercise group and −8.83 (−11.7 to −6.02) in the control group. The upper boundary of the CI for difference in change between groups was lower than the non-inferiority margin (mean difference −1.45 points (95% CI −5.08 to 2.19); P=0.43), supporting non-inferiority. Among secondary outcomes, the laughter exercise was better in improving non-invasive tear break up time (mean difference 2.30 seconds (95% CI 1.30 to 3.30), P<0.001); other secondary outcomes showed no significant difference. No adverse events were noted in either study group.
Conclusions The laughter exercise was non-inferior to 0.1% sodium hyaluronic acid in relieving subjective symptoms in patients with dry eye disease with limited corneal staining over eight weeks intervention.