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Child Health / iCCM

1. Am J TMH 2016 Jan 19. pii: 15-0584 [Epub ahead of print]

Independent Evaluation of the integrated Community Case Management of Childhood Illness Strategy in Malawi Using a National Evaluation Platform Design

Amouzou A et al., Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland <jbryce1@jhu.edu>

We evaluated the impact of integrated case management of childhood illness (integrated Community Case Management [iCCM]) on careseeking for childhood illness and child mortality in Malawi, using a National Evaluation Platform dose-response design with 27 districts as units of analysis. "Dose" variables included density of iCCM providers, drug availability, and supervision, measured through a cross-sectional cellular telephone survey of all iCCM-trained providers. "Response" variables were changes between 2010 and 2014 in careseeking and mortality in children aged 2-59 months, measured through household surveys. iCCM implementation strength was not associated with changes in careseeking or mortality. There were fewer than one iCCM-ready provider per 1,000 under-five children per district. About 70% of sick children were taken outside the home for care in both 2010 and 2014. Careseeking from iCCM providers increased over time from about 2-10%; careseeking from other providers fell by a similar amount. Likely contributors to the failure to find impact include low density of iCCM providers, geographic targeting of iCCM to "hard-to-reach" areas although women did not identify distance from a provider as a barrier to health care, and displacement of facility careseeking by iCCM careseeking. This suggests that targeting iCCM solely based on geographic barriers may need to be reconsidered.

2. BMJ 2015;5:e009111

Incidence of childhood pneumonia: facility-based surveillance estimate compared to measured incidence in a South African birth cohort study

le Roux DM et al., Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital and MRC Unit on Child and Adolescent Health, University of Cape Town, Cape Town, Western Cape, South Africa <Dave.leRoux@uct.ac.za>

Background. Pneumonia is the leading cause of childhood mortality and a major contributor to childhood morbidity, but accurate measurement of pneumonia incidence is challenging. We compared pneumonia incidence using a facility-based surveillance system to estimates from a cohort study conducted contemporaneously in the same community in Cape Town, South Africa.
Methods. A surveillance system was developed in six public sector primary care clinics and in a regional referral hospital, to detect childhood pneumonia cases. Nurses recorded all children presenting to facilities who met WHO case definitions of pneumonia, and hospital records were reviewed. Estimates of pneumonia incidence and severity were compared with incidence rates based on active surveillance in the Drakenstein Child Health Study.
Results. From June 2012 until September 2013, the surveillance system detected 306 pneumonia episodes in children under 1 year of age, an incidence of 0.20 episodes/child-year (e/cy) (95% CI 0.17 to 0.22 e/cy). The incidence in the cohort study from the same period was 0.27 e/cy (95% CI 0.23 to 0.32 e/cy). Pneumonia incidence in the surveillance system was almost 30% lower than in the birth cohort; incidence rate ratio 0.72 (95% CI 0.58 to 0.89). In the surveillance system, 18% were severe pneumonia cases, compared to 23% in the birth cohort, rate ratio 0.81 (95% CI 0.55 to 1.18).
Conclusions. In this setting, facility-based pneumonia surveillance detected fewer cases of pneumonia, and fewer severe cases, compared to the corresponding cohort study. Facility pneumonia surveillance using data collected by local healthcare workers provides a useful estimate of the epidemiology of childhood pneumonia but may underestimate incidence and severity.

3. BMJ 2015;5:e009005

Prevalence and differentials of overweight and obesity in preschool children in Sub-Saharan Africa

Gebremedhin S, School of Public and Environmental Health, Hawassa University, Hawassa, Ethiopia <samsongmgs@yahoo.com>

Objective. To determine the prevalence and differentials of overweight/obesity (body mass index (BMI)-for-age z-score >2) in preschool children in Sub-Saharan Africa (SSA).
Design Cross-sectional study.
Setting. The study was conducted on the basis of the data of 26 Demographic and Health Surveys carried out in SSA since 2010.
Participants. The records of 155 726 children aged 0–59 months were included in the analysis.
Primary outcome. Overweight/obesity.
Results. The prevalence of overweight/obesity was 6.8% (95% CI 6.7% to 6.9%). Among the countries represented, higher figures were reported in Sierra Leone (16.9%), Comoros (15.9%) and Malawi (14.5%), whereas lower prevalence was found in Ethiopia (3.0%), Togo (2.6) and Senegal (2.0%). In 11 of the countries, overweight/obesity was more prevalent than wasting. It is estimated that in the whole subcontinent, 10.7 million children were affected by the problem. The prevalence of overweight/obesity was slightly higher in boys than in girls. Overweight/obesity was three times more frequent in stunted children than in normal children. The risk also significantly increased with increasing maternal BMI and birth weight and decreased with increasing maternal age, maternal education, child's age and number of siblings. On the other hand, no significant association was observed with national gross domestic product per capita, place of residence (urban–rural) and household wealth index.
Conclusion. Childhood overweight/obesity has become a sizeable problem in the subcontinent.

4. HPP 2015;30(10):1334-41

Perceptions of usage and unintended consequences of provision of ready-to-use therapeutic food for management of severe acute child malnutrition. A qualitative study in Southern Ethiopia

Tadesse E et al., International Maternal and Child Health Uppsala University, Sweden <Lotta.Ekstrom@kbh.uu.se>

Background: Severe acute child malnutrition (SAM) is associated with high risk of mortality. To increase programme effectiveness in management of SAM, community-based management of acute malnutrition (CMAM) programme that treats SAM using ready-to-use-therapeutic foods (RUTF) has been scaled-up and integrated into existing government health systems. The study aimed to examine caregivers' and health workers perceptions of usages of RUTF in a chronically food insecure area in South Ethiopia.
Methods: This qualitative study recorded, transcribed and translated focus group discussions and individual interviews with caregivers of SAM children and community health workers (CHWs). Data were complemented with field notes before qualitative content analysis was applied.
Results: RUTF was perceived and used as an effective treatment of SAM; however, caregivers also see it as food to be shared and when necessary a commodity to be sold for collective benefits for the household. Caregivers expected prolonged provision of RUTF to contribute to household resources, while the programme guidelines prescribed RUTF as a short-term treatment to an acute condition in a child. To get prolonged access to RUTF caregivers altered the identities of SAM children and sought multiple admissions to CMAM programme at different health posts that lead to various control measures by the CHWs.
Conclusion: Even though health workers provide RUTF as a treatment for SAM children, their caregivers use it also for meeting broader food and economic needs of the household endangering the effectiveness of CMAM programme. In chronically food insecure contexts, interventions that also address economic and food needs of entire household are essential to ensure successful treatment of SAM children. This may need a shift to view SAM as a symptom of broader problems affecting a family rather than a disease in an individual child.

5. HPP 2015;30 (suppl 2):ii1-ii2, Editorial

Policy analysis—important for improving iCCM implementation; essential for success of global health efforts

Rasanathan K, Senior Health Specialist, Health Section, UNICEF, New York
<krasanathan@unicef.org>

(Abridged)
In the introductory paper of this supplement (Integrated Community Case Management: A Lens on Health Policy Processes in Sub-Saharan Africa) on policy analyses of integrated community case management of childhood illness (iCCM), we argue that 'the continued neglect of policy analysis in policy design, implementation and evaluation contributes to inappropriate decisions, ineffective programmes and inequitable consequences hindering our ability to reach widely endorsed global health goals' (George et al. 2015). The manuscripts contained in this issue provide important insights not only into how iCCM programmes can be better designed and implemented but also on how national and global health actors can take local context and policy considerations into greater account to improve the chance of their efforts being successful, regardless of the intervention.
Along with our co-funders, UNICEF's primary interest in supporting this work was to identify (in a few key countries) factors that have hindered or supported policy and programme development regarding iCCM.

6. HHP 2015;30 (suppl 2):ii3-ii11

iCCM policy analysis: strategic contributions to understanding its character, design and scale up in sub-Saharan Africa

George A et al., Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA
<ageorg22@jhu.edu>

Pneumonia, diarrhoea and malaria remain leading causes of death for children under 5 years of age and access to effective and appropriate treatment for sick children is extremely low where it is needed most. Integrated community case management (iCCM) enables community health workers to provide basic lifesaving treatment for sick children living in remote communities for these diseases. While many governments in sub-Saharan Africa recently changed policies to support iCCM, large variations in implementation remain. As a result, the collaboration represented in this supplement examined the policy processes underpinning iCCM through qualitative case study research in six purposively identified countries (Niger, Burkina Faso, Mali, Kenya, Malawi and Mozambique) and the global context. We introduce the supplement, by reviewing how policy analysis can inform: (a) how we frame iCCM and negotiate its boundaries, (b) how we tailor iCCM for national health systems and (c) how we foster accountability and learning for iCCM. In terms of framing, iCCM boundaries reflect how an array of actors use evidence to prioritize particular aspects of child mortality (lack of access to treatment), and how this underpins the ability to reach consensus and legitimate specific policy enterprises. When promoted at national level, contextual health system factors, such as the profile of CHWs and the history of primary health care, cannot be ignored. Adaptation to these contextual realities may lead to unintended consequences not forseen by technical or managerial expertize alone. Further scaling up of iCCM requires understanding of the political accountabilities involved, how ownership can be fostered and learning for improved policies and programs sustained. Collectively these articles demonstrate that iCCM, although often compartmentalized as a technical intervention, also reflects the larger and messier real world of health politics, policy and practice, for which policy analysis is vital, as an integral component of public health programming.

Communicable diseases

7. Lancet 2015;386(10009):2204–21

Will Ebola change the game? Ten essential reforms before the next pandemic. The report of the Harvard-LSHTM Independent Panel on the Global Response to Ebola

Moon S et al., Harvard Global Health Institute, Harvard University, Boston, MA, USA
<smoon@hsph.harvard.edu>

Summary of recommendations
Preventing major outbreaks

1. Develop a global strategy to invest in, monitor, and sustain national core capacities
2. Strengthen incentives for early reporting of outbreaks and science-based justifications for trade and travel restrictions
Responding to major outbreaks
3. Create a unified WHO Centre for Emergency Preparedness and Response with clear responsibility, adequate capacity, and strong lines of accountability
4. Broaden responsibility for emergency declarations to a transparent, politically protected Standing Emergency Committee
5. Institutionalise accountability by creating an independent Accountability Commission for Disease Outbreak Prevention and Response
Research: producing and sharing data, knowledge, and technology
6. Develop a framework of rules to enable, govern, and ensure access to the benefits of research
7. Establish a global facility to finance, accelerate, and prioritise research and development
Governing the global system
8. Sustain high-level political attention through a Global Health Committee of the Security Council
9. A new deal for a more focused, appropriately financed WHO
10. Good governance of WHO through decisive, time bound reform and assertive leadership

Gender

8. PLoS Med 2015;12(11):e100190

Mass HIV Treatment and Sex Disparities in Life Expectancy: Demographic Surveillance in Rural South Africa

Bor J et al., Boston University School of Public Health, Boston, Massachusetts, USA <jbor@bu.edu>

Background: Women have better patient outcomes in HIV care and treatment than men in sub-Saharan Africa. We assessed—at the population level—whether and to what extent mass HIV treatment is associated with changes in sex disparities in adult life expectancy, a summary metric of survival capturing mortality across the full cascade of HIV care. We also determined sex-specific trends in HIV mortality and the distribution of HIV-related deaths in men and women prior to and at each stage of the clinical cascade.
Methods and Findings: Data were collected on all deaths occurring from 2001 to 2011 in a large population-based surveillance cohort (52,964 women and 45,688 men, ages 15 y and older) in rural KwaZulu-Natal, South Africa. Cause of death was ascertained by verbal autopsy (93% response rate). Demographic data were linked at the individual level to clinical records from the public sector HIV treatment and care program that serves the region. Annual rates of HIV-related mortality were assessed for men and women separately, and female-to-male rate ratios were estimated in exponential hazard models. Sex-specific trends in adult life expectancy and HIV-cause-deleted adult life expectancy were calculated. The proportions of HIV deaths that accrued to men and women at different stages in the HIV cascade of care were estimated annually.
Following the beginning of HIV treatment scale-up in 2004, HIV mortality declined among both men and women. Female adult life expectancy increased from 51.3 y (95% CI 49.7, 52.8) in 2003 to 64.5 y (95% CI 62.7, 66.4) in 2011, a gain of 13.2 y. Male adult life expectancy increased from 46.9 y (95% CI 45.6, 48.2) in 2003 to 55.9 y (95% CI 54.3, 57.5) in 2011, a gain of 9.0 y. The gap between female and male adult life expectancy doubled, from 4.4 y in 2003 to 8.6 y in 2011, a difference of 4.3 y (95% CI 0.9, 7.6). For women, HIV mortality declined from 1.60 deaths per 100 person-years (95% CI 1.46, 1.75) in 2003 to 0.56 per 100 person-years (95% CI 0.48, 0.65) in 2011. For men, HIV-related mortality declined from 1.71 per 100 person-years (95% CI 1.55, 1.88) to 0.76 per 100 person-years (95% CI 0.67, 0.87) in the same period. The female-to-male rate ratio for HIV mortality declined from 0.93 (95% CI 0.82–1.07) in 2003 to 0.73 (95% CI 0.60–0.89) in 2011, a statistically significant decline ($p = 0.046$). In 2011, 57% and 41% of HIV-related deaths occurred among men and women, respectively, who had never sought care for HIV in spite of the widespread availability of free HIV treatment. The results presented here come from a poor rural setting in southern Africa with high HIV prevalence and high HIV treatment coverage; broader generalizability is unknown. Additionally, factors other than HIV treatment scale-up may have influenced population mortality trends.

Conclusions: Mass HIV treatment has been accompanied by faster declines in HIV mortality among women than men and a growing female–male disparity in adult life expectancy at the population level. In 2011, over half of male HIV deaths occurred in men who had never sought clinical HIV care. Interventions to increase HIV testing and linkage to care among men are urgently needed.

9. PLoS Med 2015;12(11):e1001906

The Missing Men: HIV Treatment Scale-Up and Life Expectancy in Sub-Saharan Africa

Tsai AC et al., Department of Psychiatry, Massachusetts General Hospital, Boston, Massachusetts, USA <actsai@partners.org>

Perspective (abridged)

Delivery of effective HIV antiretroviral therapy (ART) to the more than 6 million persons with HIV in South Africa is well underway, with early data on the impact of this massive public health effort demonstrating a reversal of the previous decade's precipitous decline in population life expectancy. Although South Africa's age and sex disparities in HIV acquisition have traditionally been described as disadvantaging young women, accumulating evidence now suggests a reverse disparity: although HIV care is available to both men and women and is nominally free of charge, women are more likely to be tested for HIV, engage in pre-treatment care, initiate treatment earlier, stay on treatment, and survive. To adopt the classic Eisenberg and Power analogy of health care as current flowing through an electric circuit, the voltage drops along the entire circuit of HIV care, from HIV infection to AIDS-free survival, are larger for men compared with women. There are simply too many missing men.

In recent years, studies from South Africa, as well as Rwanda and Uganda, have begun to demonstrate the cumulative impact of these voltage drops, which, in total, result in an approximately 10-year life expectancy gap between men and women initiating ART at 20 years of age.

What could explain these findings? Certainly women's differential access to HIV care during pregnancy might be partially responsible. South Africa's successful program for preventing mother-to-child transmission largely requires HIV testing for all pregnant women and encourages ART initiation among those found to be HIV positive. This institutional link to program entry could partially explain why more than half of HIV-related mortality events among men in 2007–2011 occurred during the pre-treatment period, compared with only one-third of HIV-related mortality events among women. However, because the lower HIV-related mortality rates among women persisted even after accounting for age, CD4 count, and ART initiation, clearly more data are needed to explain the widening gender gap in life expectancy. Other major contributions likely result from historically ingrained social forces (such as increased migratory needs resulting from apartheid) and differential patterns of health behavior. Even in the absence of these crippling disadvantages, a gender gap in life expectancy may yet remain, but the data presented by Bor and colleagues signal the urgent need to better understand this large and widening disparity in South Africa and elsewhere in sub-Saharan Africa.

What can be done to address this problem? Different types of interventions should be considered. Minimally, policies could be revised to "nudge" men into HIV care; for example, opt-out HIV testing among military service members could be mandated as part of annual examinations or after deployments, peacekeeping missions, or foreign trainings. Home-based HIV counseling and testing can potentially provide a greater degree of privacy for men concerned about discrimination, or by providing convenience for men whose willingness to undergo testing is constrained by work obligations. Similarly, workplace-based treatment programs or alternative patient-centered care models may help to retain men in care once treatment has been initiated. And finally, social marketing to emphasize collateral impacts—such as economic benefits for individuals and their households or reduced risks of secondary transmission to domestic partners and/or unborn children—may provide additional impetus for testing and treatment. Of note, while these "gender sensitive" intervention strategies attempt to minimize the ways in which socially constructed gender roles in South Africa constrain men's health behavior, they still leave intact a system of gender inequality that confers distinct health disadvantages for women while simultaneously marshaling other threats to the health of men. Truly "gender transformative" intervention strategies will need to understand men's health behavior as being intimately tied to the same prevailing gender roles and norms of masculinity that produce violence against women, constraints on capital ownership, alcohol and substance abuse, and

sexual risk taking. Given the complexity of the problem, multipronged approaches will likely be needed. Certainly, the AIDS-free generation will remain a far-off mirage until men also receive the health benefits made possible through the mass provision of HIV treatment, which somehow remains out of reach for too many of them.

10. RHM 2015;23(46):62-70

"Sex is sweet": women from low-income contexts in Uganda talk about sexual desire and pleasure

Muhanguzi FK, School of Women and Gender Studies, Makerere University, Kampala, Uganda <floramuha@yahoo.com>

Abstract: In many patriarchal societies in Africa, heterosexuality is privileged as the single legitimate form of sexual interaction; other sexualities are marginalised because they are perceived as un-African, abnormal, sinful and are repressed. Female sexuality too is subordinated and controlled with it being reduced to women's conventional mothering roles that are conflated with their reproductive capacities. However, there is evidence that women in heterosexual relations have the opportunity to assert themselves and to define pleasurable sex. Drawing on in-depth interviews and focus group discussions with married women in heterosexual unions the article examines the extent to which women from low-income contexts in Uganda express their sexual agency. The findings show that within heterosexual relations, these women are able to express their sexual desires freely and negotiate diverse options for pleasurable sexual experiences. The evidence indicates the need for acknowledging variations within heterosexual experiences and the possibility of positive heterosexual relationships that resist hegemonic masculinity and subordinated femininity.

Global burden of disease study

11. Lancet 2015;386(10010):2287-323

Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013

GBD 2013 Risk Factors Collaborators

Background: The Global Burden of Disease, Injuries, and Risk Factor study 2013 (GBD 2013) is the first of a series of annual updates of the GBD. Risk factor quantification, particularly of modifiable risk factors, can help to identify emerging threats to population health and opportunities for prevention. The GBD 2013 provides a timely opportunity to update the comparative risk assessment with new data for exposure, relative risks, and evidence on the appropriate counterfactual risk distribution.

Methods: Attributable deaths, years of life lost, years lived with disability, and disability-adjusted life-years (DALYs) have been estimated for 79 risks or clusters of risks using the GBD 2010 methods. Risk-outcome pairs meeting explicit evidence criteria were assessed for 188 countries for the period 1990-2013 by age and sex using three inputs: risk exposure, relative risks, and the theoretical minimum risk exposure level (TMREL). Risks are organised into a hierarchy with blocks of behavioural, environmental and occupational, and metabolic risks at the first level of the hierarchy. The next level in the hierarchy includes nine clusters of related risks and two individual risks, with more detail provided at levels 3 and 4 of the hierarchy. Compared with GBD 2010, six new risk factors have been added: handwashing practices, occupational exposure to trichloroethylene, childhood wasting, childhood stunting, unsafe sex, and low glomerular filtration rate. For most risks, data for exposure were synthesised with a Bayesian meta-regression method, DisMod-MR 2.0, or spatial-temporal Gaussian process regression. Relative risks were based on meta-regressions of published cohort and intervention studies. Attributable burden for clusters of risks and all risks combined took into account evidence on the mediation of some risks such as high body-mass index (BMI) through other risks such as high systolic blood pressure and high cholesterol.

Findings: All risks combined account for 57·2% (95% uncertainty interval [UI] 55·8-58·5) of deaths and 41·6% (40·1-43·0) of DALYs. Risks quantified account for 87·9% (86·5-89·3) of cardiovascular

disease DALYs, ranging to a low of 0% for neonatal disorders and neglected tropical diseases and malaria. In terms of global DALYs in 2013, six risks or clusters of risks each caused more than 5% of DALYs: dietary risks accounting for 11·3 million deaths and 241·4 million DALYs, high systolic blood pressure for 10·4 million deaths and 208·1 million DALYs, child and maternal malnutrition for 1·7 million deaths and 176·9 million DALYs, tobacco smoke for 6·1 million deaths and 143·5 million DALYs, air pollution for 5·5 million deaths and 141·5 million DALYs, and high BMI for 4·4 million deaths and 134·0 million DALYs. Risk factor patterns vary across regions and countries and with time. In sub-Saharan Africa, the leading risk factors are child and maternal malnutrition, unsafe sex, and unsafe water, sanitation, and handwashing. In women, in nearly all countries in the Americas, north Africa, and the Middle East, and in many other high-income countries, high BMI is the leading risk factor, with high systolic blood pressure as the leading risk in most of Central and Eastern Europe and south and east Asia. For men, high systolic blood pressure or tobacco use are the leading risks in nearly all high-income countries, in north Africa and the Middle East, Europe, and Asia. For men and women, unsafe sex is the leading risk in a corridor from Kenya to South Africa.
Interpretation: Behavioural, environmental and occupational, and metabolic risks can explain half of global mortality and more than one-third of global DALYs providing many opportunities for prevention. Of the larger risks, the attributable burden of high BMI has increased in the past 23 years. In view of the prominence of behavioural risk factors, behavioural and social science research on interventions for these risks should be strengthened. Many prevention and primary care policy options are available now to act on key risks.

12. Lancet 2015;386(10010):2275-86

Global, regional, and national levels and trends in under-5 mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation

You D et al., Division of Data, Research, and Policy, UNICEF, New York, NY, USA <dyou@unicef.org>

Background: In 2000, world leaders agreed on the Millennium Development Goals (MDGs). MDG 4 called for a two-thirds reduction in the under-5 mortality rate between 1990 and 2015. We aimed to estimate levels and trends in under-5 mortality for 195 countries from 1990 to 2015 to assess MDG 4 achievement and then intended to project how various post-2015 targets and observed rates of change will affect the burden of under-5 deaths from 2016 to 2030.
Methods: We updated the UN Inter-agency Group for Child Mortality Estimation (UN IGME) database with 5700 country-year datapoints. As of July, 2015, the database contains about 17 000 country-year datapoints for mortality of children younger than 5 years for 195 countries, and includes all available nationally-representative data from vital registration systems, population censuses, household surveys, and sample registration systems. We used these data to generate estimates, with uncertainty intervals, of under-5 (age 0-4 years) mortality using a Bayesian B-spline bias-reduction model (B3 model). This model includes a data model to adjust for systematic biases associated with different types of data sources. To provide insights into the global and regional burden of under-5 deaths associated with post-2015 targets, we constructed five scenario-based projections for under-5 mortality from 2016 to 2030 and estimated national, regional, and global under-5 mortality rates up to 2030 for each scenario.
Results: The global under-5 mortality rate has fallen from 90·6 deaths per 1000 livebirths (90% uncertainty interval 89·3-92·2) in 1990 to 42·5 (40·9-45·6) in 2015. During the same period, the annual number of under-5 deaths worldwide dropped from 12·7 million (12·6 million-13·0 million) to 5·9 million (5·7 million-6·4 million). The global under-5 mortality rate reduced by 53% (50-55%) in the past 25 years and therefore missed the MDG 4 target. Based on point estimates, two regions-east Asia and the Pacific, and Latin America and the Caribbean-achieved the MDG 4 target. 62 countries achieved the MDG 4 target, of which 24 were low-income and lower-middle income countries. Between 2016 and 2030, 94·4 million children are projected to die before the age of 5 years if the 2015 mortality rate remains constant in each country, and 68·8 million would die if each country continues to reduce its mortality rate at the pace estimated from 2000 to 2015. If all countries achieve the Sustainable Development Goal of an under-5 mortality rate of 25 or fewer deaths per 1000

livebirths by 2030, we project 56·0 million deaths by 2030. About two-thirds of all sub-Saharan African countries need to accelerate progress to achieve this target.
Interpretation: Despite substantial progress in reducing child mortality, concerted efforts remain necessary to avoid preventable under-5 deaths in the coming years and to accelerate progress in improving child survival further. Urgent actions are needed most in the regions and countries with high under-5 mortality rates, particularly those in sub-Saharan Africa and south Asia.

13. Lancet 2015;386(10009):2145–91

Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition

GBD 2013 DALYs and HALE Collaborators, Murray CJ et al.

Background: The Global Burden of Disease Study 2013 (GBD 2013) aims to bring together all available epidemiological data using a coherent measurement framework, standardised estimation methods, and transparent data sources to enable comparisons of health loss over time and across causes, age-sex groups, and countries. The GBD can be used to generate summary measures such as disability-adjusted life-years (DALYs) and healthy life expectancy (HALE) that make possible comparative assessments of broad epidemiological patterns across countries and time. These summary measures can also be used to quantify the component of variation in epidemiology that is related to sociodemographic development.
Methods: We used the published GBD 2013 data for age-specific mortality, years of life lost due to premature mortality (YLLs), and years lived with disability (YLDs) to calculate DALYs and HALE for 1990, 1995, 2000, 2005, 2010, and 2013 for 188 countries. We calculated HALE using the Sullivan method; 95% uncertainty intervals (UIs) represent uncertainty in age-specific death rates and YLDs per person for each country, age, sex, and year. We estimated DALYs for 306 causes for each country as the sum of YLLs and YLDs; 95% UIs represent uncertainty in YLL and YLD rates. We quantified patterns of the epidemiological transition with a composite indicator of sociodemographic status, which we constructed from income per person, average years of schooling after age 15 years, and the total fertility rate and mean age of the population. We applied hierarchical regression to DALY rates by cause across countries to decompose variance related to the sociodemographic status variable, country, and time.
Findings: Worldwide, from 1990 to 2013, life expectancy at birth rose by 6·2 years (95% UI 5·6-6·6), from 65·3 years (65·0-65·6) in 1990 to 71·5 years (71·0-71·9) in 2013, HALE at birth rose by 5·4 years (4·9-5·8), from 56·9 years (54·5-59·1) to 62·3 years (59·7-64·8), total DALYs fell by 3·6% (0·3-7·4), and age-standardised DALY rates per 100 000 people fell by 26·7% (24·6-29·1). For communicable, maternal, neonatal, and nutritional disorders, global DALY numbers, crude rates, and age-standardised rates have all declined between 1990 and 2013, whereas for non-communicable diseases, global DALYs have been increasing, DALY rates have remained nearly constant, and age-standardised DALY rates declined during the same period. From 2005 to 2013, the number of DALYs increased for most specific non-communicable diseases, including cardiovascular diseases and neoplasms, in addition to dengue, food-borne trematodes, and leishmaniasis; DALYs decreased for nearly all other causes. By 2013, the five leading causes of DALYs were ischaemic heart disease, lower respiratory infections, cerebrovascular disease, low back and neck pain, and road injuries. Sociodemographic status explained more than 50% of the variance between countries and over time for diarrhoea, lower respiratory infections, and other common infectious diseases; maternal disorders; neonatal disorders; nutritional deficiencies; other communicable, maternal, neonatal, and nutritional diseases; musculoskeletal disorders; and other non-communicable diseases. However, sociodemographic status explained less than 10% of the variance in DALY rates for cardiovascular diseases; chronic respiratory diseases; cirrhosis; diabetes, urogenital, blood, and endocrine diseases; unintentional injuries; and self-harm and interpersonal violence. Predictably, increased sociodemographic status was associated with a shift in burden from YLLs to YLDs, driven by declines in YLLs and increases in YLDs from musculoskeletal disorders, neurological disorders, and mental and substance use disorders. In most country-specific estimates, the increase in life expectancy was greater than that in HALE. Leading causes of DALYs are highly variable across countries.

Interpretation: Global health is improving. Population growth and ageing have driven up numbers of DALYs, but crude rates have remained relatively constant, showing that progress in health does not mean fewer demands on health systems. The notion of an epidemiological transition--in which increasing sociodemographic status brings structured change in disease burden--is useful, but there is tremendous variation in burden of disease that is not associated with sociodemographic status. This further underscores the need for country-specific assessments of DALYs and HALE to appropriately inform health policy decisions and attendant actions.

14. Lancet 2016;387(10015):251–72

Cause-specific mortality for 240 causes in China during 1990-2013: a systematic subnational analysis for the Global Burden of Disease Study 2013

Zhou M et al., National Center for Chronic and Noncommunicable Disease Control and Prevention, Beijing, China; Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA, USA.

Findings: All provinces in mainland China have made substantial strides to improve life expectancy at birth between 1990 and 2013. Increases ranged from 4·0 years in Hebei province to 14·2 years in Tibet. Improvements in female life expectancy exceeded those in male life expectancy in all provinces except Shanghai, Macao, and Hong Kong. We saw significant heterogeneity among provinces in life expectancy at birth and probability of death at ages 0-14, 15-49, and 50-74 years. Such heterogeneity is also present in cause of death structures between sexes and provinces. From 1990 to 2013, leading causes of YLLs changed substantially. In 1990, 16 of 33 provinces had lower respiratory infections or preterm birth complications as the leading causes of YLLs. 15 provinces had cerebrovascular disease and two (Hong Kong and Macao) had ischaemic heart disease. By 2013, 27 provinces had cerebrovascular disease as the leading cause, five had ischaemic heart disease, and one had lung cancer (Hong Kong). Road injuries have become a top ten cause of death in all provinces in mainland China. The most common non-communicable diseases, including ischaemic heart disease, stroke, chronic obstructive pulmonary disease, and cancers (liver, stomach, and lung), contributed much more to YLLs in 2013 compared with 1990.
Interpretation: Rapid transitions are occurring across China, but the leading health problems and the challenges imposed on the health system by epidemiological and demographic change differ between groups of Chinese provinces. Localised health policies need to be implemented to tackle the diverse challenges faced by local health-care systems.

15. PLoS Med 2015;12(12):e1001923

World Health Organization Global Estimates and Regional Comparisons of the Burden of Foodborne Disease in 2010

Havelaar AH et al., Membership of the World Health Organization Foodborne Disease Burden Epidemiology Reference Group is provided in the Acknowledgments <ariehavelaar@ufl.edu>

Illness and death from diseases caused by contaminated food are a constant threat to public health and a significant impediment to socio-economic development worldwide. To measure the global and regional burden of foodborne disease (FBD), the World Health Organization (WHO) established the Foodborne Disease Burden Epidemiology Reference Group (FERG), which here reports their first estimates of the incidence, mortality, and disease burden due to 31 foodborne hazards. We find that the global burden of FBD is comparable to those of the major infectious diseases, HIV/AIDS, malaria and tuberculosis. The most frequent causes of foodborne illness were diarrheal disease agents, particularly norovirus and Campylobacter spp. Diarrheal disease agents, especially non-typhoidal Salmonella enterica, were also responsible for the majority of deaths due to FBD. Other major causes of FBD deaths were SalmonellaTyphi, Taenia solium and hepatitis A virus. The global burden of FBD caused by the 31 hazards in 2010 was 33 million Disability Adjusted Life Years (DALYs); children under five years old bore 40% of this burden. The 14 subregions, defined on the basis of child and adult mortality, had considerably different burdens of FBD, with the greatest falling on the subregions in Africa, followed by the subregions in South-East Asia and the Eastern Mediterranean D subregion. Some hazards, such as non-typhoidal S. enterica, were important causes of FBD in all regions of the

world, whereas others, such as certain parasitic helminths, were highly localised. Thus, the burden of FBD is borne particularly by children under five years old–although they represent only 9% of the global population–and people living in low-income regions of the world. These estimates are conservative, i.e., underestimates rather than overestimates; further studies are needed to address the data gaps and limitations of the study. Nevertheless, all stakeholders can contribute to improvements in food safety throughout the food chain by incorporating these estimates into policy development at national and international levels.

Health Financing

16. Lancet 2015;386(10007):1929–31

Lesotho's controversial public–private partnership project

Webster PC

A new hospital (Queen Mamohato Memorial Hospital in Maseru) in Lesotho's capital, set up and run through a public–private partnership, has been under scrutiny because of its financial cost to the country's government.

Built at a cost of at least US$100 million and operated under an 18-year contract between the Lesotho Ministry of Health and a consortium assembled by Netcare, the largest operator of private hospitals in South Africa and the UK, the 425-bed facility is an outpost of stylish architectural functionalism in threadbare Maseru. Like Netcare's hospitals in South Africa, the Queen Mamohato, which opened in 2011, is a spacious clinical oasis furnished with technologically-advanced care units and patient-friendly lounges and wards. According to the World Bank, which helped Lesotho negotiate financing for the construction of the hospital along with three feeder clinics, the Mamohato project serves as a model for public–private partnership (PPP) financing for health-care facilities and services in other low-income countries. It's a concept World Bank officials currently promote in countries including Myanmar, Nigeria, and Tunisia.

According to Lucy Mapota, superintendent of the government-operated hospital Queen Elizabeth II, many of the gaps in the country's public health fabric, can be directly traced to payments from the Ministry of Health to the consortium assembled by Netcare and several Lesotho-owned businesses and provider-associations that won the Mamohato contract in a process stewarded by the World Bank's International Financial Corporation (IFC). “The cost of the new hospital is depriving the entire health system”, Mapota asserted bluntly. “It's a big political mess.”

The Ministry of Health's headquarters in Maseru echoes with similar complaints. Ntoetse Mofoka, who heads the Ministry's PPP unit, says payments to Netcare's consortium, which is known as Tsepong, have increased almost 80% since 2008, when Tsepong first contracted with the government to build and operate the hospital. “The rate of payment increase is scary”, she said.

In April, 2014, Oxfam released a report charging that the hospital contract granted Netcare and its consortium partners substantial profits while creating “a dangerous diversion of scarce public funds from primary health-care services in rural areas, where three-quarters of the population live”. In a country that ranks 158th out of the 186 countries on the UN's Human Development Index, and has the world's third-highest HIV prevalence, Oxfam's criticisms have serious implications for a large swath of the population.

Even before the Queen Mamohato contract was signed, Oxfam observed, health spending in Lesotho was already skewed towards urban-based tertiary care. The contract “dramatically exacerbated this inequitable trend by absorbing over half of the Ministry of Health's budget in 2013/14, up from 28 per cent for the old public hospital in 2006/7”, Oxfam reported.

Lesotho's experience, Oxfam concluded, supports international evidence that health PPPs of this kind are risky and costly, and fail to advance universal and equitable health coverage.

In a study funded by the World Bank Group's Global Partnership on Output-Based Aid and published in the journal Health Affairs in June, the Boston University researchers concluded that “results from the analysis of baseline and endline studies indicate that the PPP-managed network in Lesotho delivered more clinical services and services of higher quality and achieved improved patient outcomes, compared to the government-managed network. The PPP-managed network's infrastructure, staffing and resources, access to data, clearly defined procedures and policies, staff accountability, and

leadership may account for the improved performance. Findings from Lesotho suggest that a health care public–private partnership may present opportunities for other developing countries to broadly improve their clinical and organizational performance."

17. HPP 2016;31(1):46-55

Two decades of maternity care fee exemption policies in Ghana: have they benefited the poor?

Johnson FA et al., Department of Social Statistics and Demography and Centre for Global Health, Population, Poverty and Policy, Faculty of Social and Human Sciences, University of Southampton, UK and Regional Institute for Population Studies, University of Ghana, Legon, Accra, Ghana <faj100@soton.ac.uk>

Objective: To investigate, the impact of maternity-related fee payment policies on the uptake of skilled birth care amongst the poor in Ghana.
Methods: Population data representing 12 288 births between November 1990 and October 2008 from four consecutive rounds of the Ghana demographic and health surveys were used to examine the impact of four major maternity-related payment policies: the full-cost recovery 'cash and carry' scheme; 'antenatal care fee exemption'; 'delivery care fee exemption' and the 'National Health Insurance Scheme (NHIS)'. Concentration curves were used to analyse the rich–poor gap in the use of skilled birth care by the four policy interventions. Multilevel logistic regression was used to examine the effect of the policies on the uptake of skilled birth care, adjusting for relevant predictors and clustering within communities and districts.
Findings: The uptake of skilled birth care over the policy periods for the poorest women was trivial when compared with their non-poor counterparts. The rich–poor gap in skilled birth care use was highly pronounced during the 'cash and carry' and 'free antenatal care' policies period. The benefits during the 'free delivery care' and ' NHIS' policy periods accrued more for the rich than the poor. There exist significant differences in skilled birth care use between and within communities and districts, even after adjusting for policy effects and other relevant predictors.
Conclusions: The maternal care fee exemption policies specifically targeted towards the poorest women had limited impact on the uptake of skilled birth care.

Health Policy

18. HPP 2016;31(1):10-20

Exploring perceptions of community health policy in Kenya and identifying implications for policy change

RMcCollum R, de Koning K et al., Department of International Public Health, Liverpool School of Tropical Medicine; KIT Health, Royal Tropical Institute, Amsterdam <r.mccollum@liverpool.ac.uk>

Background: Global interest and investment in close-to-community health services is increasing. Kenya is currently revising its community health strategy (CHS) alongside political devolution, which will result in revisioning of responsibility for local services. This article aims to explore drivers of policy change from key informant perspectives and to study perceptions of current community health services from community and sub-county levels, including perceptions of what is and what is not working well. It highlights implications for managing policy change.
Methods: We conducted 40 in-depth interviews and 10 focus group discussions with a range of participants to capture plural perspectives, including those who will influence or be influenced by CHS policy change in Kenya (policymakers, sub-county health management teams, facility managers, community health extension worker (CHEW), community health workers (CHWs), clients and community members) in two purposively selected counties: Nairobi and Kitui. Qualitative data were digitally recorded, transcribed, translated and coded before framework analysis.
Results: There is widespread community appreciation for the existing strategy. High attrition, lack of accountability for voluntary CHWs and lack of funds to pay CHW salaries, combined with high CHEW workload were seen as main drivers for strategy change. Areas for change identified include: lack of clear supervisory structure including provision of adequate travel resources, current uneven

coverage and equity of community health services, limited community knowledge about the strategy revision and demand for home-based HIV testing and counselling.
Conclusion: This in-depth analysis which captures multiple perspectives results in robust recommendations for strategy revision informed by the Five Wonders of Change Framework. These recommendations point towards a more people-centred health system for improved equity and effectiveness and indicate priority areas for action if success of policy change through the roll-out of the revised strategy is to be realized.

19. Lancet 2015;386(10011):2379-80
New orientation for China's health assistance to Africa
Alcorn T.

The Chinese Government has a long history of extending health diplomacy to African nations, notable particularly when China was a poor country itself.
China has also leveraged its huge capacity for construction, building or subsidising the cost of constructing more than 100 hospitals and other medical facilities across Africa since 1970. According to one study of Chinese aid projects related to health and population that were announced between 2000 and 2012, more than half targeted infrastructure.
China's current approach to supplying personnel and infrastructure in a piecemeal way cannot substantially contribute to improving the health of Africans, says Ray Yip, former director of the China Program at the Bill & Melinda Gates Foundation.
China's response to last year's Ebola outbreak in west Africa reflected elements of this old approach, but also a heightened attention to the longer term.
“The Chinese have been quite supportive”, the Africa Union's director of social affairs Olawale Maiyegun told The Lancet, noting that they had contributed $2 million towards the Africa CDC's 2016 budget of $7·5 million and offered to build infrastructure associated with its first five regional collaborating centres, in addition to providing technical support.
One of the most basic obstacles to improved health and wellbeing in Africa is the high cost of basic drugs and medical supplies, which burdens health systems and limits access for the poorest patients. Some development specialists argue that the Chinese Government has an opportunity to make a longer-lasting contribution to this area.
Currently on the continent, there is little or no local manufacturing of drugs and basic medical supplies says Lauren Galinsky, global planning manager for supply chains for the non-governmental organisation Partners In Health. They work with governments in five African countries, but Galinsky says, “I can't think of a significant purchase that we make in terms of medical devices or even basic supplies in-country. It's almost always less expensive […] to be importing things from China or India or a variety of other places”.
Guilin Pharmaceutical based in Guangxi could ultimately be one of the leaders. In China, Guilin manufactures a variety of drugs including injectable formulations of the malaria drug artesunate, but it has established subsidiaries in Ghana, Nigeria, and Côte d'Ivoire and regional offices in five other African countries. For now, the subsidiaries distribute or promote imported drugs rather than manufacturing them. But vice-president Lily Su says the company has ambitions to invest in local production of basic drugs, possibly antibiotics and other essential medicines or solutions that are otherwise expensive to transport.
African states and institutions will ultimately play an essential part in any future developments.

Malaria

20. Lancet 2015;386(10012):2507-19
Intermittent screening and treatment or intermittent preventive treatment with dihydroartemisinin-piperaquine versus intermittent preventive treatment with sulfadoxine-pyrimethamine for the control of malaria during pregnancy in western Kenya: an open-label, three-group, randomised controlled superiority trial
Desai M et al., Center for Global Health, Centers for Disease Control and Prevention, Atlanta, GA, USA

Background: Every year, more than 32 million pregnancies in sub-Saharan Africa are at risk of malaria infection and its adverse consequences. The effectiveness of the intermittent preventive treatment with sulfadoxine-pyrimethamine strategy recommended by WHO is threatened by high levels of parasite resistance. We aimed to assess the efficacy and safety of two alternative strategies: intermittent screening with malaria rapid diagnostic tests and treatment of women who test positive with dihydroartemisinin-piperaquine, and intermittent preventive treatment with dihydroartemisinin-piperaquine.
Methods: We did this open-label, three-group, randomised controlled superiority trial at four sites in western Kenya with high malaria transmission and sulfadoxine-pyrimethamine resistance. HIV-negative pregnant women between 16 and 32 weeks' gestation were randomly assigned (1:1:1), via computer-generated permuted-block randomisation (block sizes of three, six, and nine), to receive intermittent screening and treatment with dihydroartemisinin-piperaquine, intermittent preventive treatment with dihydroartemisinin-piperaquine, or intermittent preventive treatment with sulfadoxine-pyrimethamine. Study participants, study clinic nurses, and the study coordinator were aware of treatment allocation, but allocation was concealed from study investigators, delivery unit nurses, and laboratory staff. The primary outcome was malaria infection at delivery, defined as a composite of peripheral or placental parasitaemia detected by placental histology, microscopy, or rapid diagnostic test. The primary analysis was by modified intention to treat. This study is registered with ClinicalTrials.gov, number NCT01669941.
Findings: Between Aug 21, 2012, and June 19, 2014, we randomly assigned 1546 women to receive intermittent screening and treatment with dihydroartemisinin-piperaquine (n=515), intermittent preventive treatment with dihydroartemisinin-piperaquine (n=516), or intermittent preventive treatment with sulfadoxine-pyrimethamine (n=515); 1368 (88%) women comprised the intention-to-treat population for the primary endpoint. Prevalence of malaria infection at delivery was lower in the intermittent preventive treatment with dihydroartemisinin-piperaquine group than in the intermittent preventive treatment with sulfadoxine-pyrimethamine group (15 [3%] of 457 women vs 47 [10%] of 459 women; relative risk 0·32, 95% CI 0·18-0·56; p<0·0001), but not in the intermittent screening and treatment with dihydroartemisinin-piperaquine group (57 [13%] of 452 women; 1·23, 0·86-1·77; p=0·26). Compared with intermittent preventive treatment with sulfadoxine-pyrimethamine, intermittent preventive treatment with dihydroartemisinin-piperaquine was associated with a lower incidence of malaria infection during pregnancy (192·0 vs 54·4 events per 100 person-years; incidence rate ratio [IRR] 0·28, 95% CI 0·22-0·36; p<0·0001) and clinical malaria during pregnancy (37·9 vs 6·1 events; 0·16, 0·08-0·33; p<0·0001), whereas intermittent screening and treatment with dihydroartemisinin-piperaquine was associated with a higher incidence of malaria infection (232·0 events; 1·21, 1·03-1·41; p=0·0177) and clinical malaria (53·4 events; 1·41, 1·00-1·98; p=0·0475). We recorded 303 maternal and infant serious adverse events, which were least frequent in the intermittent preventive treatment with dihydroartemisinin-piperaquine group.
Interpretation: At current levels of rapid diagnostic test sensitivity, intermittent screening and treatment is not a suitable alternative to intermittent preventive treatment with sulfadoxine-pyrimethamine in the context of high sulfadoxine-pyrimethamine resistance and malaria transmission. However, dihydroartemisinin-piperaquine is a promising alternative drug to replace sulfadoxine-pyrimethamine for intermittent preventive treatment. Future studies should investigate the efficacy, safety, operational feasibility, and cost-effectiveness of intermittent preventive treatment with dihydroartemisinin-piperaquine.

21. PLoS Med 2016;13(1):e1001938

Intramuscular Artesunate for Severe Malaria in African Children: A Multicenter Randomized Controlled Trial

Kremsner PG et al., Institut für Tropenmedizin, Eberhard Karls Universität Tübingen, Tübingen, Germany <peter.kremsner@uni-tuebingen.de>

Background: Current artesunate (ARS) regimens for severe malaria are complex. Once daily intramuscular (i.m.) injection for 3 d would be simpler and more appropriate for remote health facilities than the current WHO-recommended regimen of five intravenous (i.v.) or i.m. injections over

4 d. We compared both a three-dose i.m. and a three-dose i.v. parenteral ARS regimen with the standard five-dose regimen using a non-inferiority design (with non-inferiority margins of 10%).
Methods and Findings: This randomized controlled trial included children (0.5–10 y) with severe malaria at seven sites in five African countries to assess whether the efficacy of simplified three-dose regimens is non-inferior to a five-dose regimen. We randomly allocated 1,047 children to receive a total dose of 12 mg/kg ARS as either a control regimen of five i.m. injections of 2.4 mg/kg (at 0, 12, 24, 48, and 72 h) (n = 348) or three injections of 4 mg/kg (at 0, 24, and 48 h) either i.m. (n =348) or i.v. (n = 351), both of which were the intervention arms. The primary endpoint was the proportion of children with ≥99% reduction in parasitemia at 24 h from admission values, measured by microscopists who were blinded to the group allocations. Primary analysis was performed on the per-protocol population, which was 96% of the intention-to-treat population. Secondary analyses included an analysis of host and parasite genotypes as risks for prolongation of parasite clearance kinetics, measured every 6 h, and a Kaplan–Meier analysis to compare parasite clearance kinetics between treatment groups. A post hoc analysis was performed for delayed anemia, defined as hemoglobin ≤ 7g/dl 7 d or more after admission.
The per-protocol population was 1,002 children (five-dose i.m.: n = 331; three-dose i.m.: n =338; three-dose i.v.: n = 333); 139 participants were lost to follow-up. In the three-dose i.m. arm, 265/338 (78%) children had a ≥99% reduction in parasitemia at 24 h compared to 263/331 (79%) receiving the five-dose i.m. regimen, showing non-inferiority of the simplified three-dose regimen to the conventional five-dose regimen (95% CI −7, 5; p = 0.02). In the three-dose i.v. arm, 246/333 (74%) children had ≥99% reduction in parasitemia at 24 h; hence, non-inferiority of this regimen to the five-dose control regimen was not shown (95% CI −12, 1; p = 0.24). Delayed parasite clearance was associated with the N86YPfmdr1 genotype. In a post hoc analysis, 192/885 (22%) children developed delayed anemia, an adverse event associated with increased leukocyte counts. There was no observed difference in delayed anemia between treatment arms.
A potential limitation of the study is its open-label design, although the primary outcome measures were assessed in a blinded manner.
Conclusions: A simplified three-dose i.m. regimen for severe malaria in African children is non-inferior to the more complex WHO-recommended regimen. Parenteral ARS is associated with a risk of delayed anemia in African children.

22. PLoS Med 2016;13(1):e1001942, Policy forum
"Asymptomatic" Malaria: A Chronic and Debilitating Infection That Should Be Treated
Chen I et al., Malaria Elimination Initiative, University of California, San Francisco, San Francisco, California, United States of America <roly.gosling@ucsf.edu>

Summary Points
• Are afebrile malaria infections truly asymptomatic, benign, or even beneficial to the individual? The evidence suggests the contrary.
• So-called "asymptomatic" malaria infections are associated with recurrent episodes of symptomatic parasitemia, chronic anemia, maternal and neonatal mortality, co-infection with invasive bacterial disease, cognitive impairment, and ongoing transmission of the parasite.
• "Asymptomatic" malaria infections have significant health and societal consequences, and we propose that they should be renamed "chronic" malaria infections.
• Targeting chronic malaria infections poses major scientific, operational, and ethical challenges.
• We call for the malaria community to work with malaria control and elimination programs to target all malaria infections, irrespective of their density or presentation. The operational challenges to detect and treat chronic infections are significant, but accomplishing this is likely to result in substantial gains to both the individual and society.

MDG

23. Lancet 2016;387(10015):273–83
Under-5 mortality in 2851 Chinese counties, 1996-2012: a subnational assessment of achieving MDG 4 goals in China

Wang Y et al., National Center for Chronic and Noncommunicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention, Beijing, China

Background: In the past two decades, the under-5 mortality rate in China has fallen substantially, but progress with regards to the Millennium Development Goal (MDG) 4 at the subnational level has not been quantified. We aimed to estimate under-5 mortality rates in mainland China for the years 1970 to 2012.
Methods: We estimated the under-5 mortality rate for 31 provinces in mainland China between 1970 and 2013 with data from censuses, surveys, surveillance sites, and disease surveillance points. We estimated under-5 mortality rates for 2851 counties in China from 1996 to 2012 with the reported child mortality numbers from the Annual Report System on Maternal and Child Health. We used a small area mortality estimation model, spatiotemporal smoothing, and Gaussian process regression to synthesise data and generate consistent provincial and county-level estimates. We compared progress at the county level with what was expected on the basis of income and educational attainment using an econometric model. We computed Gini coefficients to study the inequality of under-5 mortality rates across counties.
Findings: In 2012, the lowest provincial level under-5 mortality rate in China was about five per 1000 livebirths, lower than in Canada, New Zealand, and the USA. The highest provincial level under-5 mortality rate in China was higher than that of Bangladesh. 29 provinces achieved a decrease in under-5 mortality rates twice as fast as the MDG 4 target rate; only two provinces will not achieve MDG 4 by 2015. Although some counties in China have under-5 mortality rates similar to those in the most developed nations in 2012, some have similar rates to those recorded in Burkina Faso and Cameroon. Despite wide differences, the inter-county Gini coefficient has been decreasing. Improvement in maternal education and the economic boom have contributed to the fall in child mortality; more than 60% of the counties in China had rates of decline in under-5 mortality rates significantly faster than expected. Fast reduction in under-5 mortality rates have been recorded not only in the Han population, the dominant ethnic majority in China, but also in the minority populations. All top ten minority groups in terms of population sizes have experienced annual reductions in under-5 mortality rates faster than the MDG 4 target at 4·4%.
Interpretation: The reduction of under-5 mortality rates in China at the country, provincial, and county level is an extraordinary success story. Reductions of under-5 mortality rates faster than 8·8% (twice MDG 4 pace) are possible. Extremely rapid declines seem to be related to public policy in addition to socioeconomic progress. Lessons from successful counties should prove valuable for China to intensify efforts for those with unacceptably high under-5 mortality rates.

Medicines

24. Lancet 2016;387(10014):168-75
Access to effective antimicrobials: a worldwide challenge
Laxminarayan R et al., Princeton Environmental Institute, Princeton, NJ, USA

Recent years have seen substantial improvements in life expectancy and access to antimicrobials, especially in low-income and lower-middle-income countries, but increasing pathogen resistance to antimicrobials threatens to roll back this progress. Resistant organisms in health-care and community settings pose a threat to survival rates from serious infections, including neonatal sepsis and health-care-associated infections, and limit the potential health benefits from surgeries, transplants, and cancer treatment. The challenge of simultaneously expanding appropriate access to antimicrobials, while restricting inappropriate access, particularly to expensive, newer generation antimicrobials, is unique in global health and requires new approaches to financing and delivering health care and a one-health perspective on the connections between pathogen transmission in animals and humans. Here, we describe the importance of effective antimicrobials. We assess the disease burden caused by limited access to antimicrobials, attributable to resistance to antimicrobials, and the potential effect of vaccines in restricting the need for antibiotics.

25. Lancet 2016;387(10015):285–95

Exploring the evidence base for national and regional policy interventions to combat resistance
Dar OA et al., Public Health England, London, UK <osman.dar@phe.gov.uk>

The effectiveness of existing policies to control antimicrobial resistance is not yet fully understood. A strengthened evidence base is needed to inform effective policy interventions across countries with different income levels and the human health and animal sectors. We examine three policy domains-responsible use, surveillance, and infection prevention and control-and consider which will be the most effective at national and regional levels. Many complexities exist in the implementation of such policies across sectors and in varying political and regulatory environments. Therefore, we make recommendations for policy action, calling for comprehensive policy assessments, using standardised frameworks, of cost-effectiveness and generalisability. Such assessments are especially important in low-income and middle-income countries, and in the animal and environmental sectors. We also advocate a One Health approach that will enable the development of sensitive policies, accommodating the needs of each sector involved, and addressing concerns of specific countries and regions.
Key messages:
•The effect of antimicrobial resistance policies seems to be variable. The absence of progress is partly due to an insufficient evidence base to inform policy makers about the effectiveness, generalisability, and cost-effectiveness of initiatives.
•Policies encouraging responsible use of antimicrobials in primary care and outpatient settings have been proved effective but are not easily generalisable. Stewardship programmes in secondary care can be effective in encouraging responsible use of antibiotics and should be scaled up both in high-income countries and in low-income and middle-income countries (LMICs) where feasible.
•Sustained public awareness campaigns have shown some benefits, but these campaigns should be implemented with caution in LMICs, where cost and effects need improved assessment.
•Effective infection prevention and control interventions (IPCIs) can reduce the demand and need for antimicrobials, but evidence on appropriate IPCI strategies in LMICs is inadequate.
•Evidence of the most cost-effective systems for surveillance of antibiotic use and resistance remains weak worldwide. In the animal and environmental sectors, IPCIs and surveillance programmes are chronically underfunded.
•A global surveillance system should be created to secure accountability for control of antimicrobial resistance and improve between-country comparisons. For LMICs, an additional focus is needed to improve monitoring of drug quality and marketing to curb the production of counterfeit and substandard drugs.
•Standardised policy assessments should measure cost-effectiveness and acceptability to populations and stakeholders, and examine the political, regulatory, and technical environments in which the policies are implemented.
•A One Health approach will help to bridge gaps in levels of commitment of each sector and enable policy development that is inclusive, sensitive, and sufficiently flexible to accommodate the varying needs of different countries and regions.

(Lancet 2016;387(10015):296–307
International cooperation to improve access to and sustain effectiveness of antimicrobials
Årdal C et al., Norwegian Institute of Public Health, Oslo, Norway)

26. TMIH 2015;20(12):1593-606
Risk of gentamicin toxicity in neonates treated for possible severe bacterial infection in low- and middle-income countries: Systematic Review
Musiime GM et al., Gertrude's Children's Hospital, Nairobi, Kenya

Objectives: To assess the risk of gentamicin toxicity and potential number of neonates exposed annually to this risk, through treatment with WHO-recommended first-line antibiotics (gentamicin with penicillin) for the 6.9 million neonates with possible serious bacterial infection (PSBI).
Methods: Systematic literature review and assessment of the evidence using Cochrane and GRADE criteria. Meta-analysis was undertaken for pooled estimates where appropriate.

Results: Eleven studies (946 neonates) were included (nine randomised controlled trials and two prospective cohort studies). Six trials reported consistently measured ototoxicity outcomes in neonates treated with gentamicin, and the pooled estimate for hearing loss was 3% (95% CI 0-7%). Nephrotoxicity could not be assessed due to variation in case definitions used. Estimates of the number of neonates potentially affected by gentamicin toxicity were not undertaken due to insufficient data.
Conclusion: Given wider scale-up of outpatient-based and lower-level treatment of PSBI, improved data are essential to better assess the risks from neonatal gentamicin treatment without assessment of blood levels, to maximise benefit and reduce harm.

Mental Health

27. BMJ 2015;5:e00980

Epidemiological features of alcohol use in rural India: a population-based cross-sectional study
Rathod SD et al., London School of Hygiene and Tropical Medicine, London, UK <Sujit.rathod@lshtm.ac.uk>

Objectives; We sought to estimate the proportion of adults in Sehore District, India, who consumed alcohol, and the proportion who had behaviours consistent with alcohol use disorders (AUDs), using the Alcohol Use Disorders Identification Test (AUDIT). Among men who drank, we identified individual-level, household-level and community-level factors associated with AUDIT scores. Men with AUDs (AUDIT score ≥8) reported on whether and where they had sought treatment, and about alcohol-related internal stigma.
Design; Population-based cross-sectional study.
Setting; Rural villages and urban wards in Sehore District, Madhya Pradesh, India.
Participants; n=3220 adult (≥18 years of age) residents of Sehore District.
Primary outcome measure; Score on the AUDIT.
Results; Nearly one in four men (23.8%) had consumed alcohol in the past 12 months, while few (0.6%) women were consumers. Among drinkers, 33.2% (95% CI 28.6% to 38.1%) had AUDIT scores consistent with hazardous drinking, 3.3% (95% CI 2.1% to 5.1%) with harmful drinking and 5.5% (95% CI 3.8% to 8.0%) with dependent drinking. We observed that AUDIT scores varied widely by village (intraclass correlation=0.052). Among men who had recently consumed alcohol, AUDIT scores were positively associated with depression, having at least one child, high-quality housing, urban residence, tobacco use and disability. AUDIT scores were negatively associated with land ownership, out-of-pocket healthcare expenditure and participation in the national employment programme. While 49.2% of men with AUDs felt embarrassed by their problems with alcohol, only 2.8% had sought treatment in the past 12 months.
Conclusions; A need exists for effectively identifying and treating adults with AUDs. Health promotion services, informed by commonly-expressed stigmatised beliefs held among those affected by AUDs and which are targeted at the most affected communities, may be an effective step in closing the treatment gap.

28. HPP 2016;31(1):37-45

Developing a holistic policy and intervention framework for global mental health
Khenti A et al., Centre for Addiction and Mental Health, Toronto, Ontario, Canada <Jaime.Sapag@camh.ca>

Abstract Introduction: There are significant gaps in the accessibility and quality of mental health services around the globe. A wide range of institutions are addressing the challenges, but there is limited re- flection and evaluation on the various approaches, how they compare with each other, and conclusions regarding the most effective approach for particular settings. This article presents a framework for global mental health capacity building that could potentially serve as a promising or best practice in the field. The framework is the outcome of a decade of collaborative global health work at the Centre for Addiction and Mental Health (CAMH) (Ontario, Canada). The framework is

grounded in scientific evidence, relevant learning and behavioural theories and the underlying principles of health equity and human rights.
Methods: Grounded in CAMH's research, programme evaluation and practical experience in developing and implementing mental health capacity building interventions, this article presents the iterative learning process and impetus that formed the basis of the framework. A developmental evaluation (Patton M.2010. Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use. New York: Guilford Press.) approach was used to build the framework, as global mental health collaboration occurs in complex or uncertain environments and evolving learning systems.
Results: A multilevel framework consists of five central components: (1) holistic health, (2) cultural and socioeconomic relevance, (3) partnerships, (4) collaborative action-based education and learning and (5) sustainability. The framework's practical application is illustrated through the presentation of three international case studies and four policy implications. Lessons learned, limitations and future opportunities are also discussed. Conclusion: The holistic policy and intervention framework for global mental health reflects an iterative learning process that can be applied and scaled up across different settings through appropriate modifications.

Non-communicable Diseases

29. Lancet 2015; Nov 10. pii: S0140-6736(15)00755-2
Costs, affordability, and feasibility of an essential package of cancer control interventions in low-income and middle-income countries: key messages from Disease Control Priorities, 3rd edition
Gelband H et al., Center for Disease Dynamics, Economics & Policy, Washington, DC, USA <gelband@cddep.org>

Investments in cancer control-prevention, detection, diagnosis, surgery, other treatment, and palliative care-are increasingly needed in low-income and particularly in middle-income countries, where most of the world's cancer deaths occur without treatment or palliation. To help countries expand locally appropriate services, Cancer (the third volume of nine in Disease Control Priorities, 3rd edition) developed an essential package of potentially cost-effective measures for countries to consider and adapt. Interventions included in the package are: prevention of tobacco-related cancer and virus-related liver and cervical cancers; diagnosis and treatment of early breast cancer, cervical cancer, and selected childhood cancers; and widespread availability of palliative care, including opioids. These interventions would cost an additional US$20 billion per year worldwide, constituting 3% of total public spending on health in low-income and middle-income countries. With implementation of an appropriately tailored package, most countries could substantially reduce suffering and premature death from cancer before 2030, with even greater improvements in later decades.

Sexual Reproductive Health

30. BMJ 2015;351:h6129, News
Maternal deaths have nearly halved in past 25 years
Torjesen I.

The risk of a woman dying through pregnancy and childbirth has fallen by 44% over the past 25 years, but the world has missed the millennium development goal to cut maternal deaths by 75%, a report from United Nations agencies and the World Bank Group has shown.
Just nine countries managed to achieve a 75% reduction in maternal death rates in the period from 1990 to 2015: Bhutan, Cape Verde, Cambodia, Iran, Laos, the Maldives, Mongolia, Rwanda, and Timor-Leste.

31. BMJ 2015;5:e008226
Systematic review of the evidence on the effectiveness of sexual and reproductive health interventions in humanitarian crises

Warren E et al., Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, UK <Emily.Warren@lshtm.ac.uk>

Objectives. This systematic review aims to evaluate evidence on the effectiveness of sexual and reproductive health (SRH) interventions delivered in humanitarian crises.
Setting. Crisis affected low-income or middle-income countries.
Participants. Crisis-affected populations in low-income or middle-income countries.
Method. Peer-reviewed and grey literature sources were systematically searched for relevant papers detailing interventions from 1 January 1980 until the search date on 30 April 2013. Data from included studies were then extracted, and the papers' quality evaluated using criteria based on modified STROBE and CONSORT checklists.
Primary and secondary outcome measures. Primary outcomes include, but are not limited to, changes in morbidity, mortality, sexually transmitted infection (STI) diagnosis or gender-based violence. Secondary outcomes include, but are not limited to, reported condom use or skilled attendance at birth. Primary outputs include, but are not limited to, condoms distributed or education courses taught.
Results. Of 7149 returned citations, 15 studies met the inclusion criteria. Only one randomised controlled trial was identified. The remaining observational studies were of moderate quality, demonstrating limited use of controls and inadequate attempts to address bias. Evidence of effectiveness was available for the following interventions: impregnated bed nets for pregnant women, subsidised refugee healthcare, female community health workers, and tiered community reproductive health services.
Conclusions. The limited evidence base for SRH interventions highlights the need for improved research on the effectiveness of public health interventions in humanitarian crises. While interventions proven efficacious in stable settings are being used in humanitarian efforts, more evidence is required to demonstrate the effectiveness of delivering and scaling-up such interventions in humanitarian crises.

32. HPP 2016;31(1):102-13

Programmes for advance distribution of misoprostol to prevent post-partum haemorrhage: a rapid literature review of factors affecting implementation

Smith HJ et al., School of Nursing, Midwifery & Social Work, University of Manchester <Helen.smith-4@manchester.ac.uk>

Recent efforts to prevent post-partum haemorrhage (PPH) in low-income countries have focused on providing women with access to oral misoprostol during home birth. The WHO recommends using lay health workers (LHWs) to administer misoprostol in settings where skilled birth attendants are not available. This review synthesizes current knowledge about the barriers and facilitators affecting implementation of advance community distribution of misoprostol to prevent PPH, where misoprostol may be self-administered or administered by an LHW.
We searched for and summarized available empirical evidence, and collected primary data from programme stakeholders about their experiences of programme implementation.
We present key outcomes and features of advanced distribution programmes that are in operation or have been piloted globally. We categorized factors influencing implementation into those that operate at the health system level, factors related to the community and policy context and those factors more closely connected to the end user.
Debates around advance distribution have centred on the potential risks and benefits of making misoprostol available to pregnant women and community members during pregnancy for administration in the home. However, the risks of advance distribution appear manageable and the benefits of self-administration, especially for women who have little chance of expert care for PPH, are considerable.

33. RHM 2015;23(46):1–6, Editorial

Sexual rights and bodily integrity as human rights

Heidari S, Reproductive Health Matters, London, UK / Geneva, Switzerland <SHeidari@rhmjournal.org.uk>

(Abridged)
Sexuality is a political struggle and, as one of the authors in this issue reflects, it is caught between "repression and danger on the one hand and exploration, pleasure and agency on the other" (Muhanguzi). Although sexuality can be deemed intimate and personal, it is often subject to power relations in both the private and public domains, and is highly politicised. Human rights standards have been applied by authoritative human rights bodies to a wide range of sexuality and sexual health-related matters to form the content and meaning of sexual rights, and the public health benefits of respecting and fulfilling these rights are indisputable. Yet, political negotiations on matters related to sexuality and sexual health remain contentious and polarised. This issue of RHM focuses on sexuality, sexual rights and sexual politics, offering a wide range of analysis, perspectives and evidence that highlight the nexus between sexual health and human rights and deepen our knowledge about the challenges and opportunities for individuals of any sexual orientation or gender diversity to achieve the highest attainable level of sexual health.

34. TMIH 2015;20(12):1639-56

Who, What, Where: an analysis of private sector family planning provision in 57 low- and middle-income countries

Campbell OM et al., London School of Hygiene and Tropical Medicine, London, UK

Objective: Family planning service delivery has been neglected; rigorous analyses of the patterns of contraceptive provision are needed to inform strategies to address this neglect.
Methods: We used 57 nationally representative Demographic and Health Surveys in low- and middle-income countries (2000-2013) in four geographic regions to estimate need for contraceptive services, and examined the sector of provision, by women's socio-economic position. We also assessed method mix and whether women were informed of side effects.
Results: Modern contraceptive use among women in need was lowest in sub-Saharan Africa (39%), with other regions ranging from 64% to 72%. The private sector share of the family planning market was 37-39% of users across the regions and 37% overall (median across countries: 41%). Private sector users accessed medical providers (range across regions: 30-60%, overall mean: 54% and median across countries 23%), specialised drug sellers (range across regions: 31-52%, overall mean: 36% and median across countries: 43%) and retailers (range across regions: 3-14%, overall mean: 6% and median across countries: 6%). Private retailers played a more important role in sub-Saharan Africa (14%) than in other regions (3-5%). NGOs and FBOs served a small percentage. Privileged women (richest wealth quintile, urban residents or secondary-/tertiary-level education) used private sector services more than the less privileged. Contraceptive method types with higher requirements (medical skills) for provision were less likely to be acquired from the private sector, while short-acting methods/injectables were more likely. The percentages of women informed of side effects varied by method and provider subtype, but within subtypes were higher among public than private medical providers for four of five methods assessed.
Conclusion: Given the importance of private sector providers, we need to understand why women choose their services, what quality services the private sector provides, and how it can be improved. However, when prioritising one of the two sectors (public vs. private), it is critical to consider the potential impact on contraceptive prevalence and equity of met need.

Tuberculosis

35. Lancet 2015;386(10010):2344-53

Controlling the seedbeds of tuberculosis: diagnosis and treatment of tuberculosis infection

Rangaka MX et al., Institute of Epidemiology and Health, University College London, London, UK <rchaiss@jhmi.edu>

The billions of people with latent tuberculosis infection serve as the seedbeds for future cases of active tuberculosis. Virtually all episodes of tuberculosis disease are preceded by a period of asymptomatic Mycobacterium tuberculosis infection; therefore, identifying infected individuals most likely to

progress to disease and treating such subclinical infections to prevent future disease provides a crucial opportunity to interrupt tuberculosis transmission and reduce the global burden of tuberculosis disease. Programmes focusing on single strategies rather than comprehensive programmes that deliver an integrated arsenal for tuberculosis control might continue to struggle. Tuberculosis preventive therapy is a poorly used method that is essential for controlling the reservoirs of disease that drive the epidemic. Comprehensive control strategies that combine preventive therapy for the most high-risk populations and communities with improved case-finding and treatment, control of transmission, and health systems strengthening could ultimately lead to worldwide tuberculosis elimination. In this Series paper we outline challenges to implementation of preventive therapy and provide pragmatic suggestions for overcoming them. We further advocate for tuberculosis preventive therapy as the core of a renewed worldwide focus to implement a comprehensive epidemic control strategy that would reduce new tuberculosis cases to elimination targets. This strategy would be underpinned by accelerated research to further understand the biology of subclinical tuberculosis infections, develop novel diagnostics and drug regimens specifically for subclinical tuberculosis infection, strengthen health systems and community engagement, and enhance sustainable large scale implementation of preventive therapy programmes.

36. Lancet 2015;386(10010):2354-62

Stopping tuberculosis: a biosocial model for sustainable development

Ortblad KF, Harvard T H Chan School of Public Health, Harvard University, Boston, MA, USA <ratun@hsph.harvard.edu>

Tuberculosis transmission and progression are largely driven by social factors such as poor living conditions and poor nutrition. Increased standards of living and social approaches helped to decrease the burden of tuberculosis before the introduction of chemotherapy in the 1940s. Since then, management of tuberculosis has been largely biomedical. More funding for tuberculosis since 2000, coinciding with the Millennium Development Goals has yielded progress in tuberculosis mortality but smaller reductions in incidence, which continues to pose a risk to sustainable development, especially in poor and susceptible populations. These at-risk populations need accelerated progress to end tuberculosis as resolved by the World Health Assembly in 2015. Effectively addressing the worldwide tuberculosis burden will need not only enhancement of biomedical approaches but also rebuilding of the social approaches of the past. To combine a biosocial approach, underpinned by social, economic, and environmental actions, with new treatments, new diagnostics, and universal health coverage, will need multisectoral coordination and action involving the health and other governmental sectors, as well as participation of the civil society, and especially the poor and susceptible populations. A biosocial approach to stopping tuberculosis will not only target morbidity and mortality from disease but would also contribute substantially to poverty alleviation and sustainable development that promises to meet the needs of the present, especially the poor, and provide them and subsequent generations an opportunity for a better future.

37. Lancet 2015;386(10010):2324-33

Data for action: collection and use of local data to end tuberculosis

Theron G(1), Cobelens F(3), et al., (1)Faculty of Medicine and Health Sciences, Stellenbosch University, Tygerberg, South Africa; University of Cape Town, Observatory, Cape Town, South Africa; (3)KNCV Tuberculosis Foundation, The Hague, Netherlands; Amsterdam Institute for Global Health and Development, Academic Medical Center, Amsterdam, Netherlands

Accelerating progress in the fight against tuberculosis will require a drastic shift from a strategy focused on control to one focused on elimination. Successful disease elimination campaigns are characterised by locally tailored responses that are informed by appropriate data. To develop such a response to tuberculosis, we suggest a three-step process that includes improved collection and use of existing programmatic data, collection of additional data (eg, geographic information, drug resistance, and risk factors) to inform tailored responses, and targeted collection of novel data (eg, sequencing data, targeted surveys, and contact investigations) to improve understanding of tuberculosis transmission dynamics. Development of a locally targeted response for tuberculosis will require

substantial investment to reconfigure existing systems, coupled with additional empirical data to evaluate the effectiveness of specific approaches. Without adoption of an elimination strategy that uses local data to target hotspots of transmission, ambitious targets to end tuberculosis will almost certainly remain unmet.

38. Lancet 2015;386(10010):2334-43

Turning off the tap: stopping tuberculosis transmission through active case-finding and prompt effective treatment

Yuen CM et al., Brigham and Women's Hospital, Boston, MA, USA <Mercedes_Becerra@hms.harvard.edu>

To halt the global tuberculosis epidemic, transmission must be stopped to prevent new infections and new cases. Identification of individuals with tuberculosis and prompt initiation of effective treatment to rapidly render them non-infectious is crucial to this task. However, in settings of high tuberculosis burden, active case-finding is often not implemented, resulting in long delays in diagnosis and treatment. A range of strategies to find cases and ensure prompt and correct treatment have been shown to be effective in high tuberculosis-burden settings. The population-level effect of targeted active case-finding on reducing tuberculosis incidence has been shown by studies and projected by mathematical modelling. The inclusion of targeted active case-finding in a comprehensive epidemic-control strategy for tuberculosis should contribute substantially to a decrease in tuberculosis incidence.

39. TMIH 2015;20(12):1733-44

Tuberculin reaction and BCG scar: association with infant mortality

Timmermann CA et al., Institute of Public Health, University of Southern Denmark, Odense, Denmark

Objective: To test the hypothesis that having a scar and a positive tuberculin skin test (TST) response after vaccination with Bacille Calmette-Guérin (BCG) is associated with reduced infant mortality.
Methods: We studied cohorts of 2709 normal-birthweight (NBW) and 1102 low-birthweight (LBW) infants in Guinea-Bissau. Children were enrolled in randomised trials between year 2002 and 2008 and received BCG vaccination at birth. BCG scars and TST responses were assessed at 2 and 6 months of age. The infants were followed for mortality to 12 months of age, and survival was analysed using Cox regression.
Results: At age 2 months, 88% of NBW children and 91% of LBW children had a BCG scar, and 36% and 17% had a TST response, respectively. The LBW infants had nearly twofold higher mortality (4.5%) than the NBW infants (2.8%) between 2 and 12 months of age. In the LBW cohort, the adjusted mortality rate ratio (MRR) comparing children with a BCG scar with those without was 0.42 (95% CI = 0.19; 0.93). There was a similar tendency for TST positivity: MRR = 0.47 (95% CI = 0.14; 1.54). For LBW children who had both a positive TST reaction and a scar, the MRR was 0.22 (95% CI = 0.05; 0.87). For NBW children, a scar and a positive TST were associated with 20% reductions in mortality, which did not reach statistical significance.
Conclusion: We confirmed previous observations that having a scar and a TST response after BCG vaccination is associated with lower mortality risk. The possibility of revaccinating scar-negative children should be considered.

40. TMIH 2015;20(12):1797-804

Tuberculosis and latent tuberculosis infection among healthcare workers in Kisumu, Kenya

Agaya J et al., Kenya Medical Research Institute (KEMRI) Center for Global Health Research, Kisumu, Kenya.

Objective: To assess prevalence and occupational risk factors of latent TB infection and history of TB disease ascribed to work in a healthcare setting in western Kenya.
Methods: We conducted a cross-sectional survey among healthcare workers in western Kenya in 2013. They were recruited from dispensaries, health centres and hospitals that offer both TB and HIV services. School workers from the health facilities' catchment communities were randomly selected to

serve as the community comparison group. Latent TB infection was diagnosed by tuberculin skin testing. HIV status of participants was assessed. Using a logistic regression model, we determined the adjusted odds of latent TB infection among healthcare workers compared to school workers; and among healthcare workers only, we assessed work-related risk factors for latent TB infection.
Results: We enrolled 1005 healthcare workers and 411 school workers. Approximately 60% of both groups were female. A total of 22% of 958 healthcare workers and 12% of 392 school workers tested HIV positive. Prevalence of self-reported history of TB disease was 7.4% among healthcare workers and 3.6% among school workers. Prevalence of latent TB infection was 60% among healthcare workers and 48% among school workers. Adjusted odds of latent TB infection were 1.5 times higher among healthcare workers than school workers (95% confidence interval 1.2-2.0). Healthcare workers at all three facility types had similar prevalence of latent TB infection ($P = 0.72$), but increasing years of employment was associated with increased odds of LTBI ($P < 0.01$).
Conclusion: Healthcare workers at facilities in western Kenya which offer TB and HIV services are at increased risk of latent TB infection, and the risk is similar across facility types. Implementation of WHO-recommended TB infection control measures are urgently needed in health facilities to protect healthcare workers.

Miscellaneous

41. BMJ 2015;351:h5378, Editorial

Snake bite: a global failure to act. Vulnerable populations need urgent access to effective and affordable treatments

For many years snake bite experts have sought to raise the profile of this forgotten problem. Lamentably, however, it has taken news of the departure of antivenom manufacturer SanofiPasteur from the sub-Saharan African market to focus the spotlight on the calamity of snake bite among the world's poorest people. The reality is that for most people bitten by snakes in Africa the loss of Sanofi's FAV-Afrique antivenom will mean little, if anything at all. This is because the product simply never reached them in the first place. In a region where median gross domestic product per capita is $550 (£360; €490), Sanofi's product was simply too expensive (a four vial treatment cost about $540) and produced in insufficient quantities to meet the needs of more than a small part of the African continent. For decades there have been gaps in antivenom supply globally that have cumulatively cost millions of lives, maimed millions more, and contributed to the burden of poverty and disenfranchisement that lingers heavily over many nations. And for just as long experts have been urging the relevant authorities to redress this denial of access to an essential medicine, without any meaningful response. Successive efforts to drive change by people from outside Africa have largely failed.
Several things need to happen before we can truly be satisfied that the voices of people with snake bite are being heard. The WHO must re-elevate snake bite to its list of neglected tropical diseases, and it must incorporate snake bite in current and future work plans for those diseases. Health ministries in nations where the burden of snake bite is felt most acutely, including countries throughout Asia and Africa, must no longer ignore their responsibility to their citizens. Finally, a motion to initiate international efforts to cut risks, burden, cost, and ensure access to treatment for snake bite must be brought before the World Health Assembly and passed to mobilise resources. The time for talk has passed; action must be taken now.