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Child Health

1. BMJ 2014;349:g4988 Research

Effect of implementation of Integrated Management of Neonatal and Childhood Illness programme on treatment seeking practices for morbidities in infants: cluster randomised trial

Mazumder S et al. Correspondence: N Bhandari: CHRD@sas.org.in

Objective: To determine the effect of implementation of the Integrated Management of Neonatal and Childhood Illness strategy on treatment seeking practices and on neonatal and infant morbidity.
Design: Cluster randomised trial.
Setting: Haryana, India.
Participants: 29 667 births in nine intervention clusters and 30 813 births in nine control clusters.
Main outcome measures: The pre-specified outcome was the effect on treatment seeking practices. Post hoc exploratory analyses assessed morbidity, hospital admission, post-neonatal infant care, and nutritional status outcomes.
Interventions: The Integrated Management of Neonatal and Childhood Illness intervention included home visits by community health workers, improved case management of sick children, and strengthening of health systems. Outcomes were ascertained through interviews with randomly selected caregivers: 6204, 3073, and 2045 in intervention clusters and 6163, 3048, and 2017 in control clusters at ages 29 days, 6 months, and 12 months, respectively.
Results: In the intervention cluster, treatment was sought more often from an appropriate provider for severe neonatal illness (risk ratio 1.76, 95% confidence interval 1.38 to 2.24), for local neonatal infection (4.86, 3.80 to 6.21), and for diarrhoea at 6 months (1.96, 1.38 to 2.79) and 12 months (1.22, 1.06 to 1.42) and pneumonia at 6 months (2.09, 1.31 to 3.33) and 12 months (1.44, 1.00 to 2.08). Intervention mothers reported fewer episodes of severe neonatal illness (risk ratio 0.82, 0.67 to 0.99) and lower prevalence of diarrhoea (0.71, 0.60 to 0.83) and pneumonia (0.73, 0.52 to 1.04) in the two weeks preceding the 6 month interview and of diarrhoea (0.63, 0.49 to 0.80) and pneumonia (0.60, 0.46 to 0.78) in the two weeks preceding the 12 month interview. Infants in the intervention clusters were more likely to still be exclusively breast fed in the sixth month of life (risk ratio 3.19, 2.67 to 3.81).
Conclusion: Implementation of the Integrated Management of Neonatal and Childhood Illness programme was associated with timely treatment seeking from appropriate providers and reduced morbidity, a likely explanation for the reduction in mortality observed following implementation of the programme in this study.

2. Am J TMH 2014;91(3):555-62

Feeding of young children during diarrhea: caregivers' intended practices and perceptions.

Pantenburg B et al.

Childhood diarrhea is an important cause of malnutrition, which can be worsened when caretakers limit nutritional support. We queried 390 caregivers and their children in a peri-urban community in Lima, Peru regarding general perceptions of feeding and feeding practices during diarrhea. Overall, 22.1% of caregivers perceived feeding during diarrhea to be harmful. At baseline, 71.9% of caregivers would discontinue normal feeding or give less food. Most would withhold milk, eggs, and meats. Approximately 40% of caregivers would withhold vegetables and fruits. A pilot educational intervention was performed to improve

feeding during diarrhea. At follow-up survey 3 months later, none of the caregivers would recommend withholding food. Only 23.2% would recommend discontinuing normal feeding and 1.8% perceived food to be damaging. Misperceptions of the role of feeding during diarrhea pose a significant health risk for children, but a simple educational intervention might have a major impact on these perceptions and practices.

3. Lancet 2014;384(9941):438-54

Every Newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries.

Dickson KE et al., UNICEF, Programmes Division, New York, NY, USA <kdickson@unicef.org>

Universal coverage of essential interventions would reduce neonatal deaths by an estimated 71%, benefit women and children after the first month, and reduce stillbirths. However, the packages with the greatest effect (care around birth, care of small and ill newborn babies), have low and inequitable coverage and are the most sensitive markers of health system function. In eight of the 13 countries with the most neonatal deaths (55% worldwide), we undertook a systematic assessment of bottlenecks to essential maternal and newborn health care, involving more than 600 experts. Of 2465 bottlenecks identified, common constraints were found in all high-burden countries, notably regarding the health workforce, financing, and service delivery. However, bottlenecks for specific interventions might differ across similar health systems. For example, the implementation of kangaroo mother care was noted as challenging in the four Asian country workshops, but was regarded as a feasible aspect of preterm care by respondents in the four African countries. If all high-burden countries achieved the neonatal mortality rates of their region's fastest progressing countries, then the mortality goal of ten or fewer per 1000 livebirths by 2035 recommended in this Series and the Every Newborn Action Plan would be exceeded. We therefore examined fast progressing countries to identify strategies to reduce neonatal mortality. We identified several key factors: (1) workforce planning to increase numbers and upgrade specific skills for care at birth and of small and ill newborn babies, task sharing, incentives for rural health workers; (2) financial protection measures, such as expansion of health insurance, conditional cash transfers, and performance-based financing; and (3) dynamic leadership including innovation and community empowerment. Adapting from the 2005 Lancet Series on neonatal survival and drawing on this Every Newborn Series, we propose a country-led, data-driven process to sharpen national health plans, seize opportunities to address the quality gap for care at birth and care of small and ill newborn babies, and systematically scale up care to reach every mother and newborn baby, particularly the poorest.

4. Lancet 2014;384(9959):2000

Editorial: Changing attitudes to child disability in Africa

It is a punishment from God, witchcraft, the fault of the mother, reincarnation. These are all frequently stated causes for disability in children in Africa. Such false beliefs are deeply rooted in tradition and culture. In truth, most children with disabilities in Africa have been disabled by the sad predicaments that continue to haunt the continent: war, poverty, and inadequate access to health care. A new report released this week by the African Child Policy Forum draws attention to the challenges facing children with disabilities in Africa.
Africa has a large population of children with disabilities; the prevalence of moderate to severe disability in children aged younger than 14 years is 6·4%. These children are largely invisible in society because of stigma and discrimination by most people, including their

parents. They face many physical barriers in daily life, discriminatory practices, and even direct abuse and violence. For example, children with speech impairments are at five times greater risk of neglect and physical abuse than children without disabilities, and three times greater risk of sexual abuse, according to the report. Mortality in children younger than 5 years with disabilities in some African countries is as high as 80%.
The report calls for five priority actions for African nations: put in place and implement appropriate legislation, policy, and programmes in line with the UN Convention on the Rights of Persons with Disabilities; develop and implement effective child protection measures; ensure provision of basic services in a disability-friendly manner; improve physical accessibility of the built environment; and generate evidence and promote evidence-based advocacy and learning.
Children with disabilities have valuable contributions to make to society but are kept from realising their full potential because of people's attitudes to disability. As Shuaib Chalklen, UN Special Rapporteur on Disability, states in the report, the hope is that its findings will "re-orient society's thinking and its treatment of children with disabilities, moving from an attitude of rejection and neglect to one of respect and inclusion". Prominent, respected members of African society have a vital part to play in aiding this reorientation.

5. TMIH 2014;19(12):1477-87

Infant twin mortality and hospitalisations after the perinatal period - a prospective cohort study from Guinea-Bissau

Bjerregaard-Andersen M et al., Bandim Health Project, INDEPTH Network, Bissau, Guinea-Bissau

Objective: To examine mortality and hospitalisations among infant twins and singletons after the perinatal period in Guinea-Bissau.
Methods: The study was conducted from September 2009 to November 2012 by the Bandim Health Project (BHP). Newborn twins and unmatched singleton controls were included at the National Hospital Simão Mendes in the capital Bissau. Children were examined clinically at enrolment. Maternal, pregnancy and obstetric information was collected and HIV testing offered at birth. Follow-up occurred at home at 2, 6 and 12 months and through linkage with the paediatric admission register at the National Hospital.
Results: About 495 twins and 333 singletons were alive on day 7 after birth. In total, 36 twins and 12 singletons died during follow-up, the post-perinatal infant mortality rate being 91/1000 person-years for twins and 42/1000 for singletons (HR = 2.11, 95% CI: 1.09-4.07). In a multivariable analysis among twins only, birth weight <2000 g [3.32, (1.36-8.07)], death of the cotwin perinatally [2.54, (1.16-5.57)] and severe maternal illness during pregnancy [2.35, (1.00-5.51)] were significant risk factors for twin death. In the subgroup with available HIV status, maternal HIV infection was strongly associated with twin mortality [3.16, (1.24-8.05)]. Death occurred at home for 60% of twins and 67% of singletons. During follow-up, 90 first-time hospital admissions were registered, with similar rates observed for twins (139/1000) and singletons (143/1000) [0.97, (0.61-1.52)].
Conclusion: The post-perinatal infant mortality rate of twins was double that of singletons. No excess in twin hospitalisations was observed, possibly implying obstacles to hospital admission for twins in case of severe illness.

Communicable Diseases

6. Clin Infect Dis 2014 Nov 2.pii: ciu849 [Epub ahead of print]

Long-term Protection From Isoniazid Preventive Therapy for Tuberculosis in HIV-Infected Patients in a Medium-Burden Tuberculosis Setting: The TB/HIV in Rio (THRio) Study
Golub JE et al.

Background: The duration of protection against tuberculosis provided by isoniazid preventive therapy is not known for human immunodeficiency virus (HIV)-infected individuals living in settings of medium tuberculosis incidence.
Methods: We conducted an individual-level analysis of participants in a cluster-randomized, phased-implementation trial of isoniazid preventive therapy. HIV-infected patients who had positive tuberculin skin tests (TSTs) were followed until tuberculosis diagnosis, death, or administrative censoring. Nelson-Aalen cumulative hazard plots were generated and hazards were compared using the log-rank test. Cox proportional hazards models were fitted to investigate factors associated with tuberculosis diagnosis.
Results: Between 2003 and 2009, 1954 patients with a positive TST were studied. Among these, 1601 (82%) initiated isoniazid. Overall tuberculosis incidence was 1.39 per 100 person-years (PY); 0.53 per 100 PY in those who initiated isoniazid and 6.52 per 100 PY for those who did not (adjusted hazard ratio [aHR], 0.17; 95% confidence interval [CI], .11-.25). Receiving antiretroviral therapy at time of a positive TST was associated with a reduced risk of tuberculosis (aHR, 0.69; 95% CI, .48-1.00). Nelson-Aalen plots of tuberculosis incidence showed a constant risk, with no acceleration in 7 years of follow-up for those initiating isoniazid preventive therapy.
ConclusionS: Isoniazid preventive therapy significantly reduced tuberculosis risk among HIV-infected patients with a positive TST. In a medium-prevalence setting, 6 months of isoniazid in HIV-infected patients with positive TST reduces tuberculosis risk over 7 years of follow-up, in contrast to results of studies in higher-burden settings in Africa.

7. Lancet 2014 Oct 21. pii: S0140-6736(13)62708-7 [Epub ahead of print]
Typhoid fever
Wain J et al.

Control of typhoid fever relies on clinical information, diagnosis, and an understanding for the epidemiology of the disease. Despite the breadth of work done so far, much is not known about the biology of this human-adapted bacterial pathogen and the complexity of the disease in endemic areas, especially those in Africa. The main barriers to control are vaccines that are not immunogenic in very young children and the development of multidrug resistance, which threatens efficacy of antimicrobial chemotherapy. Clinicians, microbiologists, and epidemiologists worldwide need to be familiar with shifting trends in enteric fever. This knowledge is crucial, both to control the disease and to manage cases. Additionally, salmonella serovars that cause human infection can change over time and location. In areas of Asia, multidrug-resistant Salmonella enterica serovar Typhi (S Typhi) has been the main cause of enteric fever, but now S Typhi is being displaced by infections with drug-resistant S enterica serovar Paratyphi A. New conjugate vaccines are imminent and new treatments have been promised, but the engagement of local medical and public health institutions in endemic areas is needed to allow surveillance and to implement control measures.

8. Lancet 2014;384(9951):1389-99 Epub 2014 May 11
Current status of rabies and prospects for elimination
Fooks AR et al.

Rabies is one of the most deadly infectious diseases, with a case-fatality rate approaching 100%. The disease is established on all continents apart from Antarctica; most cases are reported in Africa and Asia, with thousands of deaths recorded annually. However, the estimated annual figure of almost 60,000 human rabies fatalities is probably an underestimate. Almost all cases of human rabies result from bites from infected dogs. Therefore, the most cost-effective approach to elimination of the global burden of human rabies is to control canine rabies rather than expansion of the availability of human prophylaxis. Mass vaccination campaigns with parenteral vaccines, and advances in oral vaccines for wildlife, have allowed the elimination of rabies in terrestrial carnivores in several countries worldwide. The subsequent reduction in cases of human rabies in such regions advocates the multidisciplinary One Health approach to rabies control through the mass vaccination of dogs and control of canine populations.

9. Lancet 2014;384(9959):2053-63

Seminar: Hepatitis B virus infection

Trépo C et al., Croix-Rousse Hospital, Hospices Civils de Lyon, Lyon, France <christian.trepo@chu-lyon.fr>

Hepatitis B virus infection is a major public health problem worldwide; roughly 30% of the world's population show serological evidence of current or past infection. Hepatitis B virus is a partly double-stranded DNA virus with several serological markers: HBsAg and anti-HBs, HBeAg and anti-HBe, and anti-HBc IgM and IgG. It is transmitted through contact with infected blood and semen. A safe and effective vaccine has been available since 1981, and, although variable, the implementation of universal vaccination in infants has resulted in a sharp decline in prevalence. Hepatitis B virus is not cytopathic; both liver damage and viral control-and therefore clinical outcome-depend on the complex interplay between virus replication and host immune response. Overall, as much as 40% of men and 15% of women with perinatally acquired hepatitis B virus infection will die of liver cirrhosis or hepatocellular carcinoma. In addition to decreasing hepatic inflammation, long-term antiviral treatment can reverse cirrhosis and reduce hepatocellular carcinoma. Development of new therapies that can improve HBsAg clearance and virological cure is warranted.

Tuberculosis

10. TMIH 2014;19(11):1367-76

Decline in overall, smear-negative and HIV-positive TB incidence while smear-positive incidence stays stable in Guinea-Bissau 2004-2011

Lemvik G et al., Bandim Health Project, INDEPTH network, Bissau, Guinea-Bissau

Objective: To calculate Tuberculosis (TB) incidence rates in Guinea-Bissau over an 8-year period.
Methods: Since 2003, a surveillance system has registered all TB cases in six suburban districts of Bissau. In this population-based prospective follow-up study, 1205 cases of pulmonary TB were identified between January 2004 and December 2011. Incidence rates were calculated using census data from the Bandim Health and Demographic Surveillance System (HDSS).
Results: The overall incidence of pulmonary TB was 279 per 100,000 person-years of observation; the male incidence being 385, and the female 191. TB incidence rates increased significantly with age in both sexes, regardless of smear or HIV status. Despite a peak with

unknown cause of 352 per 100,000 in 2007, the overall incidence of pulmonary TB declined over the period. The incidence of HIV infected TB cases declined significantly from 108 to 39 per 100,000, while the incidence of smear-positive TB cases remained stable; the overall figure was 188 per 100,000.
Conclusions: Overall incidence of pulmonary TB in Guinea-Bissau has declined from 2004 to 2011. The decline was also seen in the subgroups of smear-negative and HIV-positive TB cases, probably due to antiretroviral treatment. Smear-positive TB incidence remains stable over the period.

11. BMJ 2014;349:g4643 Research

Effect of BCG vaccination against *Mycobacterium tuberculosis* infection in children: systematic review and meta-analysis

A Roy et al., <i.abubakar@ucl.ac.uk>

Objectives: To determine whether BCG vaccination protects against *Mycobacterium tuberculosis* infection as assessed by interferon γ release assays (IGRA) in children.
Design: Systematic review and meta-analysis. Searches of electronic databases 1950 to November 2013, checking of reference lists, hand searching of journals, and contact with experts.
Setting: Community congregate settings and households.
Inclusion criteria: Vaccinated and unvaccinated children aged under 16 with known recent exposure to patients with pulmonary tuberculosis. Children were screened for infection with *M tuberculosis* with interferon γ release assays.
Data extraction: Study results relating to diagnostic accuracy were extracted and risk estimates were combined with random effects meta-analysis.
Results: The primary analysis included 14 studies and 3855 participants. The estimated overall risk ratio was 0.81 (95% confidence interval 0.71 to 0.92), indicating a protective efficacy of 19% against infection among vaccinated children after exposure compared with unvaccinated children. The observed protection was similar when estimated with the two types of interferon γ release assays (ELISpot or QuantiFERON). Restriction of the analysis to the six studies (n=1745) with information on progression to active tuberculosis at the time of screening showed protection against infection of 27% (risk ratio 0.73, 0.61 to 0.87) compared with 71% (0.29, 0.15 to 0.58) against active tuberculosis. Among those infected, protection against progression to disease was 58% (0.42, 0.23 to 0.77).
Conclusions: BCG protects against *M tuberculosis* infection as well as progression from infection to disease.

Ebola

12. BMJ 2014;349:g4895 News

Two doctors die from Ebola and lives of others under threat in West Africa

Torjesen I

The risks to doctors while caring for patients in the outbreak of Ebola virus disease in west Africa became increasingly apparent this week when it was confirmed that a second doctor had died from the virus in a month and that at least two others had been infected.
The World Medical Association has warned that poor care practices were putting doctors' lives at risk in what has become the world's worst recorded outbreak of the disease. Reports have also emerged that doctors and officials trying to get to some villages in affected areas

have been threatened by frightened local people doing all they can to keep outsiders and potential carriers of the virus out. Some communities are blaming aid agencies for spreading the virus and turning to traditional medicine rather than sending people with suspected cases to official Ebola clinics.

The present outbreak began in Guinea in February and spread to neighbouring Liberia and Sierra Leone. As at 23 July at least 1200 people were believed to have been infected, 672 of whom had died, show figures from the World Health Organization.

"We are also concerned about reports of unsupervised junior staff in the current Ebola outbreak, which needs high level of expertise to support the junior staff. These are major threats to all those working in these situations and go to the heart of safe working conditions."

There is no specific treatment for Ebola virus disease. Patients are often dehydrated and require oral rehydration with solutions containing electrolytes or intravenous fluids. Severely ill patients require intensive supportive care.

Liberia has closed most border crossings and set up screening centres at the entry points that remain open. Public gatherings have been banned.

Last week an official died in Nigeria after flying from Monrovia to Lagos, raising fears that other passengers could have been infected and take the disease outside Africa. This was the first recorded case in Nigeria, and the country has shut and quarantined the hospital where the patient died while it is decontaminated. All entry points into Nigeria have also been put on red alert, and Nigeria's largest airline, Arik Air, has suspended all flights to Liberia and Sierra Leone.

13. BMJ 2014;349:g5079 Editorials

Ebola and other viral haemorrhagic fevers

Fletcher TE et al., <nicholas.beeching@rlbuht.nhs.uk>

Be prepared, with new guidance featuring old and well established principles

The ongoing Ebola outbreak in West Africa is the largest and most complicated that the world has even seen. Since it was first identified in the forested regions of south eastern Guinea in March, it has spread to Liberia, Sierra Leone, and Nigeria and has now been declared a "public health emergency of international concern" by the World Health Organization.

Ebola virus is one of a group of zoonotic viruses that can cause severe disease in humans. Viruses that cause viral haemorrhagic fever include Lassa virus, Crimean-Congo haemorrhagic fever virus, Marburg virus, and emerging ones such as Lujo virus. These viruses are of particular public health importance because of their ability to spread to carers and healthcare workers, the often high case fatality rate, difficulties in their rapid recognition, and the lack of effective specific treatments.

The current epidemic is caused by the Zaire strain of Ebola virus, which has a mortality of 50-90% in endemic settings. No licensed cure or vaccine is available, although research is in progress to develop these and two American healthcare workers are reported to have received an experimental monoclonal antibody preparation after acquiring Ebola virus infection in Liberia. The keys to case management are early recognition and isolation of cases, use of personal protective equipment, and the provision of supportive medical care to reduce mortality.

Guidance on management of viral haemorrhagic fever was developed for UK healthcare professionals after a laboratory acquired case of Ebola infection, and the first cases of Lassa fever imported to the United Kingdom in the 1970s. The guidance was revised by the Advisory Committee on Dangerous Pathogens in 2012 and updated last month. Similar guidelines are available in the United States**4** and European countries, and they differ in emphasis from those developed for use in resource poor settings. Guidance and information

for the British public are also available in a range of reliable internet resources including NHS Choices.

14. BMJ 2014;349:g5597 Editorials

Ebola in an unprepared Africa

Tomori O, professor of virology <oyewaletomori@yahoo.com>

Governments of affected countries need help but must take the lead in protecting their citizens

The 2 year old boy who died in December 2013 in Gueckedou, Guinea, is considered the index case of the current outbreak of Ebola virus disease caused by the Zaire species. Up until 2014, the disease was limited to rural areas of east and central Africa, but it has now spread to Liberia, Sierra Leone, Nigeria, and Senegal. By 6 September 2014, 4293 cases and 2296 deaths had been reported in the current outbreak, which, by the time the outbreak is controlled, is likely to surpass the total number of cases and deaths reported for all 22 Ebola outbreaks that have occurred in Africa since 1976, when the disease was first described. The World Health Organization has declared the current outbreak an "out of control" public health emergency of international concern.

One of the reasons for the unprecedented epidemic is that Ebola is spreading in three countries ranked among the poorest in the world. The 2014 Human Development Index ranks Liberia, Guinea, and Sierra Leone at 175, 179, and 183, respectively, of 187 countries. Whereas Liberia and Sierra Leone are recovering from civil wars, Guinea has been affected by chronic underdevelopment allowed and ignored by successive governments. Around a fifth of the citizens of these three countries live in extreme poverty. Health facilities and services are wholly inadequate. For example, Liberia has 0.1 physicians, 1.7 nurses and midwives, and eight hospital beds for every 10 000 people.

To date, more than 240 healthcare workers have developed Ebola virus disease in Guinea, Liberia, Nigeria, and Sierra Leone and more than 120 have died. In addition to fragile health systems, several other contributory factors have compromised our ability to mount an adequate response. Poor disease surveillance and response systems make early detection and control of outbreaks inefficient and unreliable. In addition, unmanned borders artificially separate people of the same ethnic origin and cultural background into different nationalities, resulting in a high level of movement across borders and uncontrolled cross border movement of infected people. The death of healthcare workers has led to a shortage of workers to care for patients with other diseases and hospital closures. Ignorance and misconceptions about the virus's mode of transmission and customary burial ceremonies complicate the situation further.

Governments of affected countries were initially in denial over the occurrence of the disease. Subsequently, they relinquished responsibility for the care of infected patients to overworked international non-governmental organisations and issued incoherent directives, such as the closure of markets and borders. The Ebola outbreak has now become so serious that health infrastructure is beginning to collapse and hospitals are closing. Without effective medical care patients are dying not only of Ebola but of malaria, diarrhoea, and other conditions. The medical charity Médecins Sans Frontières recently commented that it will take at least another six months to bring the epidemic under control. The organisation's president and general director have described the international response to its repeated calls "for more hands-on assistance to control the epidemic and to provide the best possible care to patients" as "slow, derisory, [and] irresponsible."

15. Other interesting articles on Ebola development or news:

15.1 BMJ 2014;349:g4987 Views & Reviews No Holds Barred

Courage is treating patients with Ebola

Margaret McCartney, general practitioner, Glasgow margaret@margaretmccartney.com

Sheik Umar Khan, a doctor in Sierra Leone, knew the risks. "I am afraid for my life, I must say, because I cherish my life," he said. "Health workers are prone to the disease because we are the first port of call for somebody who is sickened by the disease. Even with the full protective clothing you put on, you are at risk."

15.2 BMJ 2014;349:g5089 News

Ebola outbreak is a public health emergency of international concern, WHO warns

Nigel Hawkes

The World Health Organization has declared the current outbreak of Ebola virus disease in west Africa a public health emergency of international concern and has called for a strong and coordinated international response.

15.3 BMJ 2014;349:g4997 Feature Infectious Diseases

Ebola: an opportunity for a clinical trial?

Sophie Arie, London sarie@bmj.com

As the largest outbreak of Ebola virus has forced hitherto neglected tropical diseases on to the public agenda, debate is growing over whether affected patients should have the chance to try experimental drugs.

15.4 BMJ 2014;349:g5539 News

First Ebola treatment is approved by WHO

Anne Gulland**,** Serum from people who are convalescing from infection with the Ebola virus can be used to treat new patients, the World Health Organization announced last week.

15.5 BMJ 2014;349:g5838 News

Clinical trials of Ebola treatment to start in Africa

Anne Gulland**,** A £3.2m (€4.1m; $5.2m) grant to fund clinical trials of drugs to treat Ebola virus disease in west Africa will not be a "magic bullet" in containing the outbreak, and good public health measures were still needed, experts have said.

15.6 BMJ 2014;349:g5866 News

Liberia and Sierra Leone could see 1.4 million Ebola cases by January

Without additional intervention the number of cases of Ebola virus disease in the west African countries of Liberia and Sierra Leone could reach 1.4 million by the end of January, a report by the US Centers for Disease Control and Prevention (CDC) has found.

15.7 BMJ 2014;349:g6255 News

WHO hopes Ebola incidence will decline after peaking in December

Anne Gulland

The World Health Organization is aiming to ensure that the number of new cases of Ebola disease does not rise to more than 10 000 cases a week by the beginning of December and then starts to fall.

The goal is part of a new programme introduced by the United Nations Mission for Emergency Response, which aims that within 60 days from mid-October 70% of new infections will be isolated and 70% of burials will be safe. And within 90 days the goal is that the number of new infections will be decreasing in 80% of areas affected by Ebola disease.

15.8 BMJ 2014;349:g6542 News

WHO reports decline in number of new Ebola cases in Liberia

Anne Gulland

The number of newly reported cases of Ebola virus disease in Liberia is falling, with reports of empty beds in treatment centres, the World Health Organization has said.

15.9 BMJ 2014;349:g6827 News

Clinical trials of Ebola therapies to begin in December

Anne Gulland

The first clinical trials of therapies for Ebola virus disease will begin next month in the treatment centres run by Médecins Sans Frontières in Guinea

HIV – AIDS

16. TMIH 2014;19(8):968-77

Community-supported models of care for people on HIV treatment in sub-Saharan Africa

Bemelmans M et al., Médecins Sans Frontières, Operational Centre Brussels, Brussels, Belgium

Objectives: Further scale-up of antiretroviral therapy (ART) to those in need while supporting the growing patient cohort on ART requires continuous adaptation of healthcare delivery models. We describe several approaches to manage stable patients on ART developed by Médecins Sans Frontières together with Ministries of Health in four countries in sub-Saharan Africa.
Methods: Using routine programme data, four approaches to simplify ART delivery for stable patients on ART were assessed from a patient and health system perspective: appointment spacing for clinical and drug refill visits in Malawi, peer educator-led ART refill groups in South Africa, community ART distribution points in DRC and patient-led community ART groups in Mozambique.
Results: All four approaches lightened the burden for both patients (reduced travel and lost income) and health system (reduced clinic attendance). Retention in care is high: 94% at 36 months in Malawi, 89% at 12 months in DRC, 97% at 40 months in South Africa and 92% at 48 months in Mozambique. Where evaluable, service provider costs are reported to be lower.
Conclusion: Separating ART delivery from clinical assessments was found to benefit patients and programmes in a range of settings. The success of community ART models depends on sufficient and reliable support and resources, including a flexible and reliable drug supply, access to quality clinical management, a reliable monitoring system and a supported lay workers cadre. Such models require ongoing evaluation and further adaptation to be able to reach out to more patients, including specific groups who may be challenged to meet the demands of frequent clinic visits and the integrated delivery of other essential chronic disease interventions.

17. TMIH 2014;19(8):978-87

CD4 count outperforms World Health Organization clinical algorithm for point-of-care HIV diagnosis among hospitalised HIV-exposed Malawian infants

Maliwichi M et al., University of North Carolina Project Lilongwe, Lilongwe, Malawi

Objective: To determine, for the WHO algorithm for point-of-care diagnosis of HIV infection, the agreement levels between paediatricians and non-physician clinicians, and to compare sensitivity and specificity profiles of the WHO algorithm and different CD4 thresholds against HIV PCR testing in hospitalised Malawian infants.
Methods: In 2011, hospitalised HIV-exposed infants <12 months in Lilongwe, Malawi, were evaluated independently with the WHO algorithm by both a paediatrician and clinical officer. Blood was collected for CD4 and molecular HIV testing (DNA or RNA PCR). Using molecular testing as the reference, sensitivity, specificity and positive predictive value (PPV) were determined for the WHO algorithm and CD4 count thresholds of 1500 and 2000 cells/mm(3) by paediatricians and clinical officers.
Results: We enrolled 166 infants (50% female, 34% <2 months, 37% HIV infected). Sensitivity was higher using CD4 thresholds (<1500, 80%; <2000, 95%) than with the algorithm (physicians, 57%; clinical officers, 71%). Specificity was comparable for CD4 thresholds (<1500, 68%, <2000, 50%) and the algorithm (paediatricians, 55%, clinical officers, 50%). The positive predictive values were slightly better using CD4 thresholds (<1500, 59%, <2000, 52%) than the algorithm (paediatricians, 43%, clinical officers 45%) at this prevalence.
Conclusion: Performance by the WHO algorithm and CD4 thresholds resulted in many misclassifications. Point-of-care CD4 thresholds of <1500 cells/mm(3) or <2000 cells/mm(3) could identify more HIV-infected infants with fewer false positives than the algorithm. However, a point-of-care option with better performance characteristics is needed for accurate, timely HIV diagnosis.

18. TMIH 2014;19(9):1015-28

The changing face of the HIV epidemic in sub-Saharan Africa

Mutevedzi PC et al., University of KwaZulu-Natal, Somkhele, South Africa

The widespread roll-out of antiretroviral therapy (ART) has substantially changed the face of human immunodeficiency virus (HIV). Timely initiation of ART in HIV-infected individuals dramatically reduces mortality and improves employment rates to levels prior to HIV infection. Recent findings from several studies have shown that ART reduces HIV transmission risk even with modest ART coverage of the HIV-infected population and imperfect ART adherence. While condoms are highly effective in the prevention of HIV acquisition, they are compromised by low and inconsistent usage; male medical circumcision substantially reduces HIV transmission but uptake remains relatively low; ART during pregnancy, delivery and breastfeeding can virtually eliminate mother-to-child transmission but implementation is challenging, especially in resource-limited settings. The current HIV prevention recommendations focus on a combination of preventions approach, including ART as treatment or pre- or post-exposure prophylaxis together with condoms, circumcision and sexual behaviour modification. Improved survival in HIV-infected individuals and reduced HIV transmission risk is beginning to result in limited HIV incidence decline at population level and substantial increases in HIV prevalence. However, achievements in HIV treatment and prevention are threatened by the challenges of lifelong adherence to preventive and therapeutic Methods and by the ageing of the HIV-infected cohorts potentially complicating HIV management. Although current thinking suggests prevention of HIV transmission through early detection of infection immediately followed by ART could eventually result in elimination of the HIV epidemic, controversies remain as to whether we can treat our way out of the HIV epidemic.

19. TMIH 2014;19(9):1029-39

Outcomes of a nurse-managed service for stable HIV-positive patients in a large South African public sector antiretroviral therapy programme
Grimsrud A et al., University of Cape Town, Cape Town, South Africa

Objectives: Models of care utilizing task shifting and decentralization are needed to support growing ART programmes. We compared patient outcomes between a doctor-managed clinic and a nurse-managed down-referral site in Cape Town, South Africa.
Methods: Analysis included all adults who initiated ART between 2002 and 2011 within a large public sector ART service. Stable patients were eligible for down-referral. Outcomes [mortality, loss to follow-up (LTFU), virologic failure] were compared under different models of care using proportional hazards models with time-dependent covariates.
Results: Five thousand seven hundred and forty-six patients initiated ART and over 5 years 41% (n = 2341) were down-referred; the median time on ART before down-referral was 1.6 years (interquartile range, 0.9-2.6). The nurse-managed down-referral site reported lower crude rates of mortality, LTFU and virologic failure compared with the doctor-managed clinic. After adjustment, there was no difference in the risk of mortality or virologic failure by model of care. However, patients who were down-referred were more likely to be LTFU than those retained at the doctor-managed site (adjusted hazard ratio, 1.36; 95% CI, 1.09-1.69). Increased levels of LTFU in the nurse-managed vs. doctor-managed service were observed in subgroups of male patients, those with advanced disease at initiation and those who started ART in the early years of the programme.
Conclusion: Reorganization of ART maintenance by down-referral to nurse-managed services is associated with programme outcomes similar to those achieved using doctor-driven primary care services. Further research is necessary to identify optimal models of care to support long-term retention of patients on ART in resource-limited settings.

20. TMIH 2014;19(11):1360-6
Understanding factors, outcomes and reasons for loss to follow-up among women in Option B+ PMTCT programme in Lilongwe, Malawi
Tweya H et al., The International Union Against Tuberculosis and Lung Disease, Paris, France

Objective: To assess factors, outcomes and reasons for loss to follow-up (LTFU) among pregnant and breastfeeding women initiated on a lifelong antiretroviral therapy (ART) for PMTCT in a large antenatal clinic in Malawi.
Methods: We identified all pregnant and breastfeeding women who were initiated on ART between September 2011 and September 2013 and had missed their clinic appointment by at least 3 weeks at Bwaila Hospital, the largest antenatal clinic in Malawi. These women were traced by phone or home visits. Their true status and reasons for ART discontinuation were documented during tracing.
Results: A total of 2930 women started ART for PMTCT; 2458 (84%) pregnant and 472 (16%) breastfeeding, of which, 577 (20%) missed a scheduled clinic appointment. LTFU was associated with younger age, being pregnant, and earlier year of ART initiation. We successfully traced 229 (40%), of whom, 10 (4%) had died. Of the 219 women found alive, 118 (54%) had stopped taking ARV drugs, 67 (30%) had self-transferred to another ART clinic, 13 (6%) had collected drugs from other sources, 9 (4%) had treatment interruptions and 12 (5%) had other outcomes. Reasons cited for stopping ART were travel (38%), lack of transport money (16%), not understanding the initial ARV education session (10%), being too weak/sick (10%), ARV side effects (10%) and other reasons.

Conclusion: Approximately half of the women who were traced were taking ARVs. The study emphasises the need for enhanced post-test counselling strategies, ongoing psychosocial support, provision of incentives and further decentralisation efforts of PMTCT services.

21. TMIH 2014;19(12):1397-410

Retention and risk factors for attrition among adults in antiretroviral treatment programmes in Tanzania, Uganda and Zambia

Koole O et al., London School of Hygiene and Tropical Medicine, London, UK

Objectives: We assessed retention and predictors of attrition (recorded death or loss to follow-up) in antiretroviral treatment (ART) clinics in Tanzania, Uganda and Zambia.
Methods: We conducted a retrospective cohort study among adults (≥18 years) starting ART during 2003-2010. We purposefully selected six health facilities per country and randomly selected 250 patients from each facility. Patients who visited clinics at least once during the 90 days before data abstraction were defined as retained. Data on individual and programme level risk factors for attrition were obtained through chart review and clinic manager interviews. Kaplan-Meier curves for retention across sites were created. Predictors of attrition were assessed using a multivariable Cox-proportional hazards model, adjusted for site-level clustering.
Results: From 17 facilities, 4147 patients were included. Retention ranged from 52.0% to 96.2% at 1 year to 25.8%-90.4% at 4 years. Multivariable analysis of ART initiation characteristics found the following independent risk factors for attrition: younger age [adjusted hazard ratio (aHR) and 95% confidence interval (95%CI) = 1.30 (1.14-1.47)], WHO stage 4 ([aHR (95% CI): 1.56 (1.29-1.88)], >10% bodyweight loss [aHR (95%CI) = 1.17 (1.00-1.38)], poor functional status [ambulatory aHR (95%CI) = 1.29 (1.09-1.54); bedridden aHR1.54 (1.15-2.07)], and increasing years of clinic operation prior to ART initiation in government facilities [aHR (95%CI) = 1.17 (1.10-1.23)]. Patients with higher CD4 cell count were less likely to experience attrition [aHR (95%CI) = 0.88 (0.78-1.00)] for every log (tenfold) increase. Sites offering community ART dispensing [aHR (95%CI) = 0.55 (0.30-1.01) for women; 0.40 (0.21-0.75) for men] had significantly less attrition.
ConclusionS: Patient retention to an individual programme worsened over time especially among males, younger persons and those with poor clinical indicators. Community ART drug dispensing programmes could improve retention.

22. TMIH 2014;19(12):1411-9

Impact of systematic HIV testing on case finding and retention in care at a primary care clinic in South Africa

Clouse K et al., University of North Carolina Gillings School of Global Public Health, Chapel Hill, NC, USA

Objective: Systematic, opt-out HIV counselling and testing (HCT) may diagnose individuals at lower levels of immunodeficiency but may impact loss to follow-up (LTFU) if healthier people are less motivated to engage and remain in HIV care. We explored LTFU and patient clinical outcomes under two different HIV testing strategies.
Methods: We compared patient characteristics and retention in care between adults newly diagnosed with HIV by either voluntary counselling and testing (VCT) plus targeted provider-initiated counselling and testing (PITC) or systematic HCT at a primary care clinic in Johannesburg, South Africa.
Results: One thousand one hundred and forty-four adults were newly diagnosed by VCT/PITC and 1124 by systematic HCT. Two-thirds of diagnoses were in women. Median

CD4 count at HIV diagnosis (251 vs. 264 cells/μl, P = 0.19) and proportion of individuals eligible for antiretroviral therapy (ART) (67.2% vs. 66.7%, P = 0.80) did not differ by HCT strategy. Within 1 year of HIV diagnosis, half were LTFU: 50.5% under VCT/PITC and 49.6% under systematic HCT (P = 0.64). The overall hazard of LTFU was not affected by testing policy (aHR 0.98, 95%CI: 0.87-1.10). Independent of HCT strategy, males, younger adults and those ineligible for ART were at higher risk of LTFU.
ConclusionS: Implementation of systematic HCT did not increase baseline CD4 count. Overall retention in the first year after HIV diagnosis was low (37.9%), especially among those ineligible for ART, but did not differ by testing strategy. Expansion of HIV testing should coincide with effective strategies to increase retention in care, especially among those not yet eligible for ART at initial diagnosis.

23. BMJ 2014;349:g5978 Research

Effect of mobile telephone reminders on treatment outcome in HIV: evidence from a randomised controlled trial in India

This article has corrections. Please see:
Effect of mobile telephone reminders on treatment outcome in HIV: evidence from a randomised controlled trial in India - November 06, 2014
Effect of mobile telephone reminders on treatment outcome in HIV: evidence from a randomised controlled trial in India - November 19, 2014
Anita Shet, Correspondence to: A De Costa Ayesha.de.costa@ki.se

Objective: To assess whether customised mobile phone reminders would improve adherence to therapy and thus decrease virological failure among HIV infected patients starting antiretroviral treatment (ART).
Design: Randomised controlled trial among HIV infected patients initiating antiretroviral treatment.
Setting: Three diverse healthcare delivery settings in south India: two ambulatory clinics within the Indian national programme and one private HIV healthcare clinic.
Participants: 631 HIV infected, ART naïve, adult patients eligible to initiate first line ART were randomly assigned to mobile phone intervention (n=315) or standard care (n=316) and followed for 96 weeks..
Intervention: The intervention consisted of customised, interactive, automated voice reminders, and a pictorial message that were sent weekly to the patients' mobile phones for the duration of the study.
Main outcome measures: The primary outcome was time to virological failure (viral load >400 copies/mL on two consecutive measurements). Secondary outcomes included ART adherence measured by pill count, death rate, and attrition rate. Suboptimal adherence was defined as mean adherence <95%.
Results: Using an intention-to-treat approach we found no observed difference in time to virological failure between the allocation groups: failures in the intervention and standard care arms were 49/315 (15.6%) and 49/316 (15.5%) respectively (unadjusted hazard ratio 0.98, 95% confidence interval 0.67 to 1.47, P=0.95). The rate of virological failure in the intervention and standard care groups were 10.52 and 10.73 per 100 person years respectively. Comparison of suboptimal adherence was similar between both groups (unadjusted incidence rate ratio 1.24, 95% CI 0.93 to 1.65, P=0.14). Incidence proportion of patients with suboptimal adherence was 81/300 (27.0%) in the intervention arm and 65/299 (21.7%) in the standard care arm. The results of analyses adjusted for potential confounders were similar, indicating no significant difference between the allocation groups. Other

secondary outcomes such as death and attrition rates, and subgroup analysis also showed comparable results across allocation groups.
Conclusions: In this multicentre randomised controlled trial among ART naïve patients initiating first line ART within the Indian national programme, we found no significant effect of the mobile phone intervention on either time to virological failure or ART adherence at the end of two years of therapy.

Malaria

24. Am J TMH 2014 Nov 17. pii: 14-0023 [Epub ahead of print]
Physical Durability of Two Types of Long-Lasting Insecticidal Nets (LLINs) Three Years after a Mass LLIN Distribution Campaign in Mozambique, 2008-2011
Morgan et al.,

We conducted a prospective evaluation to measure the physical durability of two brands of long-lasting insecticidal nets (LLINs) distributed during a campaign in 2008 in Nampula Province, Mozambique. Households with LLINs tagged during the campaign (6,000) were geo-located (34%) and a random sample was selected for each of 3 years of follow-up. The LLINs were evaluated in the field and a laboratory for presence of holes and a proportional hole index (pHI) was calculated following the World Health Organization guidelines. We performed 567 interviews (79.0%) and found 75.3% (72.1-78.4%) of households retained at least one LLIN after 3 years; the most common cause of attrition was damage beyond repair (51.0%). Hole damage was evident after 1 year, and increased by year. Olyset had a significantly greater mean number of holes and pHI compared with PermaNet 2.0 brand (all P values ≤ 0.001). Additional information about LLIN durability is recommended to improve malaria control efforts.

25. Clin Infect Dis 2014 Nov 2. pii: ciu849 [Epub ahead of print]
Long-term Protection From Isoniazid Preventive Therapy for Tuberculosis in HIV-Infected Patients in a Medium-Burden Tuberculosis Setting: The TB/HIV in Rio (THRio) Study
Golub et al.

Background: The duration of protection against tuberculosis provided by isoniazid preventive therapy is not known for human immunodeficiency virus (HIV)-infected individuals living in settings of medium tuberculosis incidence.
Methods: We conducted an individual-level analysis of participants in a cluster-randomized, phased-implementation trial of isoniazid preventive therapy. HIV-infected patients who had positive tuberculin skin tests (TSTs) were followed until tuberculosis diagnosis, death, or administrative censoring. Nelson-Aalen cumulative hazard plots were generated and hazards were compared using the log-rank test. Cox proportional hazards models were fitted to investigate factors associated with tuberculosis diagnosis.
Results: Between 2003 and 2009, 1954 patients with a positive TST were studied. Among these, 1601 (82%) initiated isoniazid. Overall tuberculosis incidence was 1.39 per 100 person-years (PY); 0.53 per 100 PY in those who initiated isoniazid and 6.52 per 100 PY for those who did not (adjusted hazard ratio [aHR], 0.17; 95% confidence interval [CI], .11-.25). Receiving antiretroviral therapy at time of a positive TST was associated with a reduced risk of tuberculosis (aHR, 0.69; 95% CI, .48-1.00). Nelson-Aalen plots of tuberculosis incidence

showed a constant risk, with no acceleration in 7 years of follow-up for those initiating isoniazid preventive therapy.
ConclusionS: Isoniazid preventive therapy significantly reduced tuberculosis risk among HIV-infected patients with a positive TST. In a medium-prevalence setting, 6 months of isoniazid in HIV-infected patients with positive TST reduces tuberculosis risk over 7 years of follow-up, in contrast to results of studies in higher-burden settings in Africa.

26. TMIH
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27. TMIH 2014;19(9):1048-56
Effectiveness of intermittent preventive treatment with sulfadoxine-pyrimethamine during pregnancy on placental malaria, maternal anaemia and birthweight in areas with high and low malaria transmission intensity in Tanzania
Mosha D et al., Ifakara Health Institute, Rufiji HDSS, Rufiji, Tanzania

Objective: To assess the effectiveness of IPTp in two areas with different malaria transmission intensities.
Methods: Prospective observational study recruiting pregnant women in two health facilities in areas with high and low malaria transmission intensities. A structured questionnaire was used for interview. Maternal clinic cards and medical logs were assessed to determine drug intake. Placental parasitaemia was screened using both light microscopy and real-time quantitative PCR.
Results:
Of 350 pregnant women were recruited and screened for placental parasitaemia, 175 from each area. Prevalence of placental parasitaemia was 16.6% (CI 11.4-22.9) in the high transmission area and 2.3% (CI 0.6-5.7) in the low transmission area. Being primigravida and residing in a high transmission area were significant risk factors for placental malaria (OR 2.4; CI 1.1-5.0; P = 0.025) and (OR 9.4; CI 3.2-27.7; P < 0.001), respectively. IPTp was associated with a lower risk of placental malaria (OR 0.3; CI 0.1-1.0; P = 0.044); the effect was more pronounced in the high transmission area (OR 0.2; CI 0.06-0.7; P = 0.015) than in the low transmission area (OR 0.4; CI 0.04-4.5; P = 0.478). IPTp use was not associated with reduced risk of maternal anaemia or low birthweight, regardless of transmission intensity. The number needed to treat (NNT) was four (CI 2-6) women in the high transmission area and 33 (20-50) in the low transmission area to prevent one case of placental malaria.
Conclusion: IPTp may have an effect on lowering the risk of placental malaria in areas of high transmission, but this effect did not translate into a benefit on risks of maternal anaemia or low birthweight. The NNT needs to be considered, and weighted against that of other protective measures, eventually targeting areas which are above a certain threshold of malaria transmission to maximise the benefit.

28. TMIH 2014;19(11):1294-309
Malaria in school-age children in Africa: an increasingly important challenge
Nankabirwa J et al., Makerere University College of Health Sciences, Kampala, Uganda

School-age children have attracted relatively little attention as a group in need of special measures to protect them against malaria. However, increasing success in lowering the level

of malaria transmission in many previously highly endemic areas will result in children acquiring immunity to malaria later in life than has been the case in the past. Thus, it can be anticipated that in the coming years there will be an increase in the incidence of both uncomplicated and severe malaria in school-age children in many previously highly endemic areas. In this review, which focuses primarily on Africa, recent data on the prevalence of malaria parasitaemia and on the incidence of clinical malaria in African school-age children are presented and evidence that malaria adversely effects school performance is reviewed. Long-lasting insecticide treated bednets (LLIN) are an effective method of malaria control but several studies have shown that school-age children use LLINs less frequently than other population groups. Antimalarial drugs are being used in different ways to control malaria in school-age children including screening and treatment and intermittent preventive treatment. Some studies of chemoprevention in school-age children have shown reductions in anaemia and improved school performance but this has not been the case in all trials and more research is needed to identify the situations in which chemoprevention is likely to be most effective and, in these situations, which type of intervention should be used. In the longer term, malaria vaccines may have an important role in protecting this important section of the community from malaria. Regardless of the control approach selected, it is important this is incorporated into the overall programme of measures being undertaken to enhance the health of African school-age children.

Sexual and Reproductive Health

29. Lancet 2014;384(9941):455-67

From evidence to action to deliver a healthy start for the next generation

Mason E et al., WHO, Geneva, Switzerland <masone@who.int>

Remarkable progress has been made towards halving of maternal deaths and deaths of children aged 1-59 months, although the task is incomplete. Newborn deaths and stillbirths were largely invisible in the Millennium Development Goals, and have continued to fall between maternal and child health efforts, with much slower reduction. This Series and the Every Newborn Action Plan outline mortality goals for newborn babies (ten or fewer per 1000 livebirths) and stillbirths (ten or fewer per 1000 total births) by 2035, aligning with A Promise Renewed target for children and the vision of Every Woman Every Child. To focus political attention and improve performance, goals for newborn babies and stillbirths must be recognised in the post-2015 framework, with corresponding accountability mechanisms. The four previous papers in this Every Newborn Series show the potential for a triple return on investment around the time of birth: averting maternal and newborn deaths and preventing stillbirths. Beyond survival, being counted and optimum nutrition and development is a human right for all children, including those with disabilities. Improved human capital brings economic productivity. Efforts to reach every woman and every newborn baby, close gaps in coverage, and improve equity and quality for antenatal, intrapartum, and postnatal care, especially in the poorest countries and for underserved populations, need urgent attention. We have prioritised what needs to be done differently on the basis of learning from the past decade about what has worked, and what has not. Needed now are four most important shifts: (1) intensification of political attention and leadership; (2) promotion of parent voice, supporting women, families, and communities to speak up for their newborn babies and to challenge social norms that accept these deaths as inevitable; (3) investment for effect on mortality outcome as well as harmonisation of funding; (4) implementation at scale, with particular attention to increasing of health worker numbers and skills with attention to high-

quality childbirth care for newborn babies as well as mothers and children; and (5) evaluation, tracking coverage of priority interventions and packages of care with clear accountability to accelerate progress and reach the poorest groups. The Every Newborn Action Plan provides an evidence-based roadmap towards care for every woman, and a healthy start for every newborn baby, with a right to be counted, survive, and thrive wherever they are born.

30. Lancet 2014;384(9948):1146-57 Epub 2014 Jun 22

The projected effect of scaling up midwifery

Homer et al.

We used the Lives Saved Tool (LiST) to estimate deaths averted if midwifery was scaled up in 78 countries classified into three tertiles using the Human Development Index (HDI). We selected interventions in LiST to encompass the scope of midwifery practice, including prepregnancy, antenatal, labour, birth, and post-partum care, and family planning. Modest (10%), substantial (25%), or universal (95%) scale-up scenarios from present baseline levels were all found to reduce maternal deaths, stillbirths, and neonatal deaths by 2025 in all countries tested. With universal coverage of midwifery interventions for maternal and newborn health, excluding family planning, for the countries with the lowest HDI, 61% of all maternal, fetal, and neonatal deaths could be prevented. Family planning alone could prevent 57% of all deaths because of reduced fertility and fewer pregnancies. Midwifery with both family planning and interventions for maternal and newborn health could avert a total of 83% of all maternal deaths, stillbirths, and neonatal deaths. The inclusion of specialist care in the scenarios resulted in an increased number of deaths being prevented, meaning that midwifery care has the greatest effect when provided within a functional health system with effective referral and transfer mechanisms to specialist care.

31. Lancet 2014;384(9949):1215-25 Epub 2014 Jun 22

Country experience with strengthening of health systems and deployment of midwives in countries with high maternal mortality

Van Lerberghe et al.

This paper complements the other papers in the Lancet Series on midwifery by documenting the experience of low-income and middle-income countries that deployed midwives as one of the core constituents of their strategy to improve maternal and newborn health. It examines the constellation of various diverse health-system strengthening interventions deployed by Burkina Faso, Cambodia, Indonesia, and Morocco, among which the scaling up of the pre-service education of midwives was only one element. Efforts in health system strengthening in these countries have been characterised by: expansion of the network of health facilities with increased uptake of facility birthing, scaling up of the production of midwives, reduction of financial barriers, and late attention for improving the quality of care. Overmedicalisation and respectful woman-centred care have received little or no attention.

32. Lancet 2014;384(9949):1226-35

Improvement of maternal and newborn health through midwifery

Hoope-Bender P ten et al., Instituto de Cooperación Social Integrare, Barcelona, Spain <petra.tenhoope@integrare.es>

In the concluding paper of this Series about midwifery, we look at the policy implications from the framework for quality maternal and newborn care, the potential effect of life-saving

interventions that fall within the scope of practice of midwives, and the historic sequence of health system changes that made a reduction in maternal mortality possible in countries that have expanded their midwifery workforce. Achievement of better health outcomes for women and newborn infants is possible, but needs improvements in the quality of reproductive, maternal, and newborn care, alongside necessary increases in universal coverage. In this report, we propose three priority research areas and outline how national investment in midwives and in their work environment, education, regulation, and management can improve quality of care. Midwifery and midwives are crucial to the achievement of national and international goals and targets in reproductive, maternal, newborn, and child health; now and beyond 2015.

33. Lancet 2014;384(9951):1366-74

Maternal mortality in Bangladesh: a Countdown to 2015 country case study

El Arifeen S et al., International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh <shams@icddrb.org>

Background: Bangladesh is one of the only nine Countdown countries that are on track to achieve the primary target of Millennium Development Goal (MDG) 5 by 2015. It is also the only low-income or middle-income country with two large, nationally-representative, high-quality household surveys focused on the measurement of maternal mortality and service use.
Methods: We use data from the 2001 and 2010 Bangladesh Maternal Mortality Surveys to measure change in the maternal mortality ratio (MMR) and from these and six Bangladesh Demographic and Health Surveys to measure changes in factors potentially related to such change. We estimate the changes in risk of maternal death between the two surveys using Poisson regression.
Findings: The MMR fell from 322 deaths per 100,000 livebirths (95% CI 253-391) in 1998-2001 to 194 deaths per 100,000 livebirths (149-238) in 2007-10, an annual rate of decrease of 5·6%. This decrease rate is slightly higher than that required (5·5%) to achieve the MDG target between 1990 and 2015. The key contribution to this decrease was a drop in mortality risk mainly due to improved access to and use of health facilities. Additionally, a number of favourable changes occurred during this period: fertility decreased and the proportion of births associated with high risk to the mother fell; income per head increased sharply and the poverty rate fell; and the education levels of women of reproductive age improved substantially. We estimate that 52% of maternal deaths that would have occurred in 2010 in view of 2001 rates were averted because of decreases in fertility and risk of maternal death.
Interpretation: The decrease in MMR in Bangladesh seems to have been the result of factors both within and outside the health sector. This finding holds important lessons for other countries as the world discusses and decides on the post-MDG goals and strategies. For Bangladesh, this case study provides a strong rationale for the pursuit of a broader developmental agenda alongside increased and accelerated investments in improving access to and quality of public and private health-care facilities providing maternal health in Bangladesh.

34. Lancet 2014;384(9957):1869-77

Use of antenatal corticosteroids and tocolytic drugs in preterm births in 29 countries: an analysis of the WHO Multicountry Survey on Maternal and Newborn Health

Vogel JP et al., Faculty of Medicine, Dentistry and Health Sciences, University of Western Australia, Crawley, WA, Australia <vogeljo@who.int>

Background: Despite the global burden of morbidity and mortality associated with preterm birth, little evidence is available for use of antenatal corticosteroids and tocolytic drugs in preterm births in low-income and middle-income countries. We analysed data from the WHO Multicountry Survey on Maternal and Newborn Health (WHOMCS) to assess coverage for these interventions in preterm deliveries.
Methods: WHOMCS is a facility-based, cross-sectional survey database of birth outcomes in 359 facilities in 29 countries, with data collected prospectively from May 1, 2010, to Dec 31, 2011. For this analysis, we included deliveries after 22 weeks' gestation and we excluded births that occurred outside a facility or quicker than 3 h after arrival. We calculated use of antenatal corticosteroids in women who gave birth between 26 and 34 weeks' gestation, when antenatal corticosteroids are known to be most beneficial. We also calculated use in women at 22-25 weeks' and 34-36 weeks' gestation. We assessed tocolytic drug use, with and without antenatal corticosteroids, in spontaneous, uncomplicated preterm deliveries at 26-34 weeks' gestation.
Findings: Of 303,842 recorded deliveries after 22 weeks' gestation, 17,705 (6%) were preterm. 3900 (52%) of 7547 women who gave birth at 26-34 weeks' gestation, 94 (19%) of 497 women who gave birth at 22-25 weeks' gestation, and 2276 (24%) of 9661 women who gave birth at 35-36 weeks' gestation received antenatal corticosteroids. Rates of antenatal corticosteroid use varied between countries (median 54%, range 16-91%; IQR 30-68%). Of 4677 women who were potentially eligible for tocolysis drugs, 1276 (27%) were treated with bed rest or hydration and 2248 (48%) received no treatment. β-agonists alone (n=346, 7%) were the most frequently used tocolytic drug. Only 848 (18%) of potentially eligible women received both a tocolytic drug and antenatal corticosteroids.
Interpretation: Use of interventions was generally poor, despite evidence for their benefit for newborn babies. A substantial proportion of antenatal corticosteroid use occurred at gestational ages at which benefit is controversial, and use of less effective or potentially harmful tocolytic drugs was common. Implementation research and contextualised health policies are needed to improve drug availability and increase compliance with best obstetric practice.

Health Policy

35. Lancet 2014 Sep 18. pii: S0140-6736(14)61591-9 [Epub ahead of print]
Avoiding 40% of the premature deaths in each country, 2010-30: review of national mortality trends to help quantify the UN Sustainable Development Goal for health
Norheim et al.

Background: The UN will formulate ambitious Sustainable Development Goals for 2030, including one for health. Feasible goals with some quantifiable, measurable targets can influence governments. We propose, as a quatitative health target, "Avoid in each country 40% of premature deaths (under-70 deaths that would be seen in the 2030 population at 2010 death rates), and improve health care at all ages". Targeting overall mortality and improved health care ignores no modifiable cause of death, nor any cause of disability that is treatable (or also causes many deaths). 40% fewer premature deaths would be important in all countries, but implies very different priorities in different populations. Reinforcing this target for overall mortality in each country are four global subtargets for 2030: avoid two-thirds of child and maternal deaths; two-thirds of tuberculosis, HIV, and malaria deaths; a third of premature deaths from non-communicable diseases (NCDs); and a third of those from other causes (other communicable diseases, undernutrition, and injuries). These challenging

subtargets would halve under-50 deaths, avoid a third of the (mainly NCD) deaths at ages 50-69 years, and so avoid 40% of under-70 deaths. To help assess feasibility, we review mortality rates and trends in the 25 most populous countries, in four country income groupings, and worldwide.
Methods: UN sources yielded overall 1970-2010 mortality trends. WHO sources yielded cause-specific 2000-10 trends, standardised to country-specific 2030 populations; decreases per decade of 42% or 18% would yield 20-year reductions of two-thirds or a third.
Results: Throughout the world, except in countries where the effects of HIV or political disturbances predominated, mortality decreased substantially from 1970-2010, particularly in childhood. From 2000-10, under-70 age-standardised mortality rates decreased 19% (with the low-income and lower-middle-income countries having the greatest absolute gains). The proportional decreases per decade (2000-10) were: 34% at ages 0-4 years; 17% at ages 5-49 years; 15% at ages 50-69 years; 30% for communicable, perinatal, maternal, or nutritional causes; 14% for NCDs; and 13% for injuries (accident, suicide, or homicide).
Interpretation: Moderate acceleration of the 2000-10 proportional decreases in mortality could be feasible, achieving the targeted 2030 disease-specific reductions of two-thirds or a third. If achieved, these reductions avoid about 10 million of the 20 million deaths at ages 0-49 years that would be seen in 2030 at 2010 death rates, and about 17 million of the 41 million such deaths at ages 0-69 years. Such changes could be achievable by 2030, or soon afterwards, at least in areas free of war, other major effects of political disruption, or a major new epidemic.

36. Lancet 2014 Nov 21. pii: S0140-6736(14)61837-7 [Epub ahead of print]
The health-systems response to violence against women.
García C et al.

Health systems have a crucial role in a multisector response to violence against women. Some countries have guidelines or protocols articulating this role and health-care workers are trained in some settings, but generally system development and implementation have been slow to progress. Substantial system and behavioural barriers exist, especially in low-income and middle-income countries. Violence against women was identified as a health priority in 2013 guidelines published by WHO and the 67th World Health Assembly resolution on strengthening the role of the health system in addressing violence, particularly against women and girls. In this Series paper, we review the evidence for clinical interventions and discuss components of a comprehensive health-system approach that helps health-care providers to identify and support women subjected to intimate partner or sexual violence. Five country case studies show the diversity of contexts and pathways for development of a health system response to violence against women. Although additional research is needed, strengthening of health systems can enable providers to address violence against women, including protocols, capacity building, effective coordination between agencies, and referral networks.

37. BMJ 2014;349:g5114 Research
Government health insurance for people below poverty line in India: quasi-experimental evaluation of insurance and health outcomes
Sood N, associate professor**,** nsood@healthpolicy.usc.edu

Objectives: To evaluate the effects of a government insurance program covering tertiary care for people below the poverty line in Karnataka, India, on out-of-pocket expenditures, hospital use, and mortality.
Design: Geographic regression discontinuity study.

Setting: 572 villages in Karnataka, India.
Participants: 31 476 households (22 796 below poverty line and 8680 above poverty line) in 300 villages where the scheme was implemented and 28 633 households (21 767 below poverty line and 6866 above poverty line) in 272 neighboring matched villages ineligible for the scheme.
Intervention: A government insurance program (Vajpayee Arogyashree scheme) that provided free tertiary care to households below the poverty line in about half of villages in Karnataka from February 2010 to August 2012.
Main outcome measure: Out-of-pocket expenditures, hospital use, and mortality.
Results: Among households below the poverty line, the mortality rate from conditions potentially responsive to services covered by the scheme (mostly cardiac conditions and cancer) was 0.32% in households eligible for the scheme compared with 0.90% among ineligible households just south of the eligibility border (difference of 0.58 percentage points, 95% confidence interval 0.40 to 0.75; P<0.001). We found no difference in mortality rates for households above the poverty line (households above the poverty line were not eligible for the scheme), with a mortality rate from conditions covered by the scheme of 0.56% in eligible villages compared with 0.55% in ineligible villages (difference of 0.01 percentage points, −0.03 to 0.03; P=0.95). Eligible households had significantly reduced out-of-pocket health expenditures for admissions to hospitals with tertiary care facilities likely to be covered by the scheme (64% reduction, 35% to 97%; P<0.001). There was no significant increase in use of covered services, although the point estimate of a 44.2% increase approached significance (−5.1% to 90.5%; P=0.059). Both reductions in out-of-pocket expenditures and potential increases in use might have contributed to the observed reductions in mortality.
Conclusions: Insuring poor households for efficacious but costly and underused health services significantly improves population health in India.

38. BMJ 2014;349:g5457 Analysis

Do the solutions for global health lie in healthcare?

Clark J, j.clark@utoronto.ca

Jocalyn Clark argues that the medicalisation of global health, like other aspects of human life and health, produces a narrow view of global health problems and will limit the success of solutions proposed to replace the millennium development goals

Global health has risen in visibility over the past decade, leading to increased recognition of the world's gross inequalities in health and the disproportionate burden of poverty and disease borne by developing countries. A baby girl might expect to live to 83 years of age in Canada, but her life expectancy is closer to 55 years in some African countries. This is largely owing to high rates of child illness and infectious disease in poor countries but can also be attributed to the rising number of premature deaths from non-communicable causes. Underlying this disparity are inequalities in access to immunisation and clean water, income, education, and other factors important to health. Collective responsibility for improving global health—demonstrated by initiatives such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria and the GAVI Alliance to increase access to immunisation in poor countries—has helped advance global health goals as part of a broader development agenda, which recognises that good health is conducive to economic growth and stability.

As the millennium development goals programme reaches its end in 2015, a new global health agenda is emerging with mental health, non-communicable diseases (NCDs), and universal health coverage brought to the fore. This is to be welcomed but, as I argued in a

recent series of articles in *Global Health Action*, the agenda has become too medicalised, which may limit its success.

How health problems and agendas are framed is important. It determines what gets included and excluded, and which priorities, strategies, resource commitments, and policies are made. The global health agenda—formed collectively by influential institutions such as the World Health Organization and other United Nations agencies, donors, research and advocacy organisations, industry, and journals—shapes public perceptions and expectations of how the global community will work to alleviate poverty, redress inequities, and save and improve lives.

Social rather than medical solutions

As shown for birth, death, sexual dysfunction, addiction, and many other conditions, the medicalisation of human problems is characterised by reductionism that ignores broader contexts. It places responsibility with the individual, disregarding social constraints, and produces a bias toward technological solutions such as doctors, drugs, and devices. It is disempowering, costly, and potentially harmful.

Medicalisation does not tackle the root cause of the problem and takes attention and resources away from doing so.

39. BMJ 2014;349:g5458 Analysis

Commentary: False dichotomy hinders global health

Yamey G**,** yameyg@globalhealth.ucsf.edu

Global health in recent years has been characterised by bitter debates, with each side marshalling a mixture of evidence and moral arguments to prove that their approach is the one that will save more lives. Witness, for example, the never ending disputes over whether the best way to reduce avertable deaths is through strengthening health delivery systems (a "horizontal" approach) or targeting individual diseases like HIV/AIDS or malaria (a "vertical" approach). Or take the rancorous debate over whether the private sector should be engaged or marginalised when it comes to tackling health challenges in low and middle income countries. Now Jocalyn Clark sets up yet another binary view of global health, arguing that a focus on biomedical approaches limits success; what we need, she says, is to follow social and political pathways to improve the health of the world's poor.

However, the complexity of the challenges in global health—and their multifactorial origins in poverty, inequity, and lack of access to health services, education, and safe and sanitary environments—means that nobody has a monopoly on the "right" approach. The dichotomies are often false and hinder progress because they get in the way of developing the innovative, interdisciplinary, and collaborative models of delivery that are desperately needed.

We don't need to choose between horizontal and vertical approaches. There is a place for both, as shown by Mexico's success in reducing child mortality through a "diagonal approach," defined by Sepulveda and colleagues as "proactive, supply-driven provision of a set of highly cost-effective interventions that bridge health clinics and home." We can be passionate believers, as I am, in public funding and provision of health services for all, without ignoring the role of private, non-state organisations in low and middle income countries. We do patients a profound disservice by ignoring the potential role of such organisations in the response to global health challenges. Half to two thirds of patients with malaria in sub-Saharan Africa and South East Asia seek care outside the public sector—including from non-governmental organisations, pharmacies, kiosks, and private doctors—and improving the quality of this care must be part of the global response to malaria. Over the past two decades extraordinary progress has been made in reducing child and maternal deaths and mortality from infectious diseases. Biomedicine had a crucial role in this transformation.

For example, in 2000-2010 the GAVI Alliance immunised 256 million children, thus averting five million deaths. A landmark study published in July as part of the Global Burden of Disease Study 2013 found that the aggressive scale-up of biomedical interventions to tackle HIV/AIDS—including antiretroviral drugs and prevention of vertical transmission—has saved 19.1 million life-years (95% uncertainty interval, 16.6 to 21.5 million), 70.3% (65.4 to 76.1%) of them in developing countries. Rwanda's so called global health miracle, achieving the fastest decline in child deaths in recorded history, is not mysterious at all but is explained largely (though not exclusively) by focused attention on health sector improvements. Downplaying biomedical innovation hinders global health progress.

40. BMJ 2014;349:g5785 Research

Using the infrastructure of a conditional cash transfer program to deliver a scalable integrated early child development program in Colombia: cluster randomized controlled trial

This article has a correction. Please see:

Using the infrastructure of a conditional cash transfer program to deliver a scalable integrated early child development program in Colombia: cluster randomized controlled trial - October 08, 2014

Attanasio OP, et al.**,** Correspondence to: EOA Fitzsimons e.fitzsimons@ioe.ac.uk

Objective: To assess the effectiveness of an integrated early child development intervention, combining stimulation and micronutrient supplementation and delivered on a large scale in Colombia, for children's development, growth, and hemoglobin levels.
Design: Cluster randomized controlled trial, using a 2×2 factorial design, with municipalities assigned to one of four groups: psychosocial stimulation, micronutrient supplementation, combined intervention, or control.
Setting: 96 municipalities in Colombia, located across eight of its 32 departments.
Participants: 1420 children aged 12-24 months and their primary careers.
Intervention: Psychosocial stimulation (weekly home visits with play demonstrations), micronutrient sprinkles given daily, and both combined. All delivered by female community leaders for 18 months.
Main outcome measures: Cognitive, receptive and expressive language, and fine and gross motor scores on the Bayley scales of infant development-III; height, weight, and hemoglobin levels measured at the baseline and end of intervention.
Results: Stimulation improved cognitive scores (adjusted for age, sex, testers, and baseline levels of outcomes) by 0.26 of a standard deviation (P=0.002). Stimulation also increased receptive language by 0.22 of a standard deviation (P=0.032). Micronutrient supplementation had no significant effect on any outcome and there was no interaction between the interventions. No intervention affected height, weight, or hemoglobin levels.
Conclusions: Using the infrastructure of a national welfare program we implemented the integrated early child development intervention on a large scale and showed its potential for improving children's cognitive development. We found no effect of supplementation on developmental or health outcomes. Moreover, supplementation did not interact with stimulation. The implementation model for delivering stimulation suggests that it may serve as a promising blueprint for future policy on early childhood development.

41. BMJ 2014;349:g6220 News

Health workers in developing countries identify infections in infants almost as well as doctors, study shows

Mayor S

Trained frontline health workers in low and middle income countries can identify bacterial infections in infants nearly as accurately as doctors who use laboratory testing, a study has found. But lack of access to antibiotics has hampered the treatment of such infections.
Up to 40% of young infants in low and middle income countries die from infections, partly because of poor access to appropriate medical care and antibiotics. An international group of researchers carried out a meta-analysis of published studies looking for evidence of measures that might improve early diagnosis and treatment of neonatal infections in these regions.**1**
Meta-analysis of results from eight studies showed that frontline health workers, such as nurses and community health workers, diagnosed severe bacterial infections in young infants with a sensitivity of 82% and a specificity of 69%, compared with trained physicians.
Further analysis showed that using a combination of simple clinical signs, including poor feeding and fever, enabled health workers to predict severe disease in young infants with a sensitivity of 87% but a slightly lower specificity of 62%.
"Frontline health workers may be trained to accurately detect possible bacterial infection in infants, but ensuring adequate quality of programme implementation remains a major challenge in large scale programmes," said the study authors, led by Anne Lee, an associate in the Department of International Health at Johns Hopkins Bloomberg School of Public Health, Massachusetts.

Global Burden of Disease

42. BMJ 2014;349:g5295 Editorials

The 2030 sustainable development goal for health

Yamey G et al., yameyg@globalhealth.ucsf.edu

Must balance bold aspiration with technical feasibility
In the year 2000, 193 countries adopted the millennium development goals (MDGs), a milestone in global development. The eight goals were simple to grasp, measurable, and time bound, ending in 2015. Goals 4, 5, and 6 focused on reducing child, maternal, and infectious disease mortality, respectively, raising health to the top of the global agenda and mobilising new health financing. Although the three health related goals are unlikely to be met, there has been substantial progress towards their achievement, particularly for infectious diseases.
An intergovernmental open working group is writing the new goals and has just published its first draft. Whereas the MDGs were "'top-down goals' formulated by policy elites," the working group deserves credit for drafting the new goals using a bottom-up approach, based on wide ranging consultations. There is much to like in the draft: a strong focus on women, climate change, and the importance of technological innovation for human development. But in trying to please everyone, it reads as a long wish list. Fortunately, the first draft is not the last word and will be revised over the next year. We urge the working group to address important weaknesses.
Firstly, the draft tries to do too much. It has 17 goals and 164 targets; the single health goal (SDG3), to "ensure healthy lives and promote well-being for all at all ages," itself has 13 targets. They should be winnowed down to no more than 10 goals.
Furthermore, several targets are aspirational, unachievable, or inappropriate. Take target 3.2, to "end preventable deaths of newborns and under-five children," or target 3.3, to "end the epidemics of AIDS, tuberculosis, malaria." Instead of setting unattainable zero targets, a more valid approach is to model the trajectory of mortality to 2030 under different degrees of health sector investment.

Early prioritisation of family planning, antiretroviral therapy, and vaccination would bring particularly large pay-offs. Yet even with these enhanced investments, by 2030 child mortality would still be about 27/1000 live births in low income countries. And though the mortality burden of AIDS, tuberculosis, and malaria would be greatly reduced, it would not be zero.
A third problem is that too many of the goals and targets are vague and unmeasurable. Consider SDG3—how will we measure progress towards "wellbeing for all"?
Another concern is that health plays second fiddle to other development goals, relegated to a single goal with no links to the other sixteen goals. Health is integral to sustainable development—better health boosts educational and economic outcomes—and should be more explicitly linked with economic and social development.
Finally, substantial new financing will be needed to finish the "unfinished health MDGs agenda" and curb non-communicable diseases and injuries, yet the draft says little on where the money will come from. As low income countries become middle income, they will increasingly be able to fund health programmes themselves through economic growth. But they will still have large populations living in poverty: 70% of the world's poor are in middle income countries. They will need to find new domestic sources of health financing, such as taxing tobacco and diverting fossil fuel subsidies to the health sector, and may require transitional donor support to target their subnational "pockets" of poverty. Other countries, especially fragile states, will remain low income and reliant on aid through to 2030. Innovations in mobilising aid, such as "solidarity taxes" on airline tickets, will be required to overcome the aid stagnation that has occurred since the global financial crisis.

43. Lancet 2014;384(9947):957-79

Global, regional, and national levels of neonatal, infant, and under-5 mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013

Wang H et al., Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA, USA <haidong@uw.edu>

Erratum in Lancet 2014;384(9947):956

Background: Remarkable financial and political efforts have been focused on the reduction of child mortality during the past few decades. Timely measurements of levels and trends in under-5 mortality are important to assess progress towards the Millennium Development Goal 4 (MDG 4) target of reduction of child mortality by two thirds from 1990 to 2015, and to identify models of success.
Methods: We generated updated estimates of child mortality in early neonatal (age 0-6 days), late neonatal (7-28 days), postneonatal (29-364 days), childhood (1-4 years), and under-5 (0-4 years) age groups for 188 countries from 1970 to 2013, with more than 29,000 survey, census, vital registration, and sample registration datapoints. We used Gaussian process regression with adjustments for bias and non-sampling error to synthesise the data for under-5 mortality for each country, and a separate model to estimate mortality for more detailed age groups. We used explanatory mixed effects regression models to assess the association between under-5 mortality and income per person, maternal education, HIV child death rates, secular shifts, and other factors. To quantify the contribution of these different factors and birth numbers to the change in numbers of deaths in under-5 age groups from 1990 to 2013, we used Shapley decomposition. We used estimated rates of change between 2000 and 2013 to construct under-5 mortality rate scenarios out to 2030.
Findings: We estimated that 6·3 million (95% UI 6·0-6·6) children under-5 died in 2013, a 64% reduction from 17·6 million (17·1-18·1) in 1970. In 2013, child mortality rates ranged from 152·5 per 1000 livebirths (130·6-177·4) in Guinea-Bissau to 2·3 (1·8-2·9) per 1000 in

Singapore. The annualised rates of change from 1990 to 2013 ranged from -6·8% to 0·1%. 99 of 188 countries, including 43 of 48 countries in sub-Saharan Africa, had faster decreases in child mortality during 2000-13 than during 1990-2000. In 2013, neonatal deaths accounted for 41·6% of under-5 deaths compared with 37·4% in 1990. Compared with 1990, in 2013, rising numbers of births, especially in sub-Saharan Africa, led to 1·4 million more child deaths, and rising income per person and maternal education led to 0·9 million and 2·2 million fewer deaths, respectively. Changes in secular trends led to 4·2 million fewer deaths. Unexplained factors accounted for only -1% of the change in child deaths. In 30 developing countries, decreases since 2000 have been faster than predicted attributable to income, education, and secular shift alone.
Interpretation: Only 27 developing countr es are expected to achieve MDG 4. Decreases since 2000 in under-5 mortality rates are accelerating in many developing countries, especially in sub-Saharan Africa. The Millennium Declaration and increased development assistance for health might have been a factor in faster decreases in some developing countries. Without further accelerated progress, many countries in west and central Africa will still have high levels of under-5 mortality in 2030.

44. Lancet 2014;384(9947):980-1004
Global, regional, and national levels and causes of maternal mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013
Kassebaum NJ et al., Institute for Health Metrics and Evaluation, Seattle, WA, USA; Pediatric Anesthesiology and Pain Medicine, Seattle Children's Hospital, School of Medicine, Seattle, WA, USA <nickjk@uw.edu>

Erratum in Lancet 2014;384(9947):956
Background: The fifth Millennium Development Goal (MDG 5) established the goal of a 75% reduction in the maternal mortality ratio (MMR; number of maternal deaths per 100,000 livebirths) between 1990 and 2015. We aimed to measure levels and track trends in maternal mortality, the key causes contributing to maternal death, and timing of maternal death with respect to delivery.
Findings: 292,982 (95% UI 261,017-327,792) maternal deaths occurred in 2013, compared with 376,034 (343,483-407,574) in 1990. The global annual rate of change in the MMR was -0·3% (-1·1 to 0·6) from 1990 to 2003, and -2·7% (-3·9 to -1·5) from 2003 to 2013, with evidence of continued acceleration. MMRs reduced consistently in south, east, and southeast Asia between 1990 and 2013, but maternal deaths increased in much of sub-Saharan Africa during the 1990s. 2070 (1290-2866) maternal deaths were related to HIV in 2013, 0·4% (0·2-0·6) of the global total. MMR was highest in the oldest age groups in both 1990 and 2013. In 2013, most deaths occurred intrapartum or postpartum. Causes varied by region and between 1990 and 2013. We recorded substantial variation in the MMR by country in 2013, from 956·8 (685·1-1262·8) in South Sudan to 2·4 (1·6-3·6) in Iceland.
Interpretation: Global rates of change suggest that only 16 countries will achieve the MDG 5 target by 2015. Accelerated reductions since the Millennium Declaration in 2000 coincide with increased development assistance for maternal, newborn, and child health. Setting of targets and associated interventions for after 2015 will need careful consideration of regions that are making slow progress, such as west and central Africa.

45. Lancet 2014;384(9947):1005-70
Global, regional, and national incidence and mortality for HIV, tuberculosis, and malaria during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013

Murray CJ et al., Institute for Health Metrics and Evaluation, Seattle, WA, USA

Erratum in Lancet 2014;384(9947):956

Background: The Millennium Declaration in 2000 brought special global attention to HIV, tuberculosis, and malaria through the formulation of Millennium Development Goal (MDG) 6. The Global Burden of Disease 2013 study provides a consistent and comprehensive approach to disease estimation for between 1990 and 2013, and an opportunity to assess whether accelerated progress has occured since the Millennium Declaration.
Findings: Globally in 2013, there were 1·8 million new HIV infections (95% uncertainty interval 1·7 million to 2·1 million), 29·2 million prevalent HIV cases (28·1 to 31·7), and 1·3 million HIV deaths (1·3 to 1·5). At the peak of the epidemic in 2005, HIV caused 1·7 million deaths (1·6 million to 1·9 million). Concentrated epidemics in Latin America and eastern Europe are substantially smaller than previously estimated. Through interventions including PMTCT and ART, 19·1 million life-years (16·6 million to 21·5 million) have been saved, 70·3% (65·4 to 76·1) in developing countries. From 2000 to 2011, the ratio of development assistance for health for HIV to years of life saved through intervention was US$4498 in developing countries. Including in HIV-positive individuals, all-form tuberculosis incidence was 7·5 million (7·4 million to 7·7 million), prevalence was 11·9 million (11·6 million to 12·2 million), and number of deaths was 1·4 million (1·3 million to 1·5 million) in 2013. In the same year and in only individuals who were HIV-negative, all-form tuberculosis incidence was 7·1 million (6·9 million to 7·3 million), prevalence was 11·2 million (10·8 million to 11·6 million), and number of deaths was 1·3 million (1·2 million to 1·4 million). Annualised rates of change (ARC) for incidence, prevalence, and death became negative after 2000. Tuberculosis in HIV-negative individuals disproportionately occurs in men and boys (versus women and girls); 64·0% of cases (63·6 to 64·3) and 64·7% of deaths (60·8 to 70·3). Globally, malaria cases and deaths grew rapidly from 1990 reaching a peak of 232 million cases (143 million to 387 million) in 2003 and 1·2 million deaths (1·1 million to 1·4 million) in 2004. Since 2004, child deaths from malaria in sub-Saharan Africa have decreased by 31·5% (15·7 to 44·1). Outside of Africa, malaria mortality has been steadily decreasing since 1990.
Interpretation: Our estimates of the number of people living with HIV are 18·7% smaller than UNAIDS's estimates in 2012. The number of people living with malaria is larger than estimated by WHO. The number of people living with HIV, tuberculosis, or malaria have all decreased since 2000. At the global level, upward trends for malaria and HIV deaths have been reversed and declines in tuberculosis deaths have accelerated. 101 countries (74 of which are developing) still have increasing HIV incidence. Substantial progress since the Millennium Declaration is an encouraging sign of the effect of global action.

46. TMIH 2014;19(10):1198-215

Health service delivery models for the provision of antiretroviral therapy in sub-Saharan Africa: a systematic review

Lazarus JV et al., University of Copenhagen, Copenhagen, Denmark

Objectives: In response to the lack of evidence-based guidance for how to continue scaling up antiretroviral therapy (ART) in ways that make optimal use of limited resources, to assess comparative studies of ART service delivery models implemented in sub-Saharan Africa.
Methods: A systematic literature search and analysis of studies that compared two or more Methods of ART service delivery using either CD4 count or viral load as a primary outcome.
Results: Most studies identified in this review were small and non-randomised, with low statistical power. Four of the 30 articles identified by this review conclude that nurse

management of ART compares favourably to physician management. Seven provide evidence of the viability of managing ART at lower levels within the health system, and one indicates that vertical and integrated ART programmes can achieve similar outcomes. Five articles show that community/home-based ART management can be as effective as facility-based ART management. Five of seven articles investigating community support link it to better clinical outcomes. The results of four studies suggest that directly observed therapy may not be an important component of ART programmes.
Conclusions: Given that the scale-up of antiretroviral therapy represents the most sweeping change in healthcare delivery in sub-Saharan Africa in recent years, it is surprising to not find more evidence from comparative studies to inform implementation strategies. The studies reported on a wide range of service delivery models, making it difficult to draw conclusions about some models. The strongest evidence was related to the feasibility of decentralisation and task-shifting, both of which appear to be effective strategies.

Country Health System

47. TMIH 2014;19(10):1249-58

Assessing the economic burden of illness for tuberculosis patients in Benin: determinants and consequences of catastrophic health expenditures and inequities
Laokri S et al., Université Libre de Bruxelles, Brussels, Belgium

Objectives: To inform policy-making, we measured the risk, causes and consequences of catastrophic expenditures for tuberculosis and investigated potential inequities.
Methods: Between August 2008 and February 2009, a cross-sectional study was conducted among all (245) smear-positive pulmonary tuberculosis patients of six health districts from southern Benin. A standardised survey questionnaire covered the period of time elapsing from onset of tuberculosis symptoms to completion of treatment. Total direct cost exceeding the conventional 10% threshold of annual income was defined as catastrophic and used as principal outcome in a multivariable logistic regression. A sensitivity analysis was performed while varying the thresholds.
Results: A pure gradient of direct costs of tuberculosis in relation to income was observed. Incidence (78.1%) and intensity (14.8%) of catastrophic expenditure were high; varying thresholds was insensitive to the intensity. Incurring catastrophic expenditure was independently associated with lower- and middle-income quintiles (adjusted odd ratio (aOR) = 36.2, 95% CI [12.3-106.3] and aOR = 6.4 [2.8-14.6]), adverse pre-diagnosis stage (aOR = 5.4 [2.2-13.3]) and less education (aOR = 4.1[1.9-8.7]). Households incurred important days lost due to TB, indebtedness (37.1%), dissaving (51.0%) and other coping strategies (52.7%).
Conclusions: Catastrophic direct costs and substantial indirect and coping costs may persist under the 'free' tuberculosis diagnosis and treatment strategy, as well as inequities in financial hardship.

48. BMJ 2014;349:g5018 News

India must urgently tackle child gender ratio "emergency," UN report warns
Sanjeet Bagcchi S.**,**

The child gender ratio in India has reached crisis point and requires immediate action, a United Nations report has warned.

The study, *Sex Ratios and Gender Biased Sex Selection: History, Debates and Future Directions*, found that, despite India's social and economic progress, the country faced a serious deteriorating trend in the gender ratio among children. This had fallen from 976 girls for every 1000 boys in 1961, to 927 in 2001 and to 918 in 2011.

The report, which focused solely on India, said that the current trend was "akin to a national emergency" and aimed to promote research and understanding on the subject. It examined families and households, education, labour and employment, and institutions that directly or indirectly helped or opposed the practice of sex selection. The research was conducted by UN Women, a subset of the United Nations dedicated to gender equality and the empowerment of women.

The study noted, "Unequal inheritance rights, dowry, unequal socio-religious status, unpaid work, unequal pay, lack of economic opportunities for women, focus on male lineage, a culture of honour that places a greater burden of safety and protection on the parents of girls—all contribute to building a society that favours sons and men, and neglects daughters and women."

49. BMJ 2014;349:g6023 News

India's health assurance plan will offer free medicines, diagnostics, insurance, and traditional medicine

Ganapati Mudur

India's health ministry has pledged to expand healthcare insurance to cover all citizens and make available 80 essential drugs—including 30 selected from traditional or alternative systems of medicine—to be free of cost through government clinics across the country.

The two initiatives will be key components of a proposed Universal Health Assurance Mission that will also involve nationwide "preventive health information" campaigns to promote healthy lifestyles, the Indian health minister, Harsh Vardhan, said on Monday.

Vardhan said that the health assurance mission will also guarantee a package of select diagnostic tests in government health centres free of cost to cover common illnesses. The health ministry has not released the list of free medicines yet, but senior health officials have indicated that it will include a range of antimicrobials, analgesics, antipyretics, and drugs to treat asthma, cardiovascular diseases, diabetes, and hypertension.

About 310 million people among India's population of 1.2 billion are currently covered by government or private health insurance schemes, but most insurance plans cover only tertiary healthcare services that require hospital admissions.

Public health specialists say that free medicines could make a big difference to households.

50. BMJ 2014;349:g6822 News

Indian doctors are divided over plan to allow traditional medicine practitioners to perform abortions

Mudur G

India's medical community has sharply divided over a proposal by the health ministry and representatives of gynaecologists and obstetricians to allow practitioners of traditional medicine and nurses to perform abortions after regulated training programmes and certification.

The health ministry has proposed amendments to India's 43 year old Medical Termination of Pregnancy Act to extend the time limit for abortions from the current 20 weeks to 24 weeks of gestation and to expand the list of healthcare providers permitted to perform abortions.

Doctors have said that there is consensus in medical circles over the need to extend the permissible period for termination of pregnancy to 24 weeks to facilitate the abortion of

foetuses with congenital disorders that are detected late. But the plan to allow practitioners with government recognised degrees in ayurveda, unani, siddha, and homeopathy, as well as nurses and nurse-midwives, to perform abortions has triggered outrage among some doctors. The Indian Medical Association, which has long asserted that doctors should exclusively practise the system of medicine in which they have been trained, has asked the health ministry to drop the proposal. Narendra Saini, secretary general of the association, told *The BMJ*, "We believe such a move will endanger the lives of pregnant women. Abortion through modern medicine requires knowledge and skills that are not taught or learnt in the course curriculum of traditional medicine."

51. TMIH 2014;19(10):1226-36

Improving malaria treatment and prevention in India by aiding district managers to manage their programmes with local information: a trial assessing the impact of Lot Quality Assurance Sampling on programme outcomes

Valadez JJ et al., Liverpool School of Tropical Medicine, Liverpool, UK

Objectives: This paper reports the first trial of Lot Quality Assurance Sampling (LQAS) assessing associations between access to LQAS data and subsequent improvements in district programming. This trial concerns India's approach to addressing an increase in malaria-attributable deaths by training community health workers to diagnose, treat and prevent malaria, while using LQAS to monitor sub-district performance and make programme improvements.

Methods: The Ministry of Health introduced LQAS into four matched high malaria burden districts (Annual Parasite Incidence >5) (N > 5 million). In each sub-district, we sampled four populations in three 6-monthly surveys: households, children <5 years, people with fever in the last 2 weeks and community health workers. In three districts, trained local staff collected, analysed and used data for programme management; in one control district, non-local staff collected data and did not disseminate results. For eight indicators, we calculated the change in proportion from survey one to three and used a Difference-in-Differences test to compare the relative change between intervention and control districts.

Results: Coverage increased from survey one to three for 24 of 32 comparisons. Difference-in-Differences tests revealed that intervention districts exhibited significantly greater change in four of six vertical strategies (insecticide treated bed-nets and indoor residual spraying), one of six treatment-seeking behaviours and four of 12 health worker capacity indicators. The control district displayed greater improvement than two intervention districts for one health worker capacity indicator. One district with poor management did not improve.

Conclusions: In this study, LQAS results appeared to support district managers to increase coverage in underperforming areas, especially for vertical strategies in the presence of diligent managers.

52. Lancet 2014 Oct 15. pii: S0140-6736(14)61646-9 [Epub ahead of print]

Health-system reform and universal health coverage in Latin America

Atun et al.

Starting in the late 1980s, many Latin American countries began social sector reforms to alleviate poverty, reduce socioeconomic inequalities, improve health outcomes, and provide financial risk protection. In particular, starting in the 1990s, reforms aimed at strengthening health systems to reduce inequalities in health access and outcomes focused on expansion of universal health coverage, especially for poor citizens. In Latin America, health-system reforms have produced a distinct approach to universal health coverage, underpinned by the

principles of equity, solidarity, and collective action to overcome social inequalities. In most of the countries studied, government financing enabled the introduction of supply-side interventions to expand insurance coverage for uninsured citizens-with defined and enlarged benefits packages-and to scale up delivery of health services. Countries such as Brazil and Cuba introduced tax-financed universal health systems. These changes were combined with demand-side interventions aimed at alleviating poverty (targeting many social determinants of health) and improving access of the most disadvantaged populations. Hence, the distinguishing features of health-system strengthening for universal health coverage and lessons from the Latin American experience are relevant for countries advancing universal health coverage.

53. Lancet 2014;384(9945):819-27

Transformation of the education of health professionals in China: progress and challenges

Hou J et al., Institute of Medical Education, Peking University, Beijing, China

In this Review we examine the progress and challenges of China's ambitious 1998 reform of the world's largest health professional educational system. The reforms merged training institutions into universities and greatly expanded enrolment of health professionals. Positive achievements include an increase in the number of graduates to address human resources shortages, acceleration of production of diploma nurses to correct skill-mix imbalance, and priority for general practitioner training, especially of rural primary care workers. These developments have been accompanied by concerns: rapid expansion of the number of students without commensurate faculty strengthening, worries about dilution effect on quality, outdated curricular content, and ethical professionalism challenged by narrow technical training and growing admissions of students who did not express medicine as their first career choice. In this Review we underscore the importance of rebalance of the roles of health sciences institutions and government in educational policies and implementation. The imperative for reform is shown by a looming crisis of violence against health workers hypothesised as a result of many factors including deficient educational preparation and harmful profit-driven clinical practices.

a. Other articles in this series are:

Lancet 2014;384(9945):805-18

Harnessing the privatisation of China's fragmented health-care delivery

Yip W et al., Blavatnik School of Government, University of Oxford, Oxford, UK <winnie.yip@bsg.ox.ac.uk>

Lancet 2014;384(9945):783-92

Can China diminish its burden of non-communicable diseases and injuries by promoting health in its policies, practices, and incentives?

Huang C et al., Milken Institute School of Public Health, George Washington University, Washington, DC, USA

Lancet 2014;384(9945):793-804

China's distinctive engagement in global health

Liu P et al., School of Public Health, Peking University Health Sciences Center, Beijing, China liupeilong@bjmu.edu.cn

Mental Health

54. Lancet 2014;384(9959):1999

Editorial: Global mental health: policy, progress, and prospects

In many developing countries, gaps in care for people with mental illness are very substantial. Two Lancet Series on global mental health, in 2007 and 2011, have sought to scrutinise and highlight the need for clinical evidence and expertise, and especially resources, for mental health services in low-income and middle-income countries. On Nov 26, Mental Health for Sustainable Development was launched—a report by the UK's All-Party Parliamentary Group on Global Health and Mental Health, which are supported by The Lancet and other organisations. Intended to raise the priority of mental health care in development plans, the report makes four recommendations: that the UK's Department for International Development incorporates global mental health plans and metrics in its work; that non-governmental organisations and other development organisations introduce mental health planning and programmes; that partnerships in psychiatric training and research should be established by the relevant professional bodies together with low-income and middle-income countries; and that an explicit mental health target should be included in the health goal of the nascent Sustainable Development Goals (SDGs).

In alignment with WHO's Comprehensive Mental Health Action Plan 2013—20, Mental Health for Sustainable Development aims to promote a threefold change in policy: bringing about an improvement in living and working environments to reduce the incidence of mental disorders; provision of psychiatric care appropriate to individual countries and cultures; and recognition of the rights of people with mental health issues. The statistics indicate that mental illness is responsible for about 13% of the global burden of ill health, and almost a quarter of years lived with disability, yet receives no more than 2% of health funding in most developing countries. The report includes examples of promising mental health projects in developing countries—it seems that priorities are gradually being realigned in global health, with mental health taking its appropriate place alongside other non-communicable diseases in the communal health priorities for the future.

Also published in November was Global mental health from a policy perspective: a context analysis, a new report by Jessica Mackenzie of the Overseas Development Institute. Drawing on work of the Mental Health Innovation Network, supported by Grand Challenges Canada, the report seeks to analyse Methods by which global mental health stakeholders could achieve greater influence on policy. Stigma and low tractability, indicating that addressing problems in delivering care for people with mental illness might be perceived as difficult to achieve and unappealing to attempt, are seen to be reasons underlying low investment in mental health provision. But the report agrees that the prominence of mental health in high-income countries has grown substantially in the past 20 years, and that this cultural change should leave mental health advocates well placed to exploit opportunities to influence policy and resource allocation.

Mental health is a fundamental prerequisite for overall health, and ample evidence shows that countries around the world need to improve the priority and organisation of, and resources devoted to, mental health care.

Water and Sanitation

55. TMIH 2014;19(8):906-16

Hygiene and health: systematic review of handwashing practices worldwide and update of health effects.

Freeman MC et al., Rollins School of Public Health, Emory University, Atlanta, GA, USA

Objective: To estimate the global prevalence of handwashing with soap and derive a pooled estimate of the effect of hygiene on diarrhoeal diseases, based on a systematic search of the literature.
Methods: Studies with data on observed rates of handwashing with soap published between 1990 and August 2013 were identified from a systematic search of PubMed, Embase and ISI Web of Knowledge. A separate search was conducted for studies on the effect of hygiene on diarrhoeal disease that included randomised controlled trials, quasi-randomised trials with control group, observational studies using matching techniques and observational studies with a control group where the intervention was well defined. The search used Cochrane Library, Global Health, BIOSIS, PubMed, and Embase databases supplemented with reference lists from previously published systematic reviews to identify studies published between 1970 and August 2013. Results were combined using multilevel modelling for handwashing prevalence and meta-regression for risk estimates.
Results: From the 42 studies reporting handwashing prevalence we estimate that approximately 19% of the world population washes hands with soap after contact with excreta (i.e. use of a sanitation facility or contact with children's excreta). Meta-regression of risk estimates suggests that handwashing reduces the risk of diarrhoeal disease by 40% (risk ratio 0.60, 95% CI 0.53-0.68); however, when we included an adjustment for unblinded studies, the effect estimate was reduced to 23% (risk ratio 0.77, 95% CI 0.32-1.86).
Conclusions: Our results show that handwashing after contact with excreta is poorly practiced globally, despite the likely positive health benefits.

56. TMIH 2014;19(11):1334-45

The geographic and demographic scope of shared sanitation: an analysis of national survey data from low- and middle-income countries

Heijnen M et al., London School of Hygiene & Tropical Medicine, London, UK.

Objective: A large and growing proportion of the world's population rely on shared sanitation facilities that have historically been excluded from international targets due to concerns about acceptability, hygiene and access. In connection with a proposed change in such policy, we undertook this study to describe the prevalence and scope of households that report relying on shared sanitation and to characterise them in terms of selected socio-economic and demographic covariates.
Methods: We extracted data from the most recent national household surveys of 84 low- and middle-income countries from Demographic and Health Surveys and Multiple Indicator Cluster Surveys. We describe the prevalence of shared sanitation and explore associations between specified covariates and reliance on shared sanitation using log-binomial regression.
Results: While household reliance on any type of shared sanitation is relatively rare in Europe (2.5%) and the Eastern Mediterranean (7.7%), it is not uncommon in the Americas (14.2%), Western Pacific (16.4%) and South-East Asia (31.3%), and it is most prevalent in Africa (44.6%) where many shared facilities do not meet the definition of 'improved' even if they were not shared (17.7%). Overall, shared sanitation is more common in urban (28.6%) than in rural settings (25.9%), even after adjusting for wealth. While results vary geographically, people who rely on shared sanitation tend to be poorer, reside in urban areas and live in households with more young children and headed by people with no formal education. Data from 21 countries suggest that most sharing is with neighbours and other acquaintances (82.0%) rather than the public.
Conclusions: The determinants of shared sanitation identified from these data suggest potential confounders that may explain the apparent increased health risk from sharing and

should be considered in any policy recommendation. Both geographic and demographic heterogeneity indicate the need for further research to support a change in policies.

57. Other interesting articles in this series are:

57.1. TMIH 2014;19(8):884-93

Estimating the impact of unsafe water, sanitation and hygiene on the global burden of disease: evolving and alternative Methods

Clasen T et al., Rollins School of Public Health, Emory University, Atlanta, GA, USA

57.2. TMIH 2014;19(8):894-905

Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries

Prüss-Ustün A et al., WHO, Geneva, Switzerland

57.3. TMIH 2014;19(8):917-27

Global assessment of exposure to faecal contamination through drinking water based on a systematic review

Bain R et al., The Water Institute, University of North Carolina, Chapel Hill, NC, USA

57.4. TMIH 2014;19(8):928-42

Assessing the impact of drinking water and sanitation on diarrhoeal disease in low- and middle-income settings: systematic review and meta-regression

Wolf J et al., WHO World Health Organization, Geneva, Switzerland

Miscellaneous

58. TMIH 2014;19(9):1003-14

Ocular infections in sub-Saharan Africa in the context of high HIV prevalence

Schaftenaar E et al., Department of Viroscience, Erasmus MC, Rotterdam, the Netherlands

Healthy eyes and good vision are important determinants of populations' health across the globe. Sub-Saharan Africa is affected by simultaneous epidemics of ocular infections and human immunodeficiency virus (HIV). Ocular infection and its complications, along with cataract and ocular trauma, are common conditions in this region with great impact on daily life. In this review, we discuss the epidemiology, clinical manifestations and microbial aetiology of the most important infectious ocular conditions in sub-Saharan Africa: conjunctivitis, keratitis and uveitis. We focus specifically on the potential association of these infections with HIV infection, including immune recovery uveitis. Finally, challenges and opportunities for clinical management are discussed, and recommendations made to improve care in this neglected but very important clinical field.

59. TMIH 2014;19(9):1116-60

Dengue disease surveillance: an updated systematic literature review

Runge-Ranzinger S et al., WHO, Geneva, Switzerland.

Objectives: To review the evidence for the application of tools for dengue outbreak prediction/detection and trend monitoring in passive and active disease surveillance systems in order to develop recommendations for endemic countries and identify important research needs.

Methods: This systematic literature review followed the protocol of a review from 2008, extending the systematic search from January 2007 to February 2013 on PubMed, EMBASE, CDSR, WHOLIS and Lilacs. Data reporting followed the PRISMA statement. The eligibility criteria comprised (i) population at risk of dengue, (ii) dengue disease surveillance, (iii) outcome of surveillance described and (iv) empirical data evaluated. The analysis classified studies based on the purpose of the surveillance programme. The main limitation of the review was expected publication bias.
Results: A total of 1116 papers were identified of which 36 articles were included in the review. Four cohort-based prospective studies calculated expansion factors demonstrating remarkable levels of underreporting in the surveillance systems. Several studies demonstrated that enhancement Methods such as laboratory support, sentinel-based reporting and staff motivation contributed to improvements in dengue reporting. Additional improvements for passive surveillance systems are possible by incorporating simple data forms/entry/electronic-based reporting; defining clear system Objectives; performing data analysis at the lowest possible level (e.g. district); seeking regular data feedback. Six studies showed that serotype changes were positively correlated with the number of reported cases or with dengue incidence, with lag times of up to 6 months. Three studies found that data on internet searches and event-based surveillance correlated well with the epidemic curve derived from surveillance data.
Conclusions: Passive surveillance providing the baseline for outbreak alert should be strengthened and appropriate threshold levels for outbreak alerts investigated. Additional enhancement tools such as syndromic surveillance, laboratory support and motivation strategies can be added. Appropriate alert signals need to be identified and integrated into a risk assessment tool. Shifts in dengue serotypes/genotype or electronic event-based surveillance have also considerable potential as indicator in dengue surveillance. Further research on evidence-based response strategies and cost-effectiveness is needed.

60. TMIH 2014;19(11):1310-20

Prevalence and correlates of treatment failure among Kenyan children hospitalised with severe community-acquired pneumonia: a prospective study of the clinical effectiveness of WHO pneumonia case management guidelines

Agweyu A et al., University of Nairobi, Nairobi, Kenya

Objective: To determine the extent and pattern of treatment failure (TF) among children hospitalised with community-acquired pneumonia at a large tertiary hospital in Kenya.
Methods: We followed up children aged 2-59 months with WHO-defined severe pneumonia (SP) and very severe pneumonia (VSP) for up to 5 days for TF using two definitions: (i) documentation of pre-defined clinical signs resulting in change of treatment (ii) primary clinician's decision to change treatment with or without documentation of the same pre-defined clinical signs.
Results: We enrolled 385 children. The risk of TF varied between 1.8% (95% CI 0.4-5.1) and 12.4% (95% CI 7.9-18.4) for SP and 21.4% (95% CI 15.9-27) and 39.3% (95% CI 32.5-46.4) for VSP depending on the definition applied. Higher rates were associated with early changes in therapy by clinician in the absence of an obvious clinical rationale. Non-adherence to treatment guidelines was observed for 70/169 (41.4%) and 67/201 (33.3%) of children with SP and VSP, respectively. Among children with SP, adherence to treatment guidelines was associated with the presence of wheeze on initial assessment ($P = 0.02$), while clinician non-adherence to guideline-recommended treatments for VSP tended to occur in children with altered consciousness ($P < 0.001$). Using propensity score matching to account for imbalance in the distribution of baseline clinical characteristics among children with VSP revealed no

difference in TF between those treated with the guideline-recommended regimen vs. more costly broad-spectrum alternatives [risk difference 0.37 (95% CI -0.84 to 0.51)].
Conclusion: Before revising current pneumonia case management guidelines, standardised definitions of TF and appropriate studies of treatment effectiveness of alternative regimens are required.

61. TMIH 2014;19(11):1384-90

Scarcity of protective items against HIV and other bloodborne infections in 13 low- and middle-income countries

Gupta S et al., University of California San Francisco, East Bay, Oakland, CA, USA

Objective: To assess protection of surgical healthcare workers against HIV and other bloodborne infections in low- and middle-income countries (LMICs).
Methods: Literature review based on recent studies assessing baseline surgical capacity in LMICs using the WHO Situational Analysis of Access to Emergency and Essential Surgical Care, the Surgeons OverSeas (SOS) Personnel, Infrastructure, Procedures, Equipment and Supplies (PIPES) survey and the Harvard Humanitarian Initiative survey tools. The availability of protective eyewear, sterile gloves and sterilisers was assessed.
Results: Thirteen individual country studies with relevant data were identified documenting items from 399 hospitals. The countries included Afghanistan, Bolivia, Gambia, Ghana, Liberia, Mongolia, Nigeria, Sierra Leone, Solomon Islands, Somalia, Sri Lanka, Tanzania and Zambia. Overall, only 29% (79/270) of hospitals always had eye protection. Sterilisers were only available at 64% (244/383) of facilities. Sterile gloves were the most available item, available at 75% of facilities (256/340).
Conclusion: Surgical healthcare worker protection for bloodborne infections continues to be deficient in LMICs. Improved documentation of these items should be incorporated into future surgical capacity studies. Policy makers and clinicians should work together to secure resources and interventions that will protect this vital workforce.

62. BMJ 2014;349:g4798 Analysis

Decisions on WHO's essential medicines need more scrutiny

Barbui C et al,, corrado.barbui@univr.it

Global endorsement as a WHO essential medicine is big step. But **Corrado Barbui** and **Marianna Purgato** find that the quality of applications for antidepressants and antipsychotics is poor and call on applicants and WHO to raise standards. The World Health Organization produced its first essential medicines list in 1977 in response to a request from member states to help them select and procure medicines for priority healthcare needs. The list included 208 drugs selected on the basis of their efficacy, safety, availability, ease of use in various settings, comparative cost effectiveness, and public health needs. It has been updated every two years since by a WHO expert committee.
The list does not include all effective medicines, the latest medicines, or even all medicines needed in a country; rather, it helps define the minimum needs for a basic health system. Essential medicines include, for example, amoxicillin, diazepam, and haloperidol. WHO suggests that essential medicines should be available within functioning health systems at all times, in adequate amounts, in the appropriate doses, with assured quality, and at a price the individual and the community can afford.
The effect of the essential medicines list has been remarkable. Conceptually, it has led to global acceptance of essential medicines as a powerful means to promote health equity. Countries are not bound by the list, but it has provided a guide for the development of

national, provincial, or state lists and helped promote the development of medicine policies and access initiatives. However, our review of medicines for mental disorders in the list raises questions about how decisions are made on what is included.

63. BMJ 2014;349:g6017 News

Drugs exported from India to Africa are poorer quality than those sent elsewhere

Dyer O

Generic drugs exported from India to Africa are of lower quality than those exported to middle income countries, an investigation that compared the strengths of four common medications bought at pharmacies around the world has found.

The study, published as a working paper by the US National Bureau of Economic Research, measured the quantity of active ingredients found in two mainstream antibiotics, ciprofloxacin and erythromycin, and in two tuberculosis drugs, isoniazid and rifampicin. The drugs were purchased over the counter in five Indian cities, 12 African countries, and five middle income countries (Brazil, China, Russia, Thailand, and Turkey).

Of 1470 samples, the packaging of which claimed that they were made in India, 11% failed quality tests. Two thirds of these were substandard, with active ingredients below 80%, whereas the rest were counterfeits, containing no active ingredient. Most of these counterfeits were believed to come from China, despite their Indian labelling.

With apparent counterfeits excluded from the analysis the researchers presented evidence of three tiers of quality distinguished by geographical region. The best drugs were those exported to the five middle income countries with strong regulatory regimes. Of these, 95% met the standard of 80% or greater active ingredient. Next came drugs sold in India, of which 91% met the standard. Last came those sold in Africa, of which just 84% met the standard.

Of the most sampled drug, ciprofloxacin, 8.6% of samples purchased in Africa were substandard, compared with 3.3% in India and none in the middle income countries. The companies that made the drugs were not identified in the study.