Monday, October 9, 2017

Disease Prevention/Eradication and

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Monday, October 9, 2017

Lecturer: Steve Berman

Lecture: Global Health Policy – Sustainable Development Goals


RETHINKING MEDICAL ETHICS: A VIEW FROM BELOW

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ABSTRACT

In this paper, we argue that lack of access to the fruits of modern medicine and the science that informs it is an important and neglected topic within bioethics and medical ethics. This is especially clear to those working in what are now termed ‘resource-poor settings’—to those working, in plain language, among populations living in dire poverty. We draw on our experience with infectious diseases in some of the poorest communities in the world to interrogate the central imperatives of bioethics and medical ethics. AIDS, tuberculosis, and malaria are the three leading infectious killers of adults in the world today. Because each disease is treatable with already available therapies, the lack of access to medical care is widely perceived in heavily disease-burdened areas as constituting an ethical and moral dilemma. In settings in which research on these diseases are conducted but there is little in the way of therapy, there is much talk of first world diagnostics and third world therapeutics.

Here we call for the ‘resocialising’ of ethics. To resocialise medical ethics will involve using the socialising disciplines to contextualise fully ethical dilemmas in settings of poverty and, a related gambit, the systematic participation of the destitute sick. Clinical research across steep gradients also needs to be linked with the interventions that are demanded by the poor and otherwise marginalised. We conclude that medical ethics must grapple more persistently with the growing problem posed by the yawning ‘outcome gap’ between rich and poor.

I INTRODUCTION

Bioethics and medical ethics are necessarily a contentious enterprise. These fields have the potential to embrace not only empiric research, but also philosophical commentary, informed opinion,
and essay as well. The best scholarship in these related fields often addresses ‘unresolved issues’ of moral conflict. Some issues are unresolved because they stem from novel developments, such as xenotransplantation or the latest in stem-cell research; other issues are unresolved because too little attention has been paid to them in recent decades, in part because the discipline of medical ethics has arisen in certain social contexts and not in others. We argue here that lack of access to the fruits of modern medicine and the science that informs it is an important and neglected topic within bioethics and medical ethics. This is especially clear to those working in what are now termed ‘resource-poor settings’ – to those working, in plain language, among populations living in dire poverty.

AIDS research has been a case in point. In a recent commentary on the ethics of HIV vaccine trials, physician Joia Mukherjee voiced in print what many who do not read or write are saying about the ethics of AIDS research within settings in which AIDS is now the leading infectious cause of adult death:

When asked, ‘Have you no morals?’ Alfred Doolittle, in George Bernard Shaw’s Pygmalion, answered, ‘Can’t afford them, governor. Neither could you if you was as poor as me.’ The modern concept of human rights underpins a moral society and holds government responsible for fulfilling those rights. From informed consent to the right to privacy, civil and political rights have dominated the human rights focus of the HIV-1 epidemic. Yet, the economic and social rights of people with HIV-1 infection, in particular the rights to health care and to share in scientific advances, are glaringly disparate between rich and poor countries. This disparity has become the focus of debate in transnational HIV-1 vaccine research.1

Mukherjee’s commentary will resonate with some and rankle others. But many of those who would find her views compelling are those who will never read a medical journal because they do not read; others read but do not have access to journals. These are the people whose views we seek to echo in offering a view of medical ethics ‘from below.’

First, what is meant by ‘a view from below’? What is not intended by this expression? Elsewhere, we have elaborated a critique of the scholarship of suffering from the perspective of those

living in great poverty. Here we will note in passing that dissymmetries of power are present in all medical exchanges: between well and sick, expert and non-expert, white and black – the list goes on. But these dissymmetries are often masked in the language of academic medicine and public health. In a 1992 book, Howard Brody notes that ‘the word power is essentially absent from the vocabulary that scholars of medical ethics have constructed for their discipline and that has been accepted by almost everyone who does work in the field or tries to apply medical-ethical insights to the clinical context.’ This honest assessment serves as a stepping stone for our essay, which moves far beyond the boundaries of the world’s most affluent nations, the birthplace of professional societies of medical ethicists and bioethicists. Since the topic of medical rationing, which implies scarcity, is a staple of the medical ethics literature, we add at the outset that we refer in this essay to the world’s poor, especially the poor of the poorest countries. When the question ‘Who shall live?’ was posed, these people were not yet in the consciousness of those building a new field.

Subaltern populations within rich and middle-income countries have long been caught up in the key dramas of medical ethics: witness the Tuskegee Syphilis Study, which followed 600 African American men in Alabama from 1932 to 1972, and continues to have its echoes even today. Similar experiences have been documented in Europe, South Africa, and Brazil. But, to this day, the poorest people in the poorest countries are likely to appear only in the margins of the bioethics literature if they

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5 Roughly 400 of these men had syphilis, and most lived in poverty. Despite the 1947 discovery of a cure for the disease – to this day, syphilis is treated with penicillin – subjects were never offered that very inexpensive drug, even though they had joined the study assuming that they would be treated. Nor were they informed of the study’s real purpose. (S.M. Reverby, ed. 2000. *Tuskegee Truths: Rethinking the Tuskegee Syphilis Study*. Chapel Hill. University of North Carolina Press. A.M. Brandt. 1987. *No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880*. New York. Oxford University Press.)

appear at all. We have seen their critiques of research ethics dismissed as confused and ill-informed commentary or as ‘conspiracy theories.’ But much is to be gleaned from such critiques, as more in-depth and sympathetic explorations of them suggest. This paper is meant as a constructive critique of bioethics and medical ethics, not only from the point of view of those living in great poverty but from the perspectives advanced by the ‘socialising disciplines.’ These include anthropology, history, political economy and the sociology of knowledge; few would regard philosophy, for years the parent discipline of ethics, as a socialising discipline. It is our hope, here, to help ‘resocialise’ medical ethics as part of a broader intellectual and social project that is necessary as dominant cultures, academic and otherwise, increasingly favour psychological or individualist readings of social problems ranging from addiction to AIDS to ‘non-compliance’ with medical regimens. We will draw on our experience in Haiti and the United States in order to offer an overview of what is lacking not only in ethics but also in conventional human rights discourses, which have also influenced medical ethics and bioethics.

As a physician-anthropologist and a specialist in health policy, our views may be regarded as suspect by some within the field of medical ethics. For this reason, we start our review by relying on certain voices from within the discipline of medical ethics. After pointing to deficiencies underlined from within the discipline of medical ethics, we turn to problems occurring right now in the course of efforts to respond to AIDS and tuberculosis, among other modern plagues.

II WHAT’S WRONG WITH MEDICAL ETHICS?

In the social field in which bioethics and medical ethics have emerged – affluent industrialised countries, by and large, and within the past few decades – practitioners of these disciplines are seen, by themselves and by others, as liberal reformers. Three major and overlapping groups may be discerned. Within clinical settings, ethicists are the guardians of morally sound practice and a safeguard against abuses. By the close of the last century, most major teaching hospitals had ethics committees; many boasted in-house ethicists active in addressing the quandary ethics of individual patients. As often as not, ethics consults in such hospitals


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take into consideration discord between patients’ families and medical staff or withdrawal of care for those deemed unlikely to be saved by ‘heroic interventions.’ The salutary impact of these developments is not disputed.

A second major stream of medical ethics is constituted by the everyday practice of ethics within modern biomedical research. The research arena has been home to an explosive growth of institutional review boards (IRBs); human subjects committees abound. Disclaimers regarding potential personal gain are required in the publishing of data and it is not possible to publish even photographs or the comments of patients without ‘ethical clearance.’ In the university with which we are affiliated, students cannot undertake research involving human subjects without going through an ethics course and filling out an application. Again, many regard these as positive developments. But some would note that it is not easy to link the proliferation of such committees and regulations with a rise in ethical treatment of the destitute sick, especially if we take a global perspective.

It is possible to read, for example, front-page exposés of research projects conducted by first-world universities in Africa and learn that, although research subjects have signed informed-consent forms, they have no clear notion about what the research explores or about how they figure in the endeavour. Other research projects, duly blessed by multiple review boards in both the research university and the host country, are so manifestly unethical in the eyes of some leaders of modern medicine that they can be termed reminiscent of Tuskegee in the world’s leading medical journals. Consider studies involving what many argue are unethical placebo controls in AZT trials attempting to develop a cheaper drug regimen to prevent mother-to-child transmission of HIV. Despite the fact that the US Public Health


10 Also consider the more recent example of a randomised-control trial conducted between November 1994 and October 1998, which examined the relationship between serum viral load, concurrent sexually transmitted diseases, and other known and putative HIV risk factors. The research team screened 15,127 individuals in a rural district of Uganda, of whom 415 were identified as HIV-positive with an initially HIV-negative partner. The researchers then tracked these serodiscordant couples for thirty months, following the viral load of the infected partner and the rate of seroconversion among the previously uninfected partners. The study concludes that ‘viral load is the chief predictor of the risk of heterosexual transmission of HIV-1.’ (T.C. Quinn, M.J. Wawer, N. Sewankambo, D. Serwadda, C. Li, F. Wabwire-Mangen, M.O. Meehan, T. Lutalo & R.H. Gray. Viral Load and Heterosexual Transmission of Human
Service began recommending the use of zidovudine to prevent MTCT in 1994, a review by Lurie and Wolfe in 1997 counted 15 studies taking place in developing countries in which some or all of participants were not receiving antiretroviral therapy to prevent MTCT.\textsuperscript{11} Editor of the \textit{New England Journal of Medicine} Marcia Angell explicitly compared such studies to Tuskegee, and chas-tised the NIH and CDC for contributing funds to several projects:

The fact remains that many studies are done in the Third World that simply could not be done in the countries sponsoring the work. Clinical trials have become a big business, with many of the same imperatives. To survive, it is necessary to get the work done as quickly as possible, with a minimum of obstacles. When these considerations prevail, it seems as if we have not come very far from Tuskegee after all.\textsuperscript{12}

The majority of such international biomedical research has inequality as its foundation, and ethical codes developed in affluent countries are quickly ditched as soon as affluent universities undertake research in poor countries. Then come a series of efforts to develop alternative (read, less stringent) codes ‘appropriate’ to settings of destitution.

A third strand of work is less closely tied to clinical care or research endeavours: teaching and scholarship on bioethics and medical ethics. Again, the explosive growth of these fields is easy


to gauge simply by looking at journals, publications, and the number of faculty appointments within schools of medicine, nursing, and public health. Many of these scholars have formal training in both medicine and philosophy.

What is the primary purpose of these three overlapping strands of medical ethics and bioethics? An anthropologist might ask, what are the social fields in which they emerge? Whose interests are they intended to protect? What ends do they serve?

Such questions, which admit to multiple answers in multiple arenas, are not always welcome. None of the answers are facile ones, since even the quandary ethics of clinical practice are disputed terrain. But even more disputed are research ethics when projects span vertiginous social inequalities. The ethical dilemmas stemming from such research are almost invariably about the have-nots and the have-haves, and this is as true today as it was during the long decades in which the Tuskegee experiment was being conducted. But much professional commentary on medical ethics appears divorced from straightforward discussion of racism and the yawning gulf between researchers and subjects. Larry Churchill notes this at times absurd divorce between ethical dilemmas that arise in everyday life and the professional commentary they spawn:

Bioethical disputes – as measured by the debates in journals and conferences in the United States – often seem to be remote from the values of ordinary people and largely irrelevant to the decisions they encounter in health care. In this sense, philosophical theorizing might be considered harmless entertainment, which if taken too seriously would look ridiculous, as several Monty Python skits have successfully demonstrated.¹³

Churchill’s critique of philosophical theorising is even more poignant when the ‘ordinary people’ in question do not have access to modern healthcare. What ‘decisions’ are taken by the world’s poorest, who are also, by any honest accounting, the globe’s sickest? One of the ways to answer this question would be to spend time interviewing the destitute sick about what they regard as their ranking problems; it is also possible, we have discovered, to interview them about the ethics of research.

We draw on our experience with infectious diseases in some of the poorest communities in the world to interrogate the central imperatives of bioethics and medical ethics. AIDS, tuberculosis,

and malaria are the three leading infectious killers of adults in the world today. Because each disease is treatable with already available therapies, the lack of access to medical care is widely perceived in heavily disease-burdened areas as constituting an ethical and moral dilemma. In settings in which research on these diseases is conducted but there is little in the way of therapy, there is much talk of first world diagnostics and third world therapeutics.\textsuperscript{14} To quote a woman who had returned to central Haiti, dying of AIDS, after years in the city, ‘We’re good enough to study but not good enough to care for.’ This woman, who later received therapy for her disease and stopped dying, was nonetheless passionate about the topic well after her own lack of care was addressed and she began to respond to antiretroviral therapy. In another interview, conducted in her home, she expounded at some length:\textsuperscript{15}

I was diagnosed [with HIV infection] because of a research project that [a US research university] was doing. That was ten years ago. This was in [a slum in Port-au-Prince]. I went back a lot to have my blood drawn but I never got any treatment. And I knew from the radio that other people received treatment. These were people who could pay $200 a month. They were people who could go and make a deposit at a bank and then they’d get their medicines for a month . . . I came home [to central Haiti] to die, but even now that I’m better I’m still angry about it. Ten years of them sucking my blood and nothing! I was a skeleton sitting on the bench waiting for them to call my name. It’s when I got to be a skeleton that the nurse told me that I didn’t have to come any more. It’s as if poor people were animals. But we won’t serve as their guinea pigs \textit{[Men nou p’ap sevi kom kobay yo].}\textsuperscript{16}

Although the expression ‘first-world diagnostics and third-world therapeutics’ may not be the term commonly used in Haiti, the

\textsuperscript{14} Emanuel et al. have suggested guidelines for ‘what makes clinical research ethical.’ Among their criteria is ‘fair subject selection’ – subjects should not be vulnerable individuals and must have the potential to experience the benefits of any ethical research project. (E.J. Emanuel, D. Wendler & C. Grady. What Makes Clinical Research Ethical? \textit{Journal of the American Medical Association} 2000; 283: 2701–2711.)

\textsuperscript{15} Several patients being treated for HIV at the Clinique Bon Sauveur in rural Haiti are quoted throughout this article. These interviews are not part of a formal ethnographic study, but rather an effort to convey patient stories in their own words.

\textsuperscript{16} The research project mentioned has, by report, since been terminated.
idea behind the expression has wide currency among patients and non-patients there. This is because, with many infectious diseases, the research enterprise is fundamentally a transnational one. It is also a fundamentally inequalitarian exercise in the sense that medicine and science are expanding rapidly, but in a social context of growing global inequality, which ensures that the fruits of medicine and science are not available to many who need them most.17

Medicine, public health, and research are all caught up in a web of unequal relations. The link between research on AIDS and access to therapy for HIV has been the most scrutinised, perhaps, of this troubling aspect of modern medicine. But other startling examples abound. Organ transplantation is a disturbing case in point. This is not because the clamour for access to organs by those living with, say, renal failure and poverty has reached the ears of most who write about the ethics of the rapidly expanding practice of organ transplantation. It is rather because, globally, the poor are more likely to serve as donors, rather than recipients, of organs.

Organ transplantation is altogether unknown in countries as poor as Haiti, but is common in wealthier but inequalitarian countries and regions throughout the developing world. And almost everywhere we look, trafficking in organs occurs in predictable ways – predictable, that is, to those who look at social inequalities across borders. To quote one anthropologist who works on this topic, ‘the flow of organs follows the modern routes of capital: from South to North, from Third to First World, from poor to rich, from black and brown to white, and from female to male.’18

The seamy underbelly of organ donation in the poor world has been noted by other anthropologists and by adventurous ethicists as well; an ‘organs watch’ website has even been established.19 Although egregious violations of rights are a major problem – the literature is already rife with stories of organs, from kidneys to corneas, quite literally stolen – a far greater problem is the legal and ‘ethically approved’ transfer of organs across social gradients. In other words, the ethical codes currently in place have not prevented abuses grounded, however subtly, in growing inequalities.

19 Organs Watch. University of California, Berkeley. Available at: http://sunsite.berkeley.edu/biotech/organswatch/
When someone living in destitution ‘opts’ to sell a kidney and signs all informed-consent forms in front of multiple witnesses, is the term ‘informed consent’ really meaningful? Rather, what does such informed consent really mean? That the donor is a priori informed about his or her chances of survival without the money disbursed upon donation?

So it is with much AIDS research. If individuals living in slums in African cities, unable to read and write, are to participate in clinical trials, what sort of process must they go through in order to provide informed consent? Or is there a darker possibility: that research across such deep gradients of inequality means that the research enterprise is itself fundamentally coercive unless special measures are taken?

These questions, which are not meant as rhetorical, get at one of the oldest and most fraught debates within social theory: the reticulated relationship between structure and agency. A ‘view from below’ would ask how poverty, racism, and gender inequality come to constrain agency, the ability to make choices. If one believes in the ability of research to lessen misery and suffering – as we do – what ‘special measures’ might one envision as we seek to conduct research in settings of great poverty? How might we ensure that the measures are not in and of themselves coercive, as many incentives are deemed to be?

To answer these and related questions, we note again that it is necessary to resocialise the problems at hand – the quest for vaccines, say, or novel therapeutics or organ transplantation – in order to have a broader view of the inequalities in which such endeavours are grounded, whether researchers see them or not. Efforts to resocialise problems allow all concerned to have a more meaningful understanding of what it is the research subjects (or organ donors) hope to gain from participating in what are, often enough, their only encounters with modern biomedicine. And even a preliminary attempt to consider these topics in their broader social contexts allows us to come to a preliminary conclusion: the more desperate the poverty of subaltern populations (research subjects or organ donors who live in poverty, sick prisoners), the greater the constraint on their agency. In other words, the steeper the gradient of social inequality across which such transactions occur, the greater the risk of abuse without the ‘special measures’ we discuss below.

One of the ways of rethinking medical ethics is to place the ‘outcome gap’ front and centre as an ethical issue. The term ‘outcome gap’ admits to many meanings, but here we follow the example of paediatrician Paul Wise, who some years ago interro-
gated conventional wisdom regarding low birth weights in urban United States, where race and class are strongly associated with rates of premature delivery, with weight at birth, and with rates of infant mortality. These oft-noted disparities of outcome had led, in the last quarter of the previous century, to a movement to divert money from neonatal intensive care units to social conditions for African-American women. But Wise noted that such a diversion would not get to the heart of the matter:

Too often, those who elevate the role of social determinants indict clinical technologies as failed strategies. But devaluing clinical intervention diverts attention from the essential goal that it be provided equitably to all those in need. Belittling the role of clinical care tends to unburden policy of the requirement to provide equitable access to such care.20

Arguments about resource allocation – another staple, as noted, of commentary within medical ethics – are not really ‘socialised’ since they do not include an honest accounting of how an affluent society, or even a city, chooses to spend available resources. Resocialising the problem of low birth rate would require frank discussion of racism, subsidies for the rich and shrinking resources for the poor, military expenditures, and, again, the growing gap between the rich and the poor. It would also require careful consideration of equitable access to clinical care. These topics, like the term ‘power’, are rarely encountered in professional journals devoted to medical ethics.

And so it is with each of the problems mentioned in this essay: AIDS, chronic renal failure, prison-seated epidemics of tuberculosis, and racial disparities in infant mortality. Each problem has generated debates within medical ethics, and new technologies to address them may generate debates within bioethics. But it is possible to discern in scholarly discourse what might be termed a ‘Luddite approach’ to the problem: we should halt AIDS research in resource-poor settings, we should stop performing kidney transplants, we should focus exclusively on prison reform rather than treating epidemic tuberculosis within prisons, and we should stop building NICUs. These unwelcome conclusions are reflected not only within scholarship in medical ethics but also its pious echoes in clinical medicine, medical education, and public health.

We are opposed to these Luddite traps. Each of the dilemmas discussed here calls for new and better technologies, whether they are for managing renal failure or for developing a vaccine for AIDS. To argue, as we do, that the primary ethical issue of modern medicine and public health is the outcome gap, itself rooted in transnational and growing social inequalities, is not to argue for merely shuffling around research and service priorities with decisions based on primitive notions of cost-effectiveness, the latest fashion in policy making. The problem is much deeper. Indeed, we have argued elsewhere that the growing outcome gap constitutes the chief human rights challenge of the 21st century. This assertion will seem odd to many who term themselves experts in the field of human rights, accustomed, as they are, to exhorting governments to respect civil and political rights. But the importance of social and economic rights is paramount in settings of poverty, which are also settings of excess morbidity and mortality.

But what does it mean, for both bioethics and human rights, when a person living in poverty is able to vote, is protected from torture or from imprisonment without due process, but dies of untreated AIDS? What does it mean when a person with renal failure experiences no abuse of his or her civil and political rights, but dies without ever having been offered access to dialysis, to say nothing of transplant? What does it mean when an African-American neonate does not have ready access to the care only afforded in a NICU?

The world’s poor do not live on another planet; nor do they live in countries in which such technologies are unavailable. Surveys have shown that in the world’s poorest countries, the affluent have ready access to both antiretroviral agents and therapy for renal insufficiency; NICUs are close at hand for infants born to affluent families. At the same time, the world’s poor, even those living in wealthy nations, do not have reliable access to good medical care or to the fruits of medical science. And if this is regarded as an ethical problem, then it is one that is growing rapidly and worsened by the development of new and more effective therapies. It is new because some of the diseases and all of the technologies are new: impossible to imagine the key philosophers of yesteryear pondering these technologies because they did not yet exist. Whenever more effective technologies are introduced there will be, in the absence of an equity plan, a

growing outcome gap – the unmentioned elephant in the room of medical ethics.

III LINKING BIOETHICS TO SOCIAL ANALYSIS: 
RETHINKING THE CASE OF TUBERCULOSIS IN PRISONS

We have underlined two steps that would make medical ethics more compelling in settings of great poverty: using the socialising disciplines to contextualise fully ethical dilemmas in settings of poverty and, a related gambit, the systematic participation of the destitute sick. A third step is to link research across steep gradients with the interventions that are demanded by the poor or otherwise marginalised. Examples of the fruits of linking better analysis and better interventions have been offered elsewhere. In the cases cited above, understanding the ethics of AIDS research in Africa or Haiti would rely heavily on interviewing people living with both poverty and this disease. But what is true for AIDS is true for most other maladies afflicting the poor disproportionately.

Elsewhere, we have offered the example of prisoners in Russia who are sick with drug-resistant tuberculosis in order to underline the shortcomings of current approaches to these problems.22

To summarise a complex biosocial process for the purposes of the current exercise, it is important to know that a doubling of incarceration rates occurred after the collapse of the Soviet Union. The infamous gulag came to be more than three times as full in ‘democratic’ Russia, with Siberian incarceration rates exceeding, at one point, 1000 per 100 000 population (only the United States rivals this ratio). Overcrowding, poor ventilation, interruption of medical supplies and salaries for overworked prison staff, and malnutrition led to explosive epidemics of tuberculosis within Russia’s prisons. But this was not the sort of tuberculosis seen in Haiti or sub-Saharan Africa. In some senses, the Russian epidemics were more reminiscent of the prison-seated outbreaks documented in New York beginning in the late 1980s: although HIV was not a factor in the Russian epidemics, they were, as in New York, prison-based and involved strains of highly drug-resistant *Mycobacterium tuberculosis*, the organism that causes the disease.23

Into this dramatic and novel situation came, for the first time, non-Russian aid agencies and non-governmental organisations. To date, there have been few thorough studies of this stunning development, but such analyses are important to our understanding of what is occurring within prison walls today. By the mid 1990s, such organisations were prominent players in post-Soviet states, all of which had seen catastrophic deterioration in their social safety nets and medical systems. The non-governmental organisations were mostly European and North American, and in the post-perestroika disarray they had something their Russian (and Azeri and Georgian and Kazakh, etc.) partners did not then have: money and clout. The ability of these aid organisations to shape responses to epidemic tuberculosis in Siberia was significant, and they insisted on what they termed the most ‘cost-effective’ approach, the one endorsed by international tuberculosis experts, including the World Health Organization: directly observed therapy with ‘first-line’ anti-tuberculous drugs. But some of the Russian prison physicians objected, as did members of Russia’s large and crumbling tuberculosis-treatment infrastructure: the prisoner-patients had drug-resistant tuberculosis and would not be cured by standard first-line regimens; some Russian specialists made other objections. These voices were drowned in an undercurrent of censorious opinion from the international experts and the non-governmental agencies, which, flush with resources and backed by international expert opinion, insisted on giving all prisoners the same doses of the same first-line drugs.

In Siberia and in other pilot sites, treatment outcomes were nothing short of catastrophic: less than half of all patients were deemed cured (expected cure rates for supervised therapy of drug-susceptible tuberculosis exceed 95%). Worse, prisoner-patients who were not cured by therapy with first-line drugs emerged from this treatment, if they survived, with ‘amplified’


resistance. That is, their prognosis had worsened dramatically even if they were to be afforded care with the right drugs.\textsuperscript{26} But the non-Russian groups, whether international tuberculosis experts or aid groups, did not concede that they had made an error. Instead, they pressed on, delivering precisely the same medications even to prisoner-patients with documented multi-drug-resistant tuberculosis.

More delegations visited Siberia in 1998. Members of at least one delegation pointed out that drug resistance was not the likely cause of treatment failure, it was the cause already documented. Somewhat discreetly, it would seem, the lead non-governmental organisation had sent sputum samples for drug-susceptibility testing to at least two reference laboratories in Western Europe. Both laboratories confirmed that patients within Siberian prisons were sick from highly resistant strains of \textit{M. tuberculosis} – strains resistant to precisely those drugs being administered, under direct supervision, by the non-governmental organisations who had been chastising Russian experts for their lack of knowledge of modern tuberculosis control.

Well before 2000, tuberculosis had become the leading cause of death in Russian prisons. In Siberian facilities, surviving prisoners had become less and less treatable, and those with multi-drug-resistant tuberculosis were cohered behind barbed wire and declared altogether ‘untreatable.’ But this was not the case: multi-drug-resistant tuberculosis is treatable with other, more expensive drugs; data from a slum in Peru and rural Haiti have made it clear that such efforts can succeed in settings far poorer than Siberia.\textsuperscript{27} The real debate was not about the efficacy of therapy but about its costs.

By 2001, the lead non-governmental organisation appeared to yield to growing pressure from prisoners, their guards, and expert opinion: it would work with its Russian partners to treat patients with multi-drug-resistant tuberculosis with the drugs to which their strains had been shown to be susceptible. It took


the organisation well over a year to procure the drugs, but early in 2002 it announced the programme was to commence treatment right away. The need was great: in a single oblast in Western Siberia, an estimated 2000 prisoner-patients were warehoused with active multi-drug-resistant tuberculosis. But although the drugs began to arrive in Siberia, no treatment occurred in the ensuing year. In September 2003, the lead organisation issued a press release: they were pulling out of Siberia. As of today, not a single prisoner has been treated, by non-governmental organisations based in Siberia for a decade, for multi-drug-resistant tuberculosis, although thousands, perhaps more, have died of this disease. The press release blames Russian officials, particularly those in the Ministry of Health, for their intransigence, but it is likely that careful study of what occurred will come to a somewhat different conclusion.28

The story is a sad one, but it will become sadder: circulating strains of multi-drug-resistant M. tuberculosis will mean that prisoner detainees are exposed to epidemic strains of highly drug-resistant tuberculosis and then do not receive care when they need it. But that will not change the fact that the initial approach of the non-governmental organisations was incorrect: multi-drug-resistant tuberculosis cannot be cured with regimens based on the very drugs to which infecting strains are resistant, but these patients’ prognosis can be worsened by such practices, even if proper therapy later becomes available. Since international authorities had endorsed these practices they should have been the first to acknowledge the error and to make pledges to help correct it. But no mea culpa has been issued from any interested party.

All interested parties, including those willing to underline the ethical lapses involved, must be part of a broader movement not merely to point to such lapses, masked or acknowledged, but also to address them. In the case of multi-drug-resistant tuberculosis in Russian prisons, that means staying and seeing these patients through treatment that is effective, not ‘cost-effective.’ The fact that prisoners with drug-resistant tuberculosis were given drugs that were wholly ineffective is a reminder that concepts such as ‘cost-effectiveness’ are in fact ideological constructs. The example is one of many and serves, too, as a reminder of the most pressing questions for modern medical ethics.

28 MSF Ends Tuberculosis Treatment in Kemerovo Region, Russia. 30 September, 2003. Available at: http://www.msf.org/countries/page.cfm?articleid=D657393B-C8E6-4CD7-9835259FD4F8AFE
IV ALTERNATIVE AND COMPLEMENTARY FRAMEWORKS: PRAXIS MAKES PERFECT?

The examples offered above have received scant attention in the medical ethics literature and much of that attention has been inaccurate. To blame a lack of HIV care on beleaguered and cash-poor African governments is similar to blaming tuberculosis outbreaks in Siberia on prolonged pre-trial detention or the malfeasance of local prison officials. Such observations are superficial and also convenient, since they deflect attention from the truly powerful forces and actors that, respectively, shape epidemics and declare which interventions are cost-effective and which are not. These actors are more likely to be found in New York, Washington, Geneva or London than they are to be found in Siberia, Port-au-Prince, or Pretoria. It is also superficial to spend time underlining the shortcomings of any one particular field, and we add that our goal here is not to denigrate what constitutes a robust enough intellectual enterprise, but rather to point to ways in which the medical and bioethics communities might illuminate complex and transnational ethical problems. Such analysis would prove useful across steep gradients of social inequality, the context and driving force of the world’s great epidemics. One cautionary lesson of Tuskegee is that it may take decades for ethics to catch up with observations that come quite naturally to those marginalised by poverty, racism, and other forces that are not often the subject of polite conversation within medical ethics.

One reason for this selective silence is that ethics in general has until recently relied heavily on philosophy, its parent discipline, and very little on the social sciences relevant to medicine. Bioethics is fundamentally socially constructed. To resocialise medical ethics – as part of a broader project, which includes critique of dominant modes of thinking in a broad variety of fields – would mean a turn towards disciplines such as anthropology, history, and political economy. But even within philosophy, John Rawls has laid out a framework that might be applied fruitfully to problems such as those now gathering force within Siberian prisons and African slums. Rawls is, of course, famous for his difference principle, which requires preferential treatment for the most disadvantaged, regardless of the social costs this principle

can entail. Critics have rightly noted the principle’s underemphasis on health, but one can read Rawls as making a broader point about how we should view social practices. For if we take Rawls seriously, we have to ask ourselves if we truly care about the most disadvantaged when we give prisoners ineffective therapy that is declared ‘cost-effective.’

Sociologists of knowledge will one day point to the competing paradigms that have led important ethical dilemmas to remain invisible or little noted, but in the short term much more could be said simply by restoring to these problems more of the social and historical complexities inherent in each of them. A certain humility is warranted, as philosopher Caputo wryly suggests:

Far be it from me to make ethics tremble. I tremble even at the prospect that I will be found guilty of spreading the word that the pants of the great man are split. For that I have already prepared a defense aimed at exonerating me of all responsibility . . . The result is that it will be very hard to identify the guilty party, to find anyone who is singularly responsible, if we are all rounded up by the police and charged with inciting a riot against ethics.

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30 J. Rawls. 1999. A Theory of Justice. Revised edition. Cambridge, MA. Harvard University Press: § 26, pp. 130–139; § 13, pp. 65–73. Rawls’s more precise definition of the difference, or maximin principle, is that society must choose the scheme of institutions that most advantages the least advantaged persons in society. In practice, this emphasis on the absolute position of the most disadvantaged in society may force society to forgo schemes that produce lesser aggregate wealth or utility. Other scholars have cited the tensions between distributive ‘injustice’ and over-consumption by the wealthy, which may lead to such harms as environmental degradation and exploitation of the poor. See: A. Jameton & J. Pierce. Environment and Health: Sustainable Health Care and Emerging Ethical Responsibilities. Canadian Medical Association Journal 2001; 164: 365–369.


32 This attitude toward prisoners is also hard to square with an equally important, though largely forgotten, aspect of Rawls’s theory of justice – the inviolability of each person. As Rawls himself elegantly states, ‘[e]ach person possesses an inviolability founded on justice that even the welfare of society as a whole cannot override.’ Rawls, op. cit. note 26, § 1, p. 3.

The sociology of knowledge is another field full of promise in the broader project to resocialise medical ethics. Our understanding of science, for example, is given a significant boost when the non-rational procedures that lead to paradigm shifts come into clear relief. ‘Given a paradigm, interpretation of data is central to the enterprise that explores it’, writes Thomas Kuhn. ‘Paradigms are not corrigible by normal science at all.’ Most would argue that medical ethics and philosophy are not the sorts of science that Kuhn had in mind; many practitioners of anthropology and, to a lesser extent, sociology, are willing to admit that the term ‘social science’ may be a bit grand. And although economists are unwilling, often, to point to the ideological frameworks that undergird their work, they are at least willing to call theirs ‘the dismal science.’

In addition to the invaluable insights of sound epidemiology, which suggests the mechanisms by which social inequalities serve as the leading risk for both falling ill with infectious disease and then being denied access to adequate care, there is a special role for ethnography and for detailed case studies. If ethicists were to interview patients and sick non-patients – for many of the destitute sick never become patients and are never offered the chance to confront ethical dilemmas – as often as they interrogate philosophical treatises, the resocialisation of medical ethics would be well underway. Here we quote another Haitian woman, whose commentary easily spans the gulf from access to AIDS therapies to the right to employment. She made these comments in 2001 after gaining more than 20 pounds on antiretroviral medications:

We’re always sick here. If we’re not dying of AIDS, we’re dying of hunger, or both. Now that I am better, it’s not as if my problems have disappeared. It’s that I can wake up and fight them again. For two years I lay in bed, my children watching me die,

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34 Berger and Luckmann note that ‘The sociology of knowledge must concern itself with whatever passes for “knowledge” in a society, regardless of the ultimate validity or invalidity (by whatever criteria) of such “knowledge”. And in so far as all human “knowledge” is developed, transmitted and maintained in social situations, the sociology of knowledge must seek to understand the processes by which this is done in such a way that a taken-for-granted “reality” congeals for the man in the street. In other words, we contend that the sociology of knowledge is concerned with the analysis of the social construction of reality.’ (P. Berger & T. Luckmann. 1966. *The Social Construction of Reality: A Treatise on the Sociology of Knowledge*. Garden City, NY. Anchor Books.)

bringing me sips of water . . . [Their father] is gone – my sister has seven children of her own. All I could think about was what will happen to my children when I die? My sister had already purchased my coffin but then [the clinic] gave me these [antiretroviral] medicines. Someone comes to see me every day, to make sure I take them. The first thing that hit me was hunger. The medicines started killing the virus and then I became hungry. But we had no food in the house – how would that be possible, if [the father of her children] were gone and I was dying? Charity food does not allow you to regain your strength and to feed your children at the same time. That’s why we always reach the same conclusions in our [support-group meetings]. If you want to prevent AIDS among poor women, give them jobs . . . I’m happy I’m better, and I’d rather be alive than dead. But all I do every day, still, is worry about how I’m going to feed my children. I don’t want to become a thief.

In our own writing on these topics we have sought to echo and amplify such commentaries, writing about the need to re-mediate inequalities of access to healthcare as a fundamental human right. Are such calls – for the right to healthcare and to jobs – merely grandstanding when echoed by academics, broadsides dressed in scholarly guise? We would answer by insisting that both bioethics and medical ethics have a long way to go on this score before scholars in these fields can object that the views of the destitute sick receive too much emphasis in the literature.

Listening to the afflicted is not merely moral praxis, although it is that. It affords us rich insights into the sorts of problems that we have outlined in this essay. Because the poor quite literally embody many of the ethical dilemmas stemming from injustices within medicine and public health, they add insights that cannot be obtained through reference to philosophy. For ethical reflection is part of everyday life, and when the stakes are high – in a squatter settlement in Haiti, say, or a prison in Western Siberia – soliciting these views are central to the quest for understanding. With the exception of sociopaths, as Churchill notes, ‘[the capacity to think critically about moral values and direct our actions in terms of such values] is common to all of us.’36 The same is not true of particle physics or evidence-based medicine, which do not figure prominently in everyday discourse and reasoning. But

herein lies the great promise of a resocialised ethics: seeking the views of the destitute sick will breathe new life into medical ethics.

The call to rely more heavily on the views of the afflicted is not a call to turn our backs on philosophy but rather a call to turn our attention to those who suffer most. It is also a call to turn towards the disciplines that can illuminate the social production, and maintenance, of that suffering. Just as history and political economy can show us how science and medicine have grown but not in tandem with ethical approaches to global health equity, so too can history and political economy in turn illuminate ethnography and other ‘experience-near’ disciplines.

Each of the problems mentioned above is an obvious example. The distribution of HIV infection is as surely sculpted by social inequalities as is access to both HIV care and to what might be called prevention equity. To engage in ethical debate about vaccine trials or ethically sound clinical research in ‘resource-poor settings’, as many have done in recent years, it is necessary to understand the social inequalities that sculpt both the AIDS epidemic and social responses to it. Indeed, it is these very inequalities of risk and access that make it attractive to conduct research on diseases endemic among the world’s poor. As for organ transplants, there can be no honest understanding of international movement of organs without acknowledging the steep social gradients across which they move. Such observations, even when undergirded by robust research, cause those involved in the enterprise to bristle, but that makes these observations no less true.

There are other paradigms and bodies of knowledge that can help to resocialise bioethics. Within the human rights movement is a small but growing effort to underline the importance of social and economic rights, which are the rights commonly demanded by the poorest populations. These include the right to healthcare, schooling, housing, and clean water. Some have attempted to listen to the poorest and restore these rights to their proper place in the hierarchy of rights, and also to underscore the impossibility of understanding current debates in global medical ethics without understanding the extreme disparities that underpin the ‘ethical’ dilemmas of the destitute sick.37

Medical ethics also stands to gain from insights from liberation theology, as noted by Marcos Fabri dos Anjos. Although ethics and philosophy have long been entangled in religious reflection, there is thus far very little synergy between medical ethics and the one branch of theology that concerns itself chiefly with the problem of poverty in the modern world. The conclusions of dos Anjos are worth citing here:

First, to what level of quality can medical ethics aspire, if it ignores callous discrimination in medical practice against large populations of the innocent poor? Second, how effective can such theories be in addressing the critical issues of medical and clinical ethics if they are unable to contribute to the closing of the gap of socio-medical disparity?38

Regardless of which or how many of the socialising disciplines are used, modern medical ethics would stand to benefit from another dramatic change. We argue here that those who study ethical dilemmas will be called increasingly to have a hand in remediating them. These calls will come from ‘below’, from the afflicted themselves. The concept of ‘pragmatic solidarity’ is instructive as medicine, science, and public health stumble and fall in the very regions most in need of them. AIDS in Africa and tuberculosis in prisons are cases in point. Pragmatic solidarity is a cumbersome term, perhaps, and one that makes many academics uncomfortable. Anthropologists, for example, have long argued that their task is to observe rather than intervene, but this claim is undermined by the arguments that anthropology’s supposed neutrality was in fact perceived by others, including those studied, as a small but at times integral part of the colonial project.39

The social sciences, if that is what we are to term them, cannot claim neutrality. There is no social variant of Heisenberg’s principle, and it is possible to argue that no field of inquiry can span such dizzying social inequalities and not influence the very topic it proposes to study. Researchers from the modern university are invariably actors in a social field and medical ethicists who work across steep gradients of inequality are, all objections to the contrary notwithstanding, powerful actors when compared to those they study.

Listening to the poorest will lead us back, inevitably, to the outcome gap. The ‘special measures’ mentioned above will vary from place to place and from problem to problem, but medical ethicists should expect to become part of teams seeking to lessen the outcome gap by remediating access to effective medical care. And once that step is taken, we will have the option of trying to ignore what we are being told by the afflicted, or to take seriously the challenge of linking the struggle for social and economic rights – the right to food, housing, clean water, education, and jobs – to scholarly inquiry that breaches the frighteningly deep gap between the haves and the have-nots.

V CONCLUSIONS OR NEW DIRECTIONS?

Like any established fields of scholarly inquiry, bioethics and medical ethics are broad and large enough to contain their own internal critics. And like many practitioners of an academic discipline, ethicists are not always eager to embrace critiques from beyond the field. But this essay is meant merely to complement ongoing research and reflection within bioethics and medical ethics.

Writing of AIDS, historian Allan Brandt astutely notes that, ‘In the years ahead we will, no doubt, learn a great deal more about AIDS and how to control it. We will also learn a great deal about the nature of our society from the manner in which we address the disease. AIDS will be a standard by which we may measure not only our medical and scientific skill but also our capacity for justice and compassion.’\textsuperscript{40} When Brandt writes of ‘our society’, he refers to the global village through which HIV has raced. Access to AIDS care has yet to follow. Surely this constitutes a daunting ethical problem.

Research in medical ethics has thus far been conducted largely in affluent and industrialised nations. Yet these ‘resource-rich’ settings are tied, and intimately so, to the poorest parts of the world. Haiti, the Western Hemisphere’s most HIV-burdened nation, is the classic case in point: born of late 15th-century European expansion, Haiti was, by the 18th century, the world’s most profitable slave colony. It is now commonly termed the poorest country in the Western Hemisphere. But the creation of this

poverty over time is seen within Haiti as a result of the historical processes that created one of the most brutal slave colonies on record. The key events in Haitian history, from the slave revolt that led to the founding of Latin America’s oldest republic to the 20th-century US military occupation of Haiti and subsequent generous support of military dictators, are as familiar to Haitians as they are forgotten by French and US citizens. So too was Tuskegee all but forgotten by modern medicine and yet remembered by African Americans. Indeed, historians and medical ethicists are to be thanked for having kept this issue alive until a formal presidential apology was obtained in 1997, 50 years after penicillin was found to be effective therapy for syphilis, and 25 years after the cessation of the experiment. Research in South Africa, similarly, is necessarily fraught, in part because the scars of apartheid are forgotten by newly arrived AIDS researchers but not by those who endured apartheid and now see their communities attacked by yet another foe. The Haitians have a saying, ‘bay kou bilye, pote mak chonje’: he who delivers the blow forgets; he who bears the scar remembers.

Injustices of one sort or another are very often central to the modern ethical problems in medicine, public health, and science. Rawls was correct to underline the centrality of justice in considerations of ethical problems, and the process of resocialising medical ethics and bioethics is in part a process of restoring the historically deep and geographically broad analysis that comes naturally to the world’s destitute sick, who bear the scars of history.

Another way of putting this is best saved for the end of this essay: medical ethics must grapple more persistently with the growing problem posed by the yawning gap between rich and poor. The central topics of bioethics and medical ethics need to be linked to questions of social justice and to consideration of how inequalities of all sorts are linked to the inequalities studied by sociologists, anthropologists, and epidemiologists. In almost all countries in which medical ethics and bioethics have taken root – which is to say in most countries, at this writing – access to care, even access to informed participation in clinical trials, is determined as much by social standing as by disease process. This basic epidemiological and social fact emboldens us to close with a warning: if social inequalities persist and grow, we will no longer be welcome to conduct research or even to comment on it. To cite Joia Mukherjee again, ‘If the medical community is to use data generated in high-burden and vulnerable
populations to develop an HIV-1 vaccine, we must ensure that the global community will help governments fulfill the right to health and share the fruits of research with the world’s poorest communities.\textsuperscript{41}

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ngastineau@pih.org

\textsuperscript{41} Mukherjee, \textit{op. cit.} note 1, p. 995.
Rapid declines in mortality rates and overall improvement in health are among the least recognised advances of the second half of the 20th century. Life expectancy increased by an average of 6·3 years per decade worldwide between 1960 and 1990, albeit more slowly since then. Furthermore, cross-country differences in life expectancy have fallen greatly since 1950, although income inequality between and within countries has risen. Overall, if one properly accounts for convergence across countries in health conditions, global inequalities are falling.1,2

Despite huge overall global improvements in health, many low-income and middle-income countries have not shared in the gains or have fallen further behind high-income countries. As well as affecting wellbeing, poor health impedes economic growth and poverty reduction. From 1990 to 2001 the mortality rate of those aged 5 years or younger increased or remained constant in 23 countries. In another 53 countries (including China), the fall in mortality in this age group was less than half the 4·3% per year required to reach the fourth Millennium Development Goal of reducing mortality in those younger than 5 years by two thirds by 2015.

Income inequality is only one reason for health inequality. The experiences of European countries in the late 19th and early 20th centuries and, more recently, of Bangladesh, China, Costa Rica, Cuba, Sri Lanka, and the Kerala state of India, among many others, indicate that improvements in health can arise without high or rapidly growing incomes and that the correct policies can greatly reduce mortality. Globalisation has helped to diffuse knowledge about the consequences.14

The Disease Control Priorities Project (DCPP), a joint project of the Fogarty International Center of the US National Institutes of Health, the WHO, and The World Bank, was launched in 2001 to identify policy changes and intervention strategies for the health problems of low-income and middle-income countries. Nearly 500 experts worldwide compiled and reviewed the scientific research on a broad range of diseases and conditions, the results of which are published this week. A major product of DCPP, Disease Control Priorities in Developing Countries, 2nd edition (DCP2), focuses on the assessment of the cost-effectiveness of health-improving strategies (or interventions) for the conditions responsible for the greatest burden of disease. DCP2 also examines crosscutting issues crucial to the delivery of quality health services, including the organisation, financial support, and capacity of health systems. Here, we summarise the key messages of the project.

The aim of DCPP was to generate knowledge to assist decision makers in developing countries—especially those in the public sector—to realise the potential of affordable, effective interventions to rapidly improve the health and welfare of their populations. The main product of DCP is a second, much expanded and updated revision of Disease Control Priorities in Developing Countries. The Disease Control Priorities in Developing Countries, 2nd edition (DCP2), has 73 wide-ranging chapters, compiled by almost 500 experts, covering disease conditions, their burdens and risk factors, intervention effectiveness and cost-effectiveness, health systems, and financing. Table 1 provides comparative disease burdens in low-income, middle-income, and high-income countries, and worldwide of major diseases. Here, we summarise the key messages about intervention priorities (table 2) and, to a lesser extent, those about health systems (panel 1), development assistance for health (panel 2), and research and product development priorities (panel 3).

Additionally, DCPP has resulted in an updated assessment of the global burden of disease and risk factors,7 a review of documented successes at improving population health,8 and many other publications9,10 and working papers, including a major review of malaria’s consequences.11

**Intervention priorities**

DCP2 identifies highly cost-effective opportunities to improve health that policymakers are ignoring or underfunding and details prevalent investments that are not cost effective. The perspective taken is that of allocation of public finances to meet social goals of improving population health and reducing financial risks.
### Communicable diseases, pregnancy outcomes, and nutritional deficiencies

<table>
<thead>
<tr>
<th>Condition</th>
<th>Low-income and middle-income countries</th>
<th>High-income countries</th>
<th>Worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DALY</strong> (n=1387426)</td>
<td><strong>DALY</strong> (n=1260643)</td>
<td><strong>DALY</strong> (n=149161)</td>
<td><strong>DALY</strong> (n=148316)</td>
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<tr>
<td><strong>Total</strong></td>
<td>39.8</td>
<td>31.6</td>
<td>5.7</td>
</tr>
<tr>
<td><strong>Infections and parasitic diseases</strong></td>
<td>23.1</td>
<td>21.0</td>
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<tr>
<td><strong>Tuberculosis</strong></td>
<td>2.6</td>
<td>2.8</td>
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</tr>
<tr>
<td><strong>Sexually transmitted infections (not HIV)</strong></td>
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<td>0.7</td>
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<td><strong>HIV/AIDS</strong></td>
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<td><strong>Diphtheria</strong></td>
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<td><strong>Measles</strong></td>
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<td><strong>Tetanus</strong></td>
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<td>42.0</td>
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<td><strong>Respiratory infections</strong></td>
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<td>46.3</td>
<td>17.1</td>
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<td><strong>Maternal conditions</strong></td>
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<td><strong>Nutritional deficiencies</strong></td>
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### Non-communicable conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Low-income and middle-income countries</th>
<th>High-income countries</th>
<th>Worldwide</th>
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<td><strong>DALY</strong> (n=1387426)</td>
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<td><strong>DALY</strong> (n=149161)</td>
<td><strong>DALY</strong> (n=148316)</td>
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<tr>
<td><strong>Total</strong></td>
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<td>10.8</td>
<td>20.9</td>
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<td><strong>Digestive diseases</strong></td>
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### Injuries

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<th>High-income countries</th>
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<td><strong>DALY</strong> (n=1387426)</td>
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<td><strong>DALY</strong> (n=149161)</td>
<td><strong>DALY</strong> (n=148316)</td>
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<td><strong>Total</strong></td>
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<tr>
<td><strong>Unintentional</strong></td>
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</tr>
<tr>
<td><strong>Other</strong></td>
<td>1.8</td>
<td>2.0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Data are %. "DALY calculated at 3% per year discount rate with no age-weights. "DALY,† analogous to DALY except that it includes stillbirths in estimates of burden and assumes a gradual acquisition of life potential that allows burden associated with a death near the time of birth to grow gradually with age rather than instantaneously increasing from 0 to a high value at birth or some earlier time.

Table 1: Burden of disease in low-income and middle-income countries, high-income countries, and worldwide, 2001"
## Cost per DALY averted ($)*

<table>
<thead>
<tr>
<th>Burden of target diseases (millions of DALYs)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost per DALY averted ($)</strong></td>
</tr>
</tbody>
</table>

### Neglected low-cost opportunities in south Asia

**Childhood immunisation**
- Increased coverage of traditional EPI programme
  - Cost per DALY averted: 8
  - Thousands of DALYs averted:
  - Not assessed
  - Burden of target diseases: 28·4

**HIV/AIDS**
- Voluntary counselling and testing
  - Cost per DALY averted: 9–126
  - Thousands of DALYs averted:
  - Not assessed
  - Burden of target diseases: 7·4

**Peer-based programmes for at-risk groups**
- (e.g., commercial sex workers) to disseminate information, services (clean needles and condoms), and teach specific skills
- School-based interventions to disseminate information
- Prevention of mother-to-child transmission with antiretroviral therapy

**Surgical services and emergency care**
- Surgical ward in district hospital, primarily for obstetrics, trauma, and injury
  - Cost per DALY averted: 6–212
  - Thousands of DALYs averted:
  - ≥1·8
  - Burden of target diseases: 48·0–146·3

**Tuberculosis**
- Childhood vaccination against endemic disease
  - Cost per DALY averted: 8–263
  - Thousands of DALYs averted:
  - Not assessed
  - Burden of target diseases: 13·9

**Lower acute respiratory illnesses of children younger than age 5 years**
- Community-based or facility-based case management of non-severe cases
  - Cost per DALY averted: 28–264
  - Thousands of DALYs averted:
  - 0·7–1·8
  - Burden of target diseases: 9·7–26·4

**Cardiovascular diseases**
- Management of acute myocardial infarction with aspirin and β blocker
  - Cost per DALY averted: 9–304
  - Thousands of DALYs averted:
  - ≥0·1
  - Burden of target diseases: 25·9–39·1

**Tobacco use and addiction**
- Tax policy to increase price of cigarettes by 33%
  - Cost per DALY averted: 14–374
  - Thousands of DALYs averted:
  - ≥2·5
  - Burden of target diseases: 15·7

### Neglected low-cost opportunities in sub-Saharan Africa

**Childhood immunisation**
- Second opportunity measles vaccination‡
  - Cost per DALY averted: 1–5
  - Thousands of DALYs averted:
  - Not assessed
  - Burden of target diseases: Not assessed

**Traff ic accidents**
- Increased speeding penalties, and media and law enforcement
  - Cost per DALY averted: 2–12
  - Thousands of DALYs averted:
  - Not assessed
  - Burden of target diseases: 6·4

**Malaria**
- Insecticide-treated bed nets‡
  - Cost per DALY averted: 2–24
  - Thousands of DALYs averted:
  - 20·8–37·6
  - Burden of target diseases: 35·4

### (Continues on next page)
### Childhood illnesses

- Integrated management of childhood illnesses
- Case management of non-severe lower acute respiratory illnesses at community or facility level
- Case management package, including community-based or facility-based care for non-severe cases and hospital-based care for severe lower acute respiratory illnesses
- Breastfeeding to prevent malnutrition

### Cardiovascular disease

- Management of acute myocardial infarction with aspirin and β blocker
- Primary prevention of coronary artery disease with legislation, substituting 2% of trans fat with polyunsaturated fat, at $0.50 per adult
- Secondary prevention of congestive heart failure with ACE inhibitors and β blockers incremental to diuretics
- Secondary prevention of myocardial infarction and stroke with polypill, containing aspirin, β blocker, thiazide diuretic, ACE inhibitor, and statin

### HIV/AIDS

- Peer-based programmes for at-risk groups (eg, commercial sex workers) to disseminate information and teach specific skills
- Voluntary counselling and testing
- Diagnosis and treatment of sexually-transmitted diseases
- Condom promotion and distribution
- Prevention and treatment of coinfection with Mycobacterium tuberculosis
- Blood and needle safety programmes
- Prevention of mother-to-child transmission with antiretroviral therapy

### Maternal and neonatal care

- Increased primary-care coverage
- Improved quality of comprehensive emergency obstetric care
- Improved overall quality and coverage of care
- Neonatal packages targeted at families, communities, and clinics

### High-cost interventions in south Asia

<table>
<thead>
<tr>
<th>Disease Area</th>
<th>Intervention</th>
<th>Country Cost and Effectiveness</th>
<th>Cost Effectiveness (Cost per DALY averted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Episodic treatment with new antidepressant drug (SSRI)</td>
<td>1003-1449 0.4-0.8</td>
<td>14.6</td>
</tr>
<tr>
<td>Depression</td>
<td>Episodic or maintenance psychosocial treatment plus treatment with new antidepressant drug (SSRI)</td>
<td>1003-1449 0.4-0.8</td>
<td>14.6</td>
</tr>
<tr>
<td>High blood pressure and cholesterol</td>
<td>Primary prevention of stroke and ischaemic and hypertensive heart disease with aspirin, β blocker, and statin, incremental to policy-induced behaviour change, at 15% risk of cardiovascular disease event over 10 years</td>
<td>1120-1932 46.3-76.4</td>
<td>41.5</td>
</tr>
<tr>
<td>Lifestyle diseases</td>
<td>Primary prevention of diabetes, ischaemic heart disease, and stroke through policy that replaces saturated fat with monounsaturated fat in manufactured foods, accompanied by a public education campaign</td>
<td>1325-1865 1.3-1.8</td>
<td>39.5</td>
</tr>
<tr>
<td>Stroke (ischaemic)</td>
<td>Acute management with recombinant tissue plasminogen activator within 48 h of onset</td>
<td>1630-2967 0.03-0.4</td>
<td>2.2-2.9</td>
</tr>
<tr>
<td>Diarrhoeal diseases</td>
<td>Oral rehydration therapy if package cost is &gt;$2.30 per child per episode</td>
<td>500-6390 0.02-0.25</td>
<td>22.3</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Isoniazid treatment for latent endemic disease in patients uninfected with HIV</td>
<td>5588-9189 Not assessed</td>
<td>13.9</td>
</tr>
<tr>
<td>Schizophrenia and bipolar disorder</td>
<td>Antipsychotic medication and psychosocial treatment for schizophrenia</td>
<td>1743-17702 0.02-0.12</td>
<td>2.2-2.9</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>Management of acute myocardial infarction with streptokinase or tissue plasminogen activator, incremental to aspirin and β blocker</td>
<td>6388-24040 0.04-0.3</td>
<td>25.9</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>Secondary prevention of ischaemic heart disease with statin, incremental to aspirin, β blocker, and ACE inhibitor</td>
<td>6388-24040 0.04-0.3</td>
<td>25.9</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>Secondary prevention of ischaemic heart disease with coronary artery bypass graft</td>
<td>6388-24040 0.04-0.3</td>
<td>25.9</td>
</tr>
</tbody>
</table>
of ill-health. Careful selection of priorities makes limited resources go further and encourages aid agencies and development partners to invest in the expansion of health programmes. Improved efficiency does not reduce the importance of increasing resources for the implementation of these interventions and meeting of broader objectives, such as the Millennium Development Goals. These objectives are complementary.

Cost-effectiveness is presented as US$ per disability-adjusted life year (DALY) averted. DALYs are years lived with disability and years lost to premature death in a single metric. Cost-effectiveness is only one consideration in allocating resources to specific diseases and interventions; epidemiological, medical, political, ethical, cultural, and budgetary factors also affect such decisions. Interpretation of the cost-effectiveness ratio as the price of equivalent units of health, using different interventions, is a useful approach to deploy cost-effectiveness information alongside these other considerations in setting priorities. Cost-effectiveness information makes policymakers aware of differences in the price of improving health with different interventions. Interventions with a high price should, all else being equal, be used less, whereas those with a low price should be used to a greater extent.

The cost-effectiveness-related findings in DCP2 are subject to several caveats, and we encourage readers to note the order of magnitude of each estimate rather than the specific number. Final estimates were calculated either with cost-effectiveness numbers drawn from published work or with standardised resource costs adapted from WHO’s CHOICE project.15 Also, the cost-effectiveness estimates are not varied with the scale of the intervention, and apply to countries in which institutional and technical capacity in relation to health is close to the average for their World Bank region. The estimates are based on the best available data, which are often weak. Pharmacological and other interventions within health-care services are over-represented in our assessment—environmental, agricultural, legal, and health promoting interventions have received less attention, primarily because of the complexity of evaluating them.

Figure 1 and figure 2 show cost-effectiveness estimates for 94 clusters of interventions (representing 218 interventions). Cost-effectiveness ranges should not

### Table 2: Neglected low-cost opportunities and high-cost interventions in south Asia and sub-Saharan Africa

<table>
<thead>
<tr>
<th>Interventions in south Asia and sub-Saharan Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diarrhoeal diseases</strong></td>
</tr>
<tr>
<td>Oral rehydration therapy if cost per episode is &gt;$2.80 per child</td>
</tr>
<tr>
<td>Rotavirus or cholera immunisation</td>
</tr>
<tr>
<td>HIV/AIDS</td>
</tr>
<tr>
<td>Antiretroviral therapy in populations with low adherence†</td>
</tr>
<tr>
<td>Traffic accidents</td>
</tr>
<tr>
<td>Random driver breath tests</td>
</tr>
<tr>
<td>Enforcement of seatbelt laws</td>
</tr>
<tr>
<td>Child restraint promotion</td>
</tr>
<tr>
<td>High blood pressure and cholesterol</td>
</tr>
<tr>
<td>Primary prevention of stroke and ischaemic and hypertensive heart disease with aspirin, β blocker, and statin, incremental to policy-induced behaviour change, at 15% risk of cardiovascular disease event over 10 years</td>
</tr>
<tr>
<td><strong>Lifestyle diseases</strong></td>
</tr>
<tr>
<td>Primary prevention of diabetes, ischaemic heart disease, and stroke through policy that replaces saturated fat with monounsaturated fat in manufactured foods, accompanied by a public education campaign</td>
</tr>
<tr>
<td>Primary prevention of diabetes, ischaemic heart disease, and stroke through legislation that reduces salt content plus public education</td>
</tr>
<tr>
<td><strong>Stroke (ischaemic)</strong></td>
</tr>
<tr>
<td>Acute management with recombinant tissue plasminogen activator within 48 h of onset</td>
</tr>
<tr>
<td>Acute management with heparin within 48 h of onset</td>
</tr>
<tr>
<td>Secondary prevention with carotid endarterectomy</td>
</tr>
<tr>
<td><strong>Tuberculosis</strong></td>
</tr>
<tr>
<td>Isoniazid treatment for latent endemic disease in patients uninfected with HIV</td>
</tr>
<tr>
<td><strong>Cardiovascular diseases</strong></td>
</tr>
<tr>
<td>Management of acute myocardial infarction with streptokinase or tissue plasminogen activator, incremental to aspirin and β blocker</td>
</tr>
<tr>
<td>Secondary prevention of ischaemic heart disease with statin, incremental to aspirin, β blocker, and ACE inhibitor</td>
</tr>
</tbody>
</table>

*Ranges represent variation in point estimates of cost-effectiveness, DALYs averted, or burden of disease for different interventions. Point estimates of cost-effectiveness and DALYs averted obtained from DCP2 or calculated as midpoint of range estimates reported. Burden of disease estimates obtained from reference 7. Avertable DALYs per 20% increase in treatment coverage in a hypothetical sample population of 1 million people.† Only assessed for sub-Saharan Africa.
Panel 1: Strengthening of health systems

Strengthening health system performance is a wide-ranging subject, likely to require action on many fronts and management levels. It requires attention to the various functions of the health system, especially the various dimensions of management, as well as to associations between the system, its clients (patients), and their communities. Evidence for which approaches work best is limited.

Stewardship and regulation
- Strengthen accountability of health systems to communities and ensure users have a voice and can influence priorities—in Burkina Faso, participation by communities in public primary health-care clinics increased immunisation coverage, essential drug availability, and proportion of women with two or more prenatal visits.
- Revise regulations that govern private providers—regulations are often outdated and poorly enforced; revision of regulations to permit drug shops to stock a small set of oral antibiotics, for example, would allow more constructive engagement between sales staff and inspectors as well as increase drug availability.

Organisational structures
- Distinguish more clearly the roles of purchaser and provider within public services—though there are few successful examples and major reforms have encountered severe implementation difficulties.
- Achieve the appropriate balance of vertical and horizontal modes of organisation and management of service provision—the pendulum swings between focused, disease-specific support and broader health-service or health-system support. Disease-focused efforts make most sense in situations of weak institutional capacity, poor controls on use of public money, and highly constrained resource availability. But such efforts should be designed and implemented in ways that support longer-term system strengthening.
- Use contracts with non-governmental organisations to deliver services where government capacity is weak—e.g., in remote areas—or public provision less effective—e.g., some HIV prevention interventions. In Cambodia, results of a comparison of government provision with two forms of contracting to non-governmental organisations showed that increases in coverage of key interventions were higher in the contracted districts, and that the poor especially benefited.

Human resources
- Reduce migration of doctors and nurses, which severely affects health services, especially in some sub-Saharan African countries.
- Improve recruitment and retention:
  - Employ less internationally mobile cadres.
  - Reward local employment with performance-related pay as in the successful Chinese national tuberculosis programme (requires good regulatory framework, skilled managerial resources, and careful monitoring to counter adverse effects).
  - Offer non-financial incentives—make staff feel their work is valued and provide them with the capacity to work effectively.

Targeting resources
- Use resource-allocation formulae to help ensure geographical equity.
- Use financial incentives and subsidies to encourage uptake of priority interventions.
- Provide information, tools, and training to help managers adapt services and resources to local disease burden—the experience of the Tanzania Essential Health Interventions Project shows the subsequent possible health gains.

be interpreted as statistical confidence intervals but rather as a range of “best estimates” that incorporate variation across interventions in the cluster as well as geographical variation. Ranges for the cost-effectiveness ratios are also attributable to variations in the ratios of individual interventions in each group and in the epidemiological settings where the interventions were assessed. A population-based primary intervention in a low-prevalence area is usually less cost effective than the same intervention in a high-prevalence area. Figure 1 shows interventions that deal with high-burden diseases, and figure 2 those that deal with relatively low-burden diseases. All results are in US$ discounted to the year 2001 at 3% yearly. No age weights are applied when calculating DALYs. Chapter 2 of DCP2 provides a more complete discussion of cost-effectiveness analysis guidelines provided to chapter authors and the quality of evidence on which the estimates reported here are based.16

In the figures, intervention clusters are presented in order of increasing (worsening) cost-effectiveness ratios. Observations about specific clusters of interventions follow.

Prevention and control of tuberculosis
Treatment of all forms of active tuberculosis with DOTS is among the most cost effective of interventions ($5–35 per DALY averted except in Europe and central Asia). An internationally-recommended strategy, DOTS has five components: political commitment; case detection by sputum smear microscopy, mostly among self-referring symptomatic patients; standard short-course chemotherapy administered under proper case-management conditions, including directly observed
therapy; a system to ensure regular drug supplies; and a standard recording and reporting system, including the assessment of treatment outcomes. The BCG vaccination for children is also cost effective ($40–170 per DALY averted) as a measure to reduce the burden in children of tuberculosis-associated meningitis and miliary tuberculosis. Because BCG hardly affects the huge burden of pulmonary tuberculosis in adults, development of a new vaccine targeting adults is highly desirable. Treatment of latent tuberculosis in patients not coinfected with HIV is less cost effective ($4000–25 000 per DALY averted) than treatment of those who are coinfected ($16–230). Antiretroviral therapy for HIV/AIDS is most cost effective when used to extend the life of patients who have been successfully treated for tuberculosis.

Multidrug resistant tuberculosis (MDR-TB) is two to ten times more expensive to treat than drug-susceptible disease; prevention of its emergence and spread should be a priority. Management of MDR-TB with a standardised regimen, including second-line drugs, costs about $70–450 per DALY averted. Individualised treatment regimens for MDR-TB—with drug combinations adjusted for each patient’s resistance pattern—are more costly but yield higher cure rates. As such, and though such treatment is harder to implement on a large scale, it could be as cost effective as standardised treatment with regimens that use second-line drugs.

Irrespective of resistance profile, management of tuberculosis in individuals with HIV requires higher investments than that needed for the basic directly observed treatment strategy. Nevertheless, the cost is still typically less than $1 per day of healthy life gained—a strong argument for integrating such interventions into an enhanced tuberculosis control strategy.

Prevention and treatment of HIV/AIDS

Despite the scale and relentless growth of the HIV/AIDS epidemic, cost-effective interventions have been developed for both prevention and treatment.

Prevention

Although remarkably little rigorous assessment has been done, population-based programmes to prevent infection with HIV seem to be very cost effective where prevalence is high and the epidemic generalised beyond high-risk groups into the broader population. These programmes include peer-based education for high-risk groups, including sex workers and injection drug users ($1–74 per DALY averted); voluntary testing and counselling ($14–261); and social marketing, promotion, and distribution of condoms ($19–205). Programmes to improve the safety of blood and needles, although highly cost effective ($4–51), avert only a limited burden of disease in areas of generalised epidemics. In parts of south, east, and central Asia, where injection drug use fuels rapidly increasing HIV epidemics, harm-reduction programmes, including clean needle exchanges, should be a priority.

Prevention of mother-to-child transmission of HIV, using a single dose of nevirapine to both mother and baby at birth, in generalised epidemic settings is both cost effective and capable of averting great disease burden. Treatment of sexually transmitted infections to lower the risk of HIV transmission, although less well proven, also seems to be highly cost effective ($16–105 per DALY averted).

Treatment

Treatment of most opportunistic infections in people with HIV/AIDS is cost effective ($10–500 per DALY averted), and is becoming more so as an increasing number of people receive antiretroviral treatment. Only a few studies have assessed the cost-effectiveness of antiretroviral treatment, and these are limited to clinical trials and not directly applicable to the resource-poor settings where use of antiretroviral treatment is increasing. Cost-effectiveness is affected by drug prices and adherence rates, and omits the non-health effects of HIV/AIDS and the effect of treatment on prevention of transmission. In settings where treatment costs are low and adherence rates high, antiretroviral treatment is moderately cost effective ($350–500 per DALY averted); however, treatment can be poor value for money if low adherence allows drug resistance to emerge and proliferate. How to achieve necessary adherence levels (80–90%) on a large scale at an affordable cost in resource-poor settings is a research priority.

Illnesses and mortality in children

Mortality of neonates and of children younger than age 5 years can be greatly reduced at an affordable cost, with interventions of proven effectiveness in low-
Panel 3: Research and development priorities

Unprecedented health gains in the past century resulted directly from knowledge gained through research, the development of new drugs, vaccines, and diagnostics, and improved technologies. Better, newer interventions to further reduce major causes of disease burden in low-income and middle-income countries are needed. Why?

- Convergence towards a predominance of non-communicable diseases in most regions of the world underscores need for greater research focus on cardiovascular diseases, cancer, diabetes, and neuropsychiatric conditions
- Continued threat of preventable communicable diseases, maternal mortality, and tropical diseases in sub-Saharan Africa and parts of south Asia
- Emergence of potentially devastating pandemics, such as avian (H5N1) influenza and obesity, as leading public-health concerns
- High burden of intentional and non-intentional injuries
- Many cost-effective interventions do not yield their full potential for several reasons:
  - Weak health systems, with limited infrastructure, and financial and human resources
  - Insufficient transfer of knowledge and technologies from one context to another
  - Limited capacity for disease surveillance and disease modelling
  - Limited research capabilities

Research priorities

- Discovery and approval of new and better drugs, vaccines, and diagnostics
- Improved understanding of major determinants and disease risk factors in various epidemiological, socioeconomic, and cultural contexts
- Epidemiological surveillance at country level and worldwide
- Development of new and better intervention strategies that are locally appropriate and affordable; this calls for stronger focus on developing treatment algorithms and guidelines, improved intervention packaging, better information about intervention costs and cost-effectiveness, expanded delivery of health services, and well functioning health systems, as well as improved policy instruments

Key recommendations

- Use results of cost-effectiveness analyses to improve investment of limited resources
- Expand use of successful public-private partnerships for product development
- Do operational research on delivering important interventions that might rely on lifelong medication—eg, psychiatric disorders, HIV/AIDS, cardiovascular disease, and diabetes
- Identify health problems shared by industrialised and low-income and middle-income countries
- Increase potential of information technology
- Increase global health research capacity to attract and keep productive scientists in developing world
- Create a global health architecture that allocates a larger share of development assistance for health to research and development with a focus on neglected conditions

income settings. Improvements are likely to follow an increase in coverage of preventive measures, such as breastfeeding, and expansion of childhood vaccination programmes beyond the traditional six antigens in places where coverage is high and where new antigens address diseases of significant burden, particularly pneumococcal and *Haemophilus influenzae* type b vaccines. Implementation and increased coverage of curative interventions for acute respiratory infections, malaria, and diarrhoea should reduce the figure of 6 million preventable deaths every year in this age group.

Neonatal mortality

An estimated 4 million babies younger than age 28 days die every year, accounting for 38% of all deaths in children younger than age 5 years. Causes of death include infections (36%, including neonatal sepsis, pneumonia, diarrhoea, and tetanus), complications due to preterm birth (27%), and asphyxia (23%). Intensive care is not needed to save most of these babies. Low-income countries—for instance, Sri Lanka—have achieved neonatal mortality rates of 15 per 1000 without intensive care; less than a third of the neonatal mortality rates typical in sub-Saharan Africa.

Inclusion of essential care for newborn babies (warmth, cleanliness, and immediate breastfeeding), neonatal resuscitation, facility-based care of preterm babies, and emergency care of ill neonates to the standard maternal and child health package has proven highly cost effective in India ($11–265 per year of life saved, or $24–585 per DALY averted) and sub-Saharan Africa ($25–360 per year of life saved, or $46–657 per DALY averted); however, provision of such care depends on great initial investment. Addition of community-based interventions—promoting healthy behaviours, such as breastfeeding, providing extra care of moderately small babies at home through cleanliness, warmth, and exclusive breastfeeding, plus...
HIV/AIDS: treatment of Kaposi’s sarcoma
Ischaemic heart disease: coronary artery bypass graft
Myocardial infarction: acute management with tissue plasminogen activator, with aspirin and β-blocker
Tuberculosis (endemic, latent): isoniazid treatment
Diarrhoeal disease: improved water and sanitation at current coverage of amenities and other interventions
Diabetes, ischaemic heart disease, and stroke: media campaign to reduce saturated fat
Stroke and ischaemic and hypertensive heart disease: polypill by absolute risk approach
Ischaemic heart disease: statin, with aspirin, β-blocker, and ACE inhibitor
Stroke (ischaemic): acute management with heparin and recombinant tissue plasminogen activator
Diabetes, ischaemic heart disease, and stroke: legislation with public education to reduce salt content
Depression: drugs with optional episodic or maintenance psychosocial treatment
Alcohol misuse: 25–50% increase in excise tax rate
Diarrhoeal disease: oral rehydration therapy for package costing $5–50 per episode
Diarrhoeal disease: breastfeeding promotion
HIV/AIDS: antiretroviral therapy
Coronary artery disease: legislation substituting 2% of trans fat with polyunsaturated fat at 6% per adult
Ischaemic heart disease: aspirin, β-blocker, with optional ACE inhibitor
HIV/AIDS: home care
Myocardial infarction: acute management with streptokinase, with aspirin and β-blocker
Alcohol misuse: brief advice by primary health-care doctor
Alcohol misuse: excise tax, advertising ban, with brief advice
Myocardial infarction and stroke: secondary prevention with polypill
Alcohol misuse: advertising ban and reduced access to beverage retail
Lower acute respiratory infection (0–4 years): case management package at community, facility, and hospital levels
Tobacco addiction: nicotine replacement therapy
Tobacco addiction: non-price interventions
Tuberculosis (endemic): management of drug resistance
Hemophilus influenzae type B, hepatitis B, diphtheria, pertussis, and tetanus: pentavalent vaccine
Tuberculosis (epidemic): management of drug resistance
Tuberculosis (epidemic, latent): isoniazid treatment
Diarrhoeal disease: hand pump, standpost, or house connection where clean water supply is limited
HIV/AIDS: opportunistic infection treatment
Congestive heart failure: ACE inhibitor and β-blocker, with diuretics
Stroke (ischaemic): acute management with aspirin
Diarrhoeal disease: construction and promotion of basic sanitation where facilities are limited
Problems requiring surgery: surgical ward or services in district hospital or community clinic
HIV/AIDS: tuberculosis infection prevention and treatment
Emergency care: staffed community ambulance
Tuberculosis (epidemic, infectious): directly observed short-course chemotherapy
HIV/AIDS: blood and needle safety
HIV/AIDS: mother-to-child transmission prevention
Tuberculosis (endemic): BCG vaccine
HIV/AIDS: sexually transmitted infections diagnosis with treatment
Coronary artery disease: legislation substituting 2% of trans fat with polyunsaturated fat at 60–50 per adult
HIV/AIDS: voluntary counselling and testing
Diarrhoeal disease: water sector regulation with advocacy where clean water supply is limited
Underweight child (0–4 years): child survival programme with nutrition
Childhood illness: integrated management of childhood illness
HIV/AIDS: peer and education programmes for high-risk groups
Tobacco addiction: taxation causing 33% price increase
Malaria: intermittent preventive treatment in pregnancy with sulfadoxine-pyrimethamine
Malaria: residual household spraying
Myocardial infarction: acute management with aspirin and β-blocker
Malaria: insecticide-treated bed nets
Tuberculosis, diphtheria-pertussis-tetanus, polo, measles: traditional EPI
Malaria: intermittent preventive treatment in pregnancy with drugs other than sulfadoxine-pyrimethamine
Emergency care: training volunteer paramedics with lay first-responders
Diarrhoeal disease: hygiene promotion

Figure 1: Cost-effectiveness of interventions related to high burden diseases in low-income and middle-income countries (<35 million DALYs)
Bars=range in point estimates of cost-effectiveness ratios for specific interventions included in each intervention cluster and do not represent variation across regions or statistical confidence intervals. Point estimates obtained from DCP2, calculated as midpoint of range estimates reported, or calculated from a population-weighted average of region-specific estimates reported. Only interventions with cost-effectiveness reported in terms of DALYs are included in figure. *Advertising bans, smoking restrictions, supply reduction, and information dissemination. †Chloroquine—first line drug; artemisinin-based combination therapy=second line drug; and sulfadoxine-pyrimethamine=first line or second line drug.
management of acute respiratory infections—to the maternal and child health package is likely to be highly cost effective. A year of life saved could cost as little as $100–257 in India ($221–568 per DALY averted) and $100–270 in sub-Saharan Africa ($183–493). These approaches are feasible now in virtually all countries.

Resuscitation of newborn children with a self-inflating bag that costs as little as $5 in low-income and middle-income countries can save lives at low cost if a midwife is available. Provision of two tetanus toxoid immunisations to all pregnant women could avert more than 150,000 neonatal deaths every year. Improvement of maternal and child health services delivered through a combination of family-level and community-level care, outreach, and clinical care would increase the survival rates of newborn and older children and reduce stillbirths and maternal deaths.

Vaccine-preventable diseases in childhood

Childhood vaccinations, long recognised as among the most cost-effective uses of resources, prevented more than 3 million deaths worldwide in 2001. National immunisation programmes include vaccines against tuberculosis, diphtheria, tetanus, pertussis, poliomyelitis, and measles at a cost per fully immunised child of $13–24, depending on coverage levels and type of delivery strategy (health-facility-based, campaigns, or mobile teams outreach). The estimated cost per death averted varies from less than $275 (under $10 per DALY averted) in sub-Saharan Africa and south Asia to $1754 ($20 per DALY averted) in Europe and central Asia. This pronounced variation is largely attributable to differences in the underlying prevalence of disease. These same factors also affect the cost-effectiveness of scaling up coverage with the traditional Expanded Program on Immunization (EPI) vaccines. The cost per death averted varies by region, from $162 in sub-Saharan Africa to more than $1600 in eastern Europe. Costs are less than $20 per DALY averted in all regions other than Europe and central Asia. Cost-effectiveness of the tetanus toxoid vaccine also varies widely, from less than $400 per death averted ($14 per DALY averted) in sub-Saharan Africa and south Asia to more than $190,000 ($15,000 per DALY averted) in Europe and central Asia.

Including a second opportunity for measles vaccination through routine or campaign based approaches costs $23–228 per death averted and less than $4 per DALY averted in developing regions other than Europe and central Asia. New vaccines cost more per dose and are less cost-effective than the current EPI vaccines, but might be worthwhile in regions of high disease prevalence. The pentavalent vaccine (DPT—hepatitis B—Hib) has an estimated cost per death of $1433–40,000 and a cost-effectiveness of $42 per DALY averted in sub-Saharan Africa and greater than $245 elsewhere. Addition of a yellow fever vaccine costs between $834 per death averted ($26 per DALY averted) in sub-Saharan Africa and $2810 ($39 per DALY averted) in Latin America and the Caribbean.

Multivalent pneumococcal conjugate vaccines could reduce the incidence of invasive pneumococcal disease while lowering antibiotic use and the likelihood of drug resistance. At $50 per dose, however, these vaccines are unaffordable to most people in low-income and middle-income countries. After confirmation of efficacy and subsequent licensing, new vaccines that protect against rotavirus, malaria, human papilloma virus-associated cervical cancer, and dengue should be included in the EPI schedule.

Acute respiratory infections

Although vaccination is essential, patients’ management is also an efficient use of financial resources, although more demanding of health-system capacity. Management in the community or at a health-care facility might be comparably cost-effective, but community-based strategies hold promise for more rapid coverage. Treatment of non-severe pneumonia at facilities with oral antimicrobials and paracetamol ($24–424 per DALY averted) is slightly more cost-effective than similar treatment administered at home by a health-care worker ($139–733). Treatment of severe pneumonia in a hospital rather than at home is more expensive ($1486–14,719).

Diarrhoeal disease

Of the interventions for diarrhoeal disease during the first year of life, breastfeeding promotion programmes ($527–2001 per DALY averted), measles immunisation ($257–4565), and oral rehydration therapy (as low as $132, for a cost per child of $0·70) are relatively cost-effective compared with rotavirus immunisations ($1402–8357) and cholera immunisations ($1658–8274). Because great reductions in mortality from this condition have already been achieved, the average case-fatality rate from diarrhoea is now much lower than before oral rehydration therapy was introduced. Where none of these interventions has been adopted, diarrhoeal disease is still a major killer, and oral rehydration therapy and other measures are more cost-effective in preventing deaths even if diarrhoea incidence is unchanged. The situation is parallel to that for immunisation: cost-effectiveness might look poor because of gains already achieved, but both continued and expanded coverage are needed. Similarly, improvements in water and sanitation ($1118–14,901 per DALY averted from diarrhoeal disease) are less cost-effective where access to these amenities is adequate and other interventions against diarrhoeal disease exist. In areas with little access to water and sanitation, however, improvements can be highly cost-effective because they reduce incidence of illness ($94 per DALY averted for installation of hand pumps and $270 per DALY averted for provision and promotion of basic sanitation facilities).
Integrated management of childhood illnesses
An integrated package, consisting of exclusive breastfeeding, vitamin A and zinc supplementation, screening for immunisation, and management of pneumonia, malaria, and diarrhoea—including oral rehydration therapy—costs about $4–10 per child in sub-Saharan Africa and is cost effective ($38 per DALY averted) when coverage is at least 50%. Constant attention to quality is especially important when introducing packages of diverse interventions.

Inherited disorders of haemoglobin
Inherited disorders of haemoglobin, including sickle cell anaemia and the thalassaemias, affect about 500,000 babies every year and have a high mortality rate. Expensive prenatal screening for sickle cell disease can be replaced by much cheaper screening of newborn babies and by counselling. Antibiotic prophylaxis is moderately cost effective at preventing death in the first few years ($8000–12,000 per death averted, or $300–400 per DALY averted). At $10,000 or more per DALY averted, however, the repeated transfusions needed for some thalassaemias are unaffordable to all but the rich in low-income and middle-income countries; bone-marrow transplant, seldom needed, costs even more. A strategy that worked in Cyprus, Greece, and Italy, countries with previously high incidence rates of thalassaemias, involved the screening of couples to ascertain their risk of having an affected child, followed by prenatal testing—a relatively expensive proposition—only of couples at high risk.

Tropical diseases
Despite health researchers’ neglect of predominantly tropical diseases, interventions to control—and in some cases eliminate—these diseases rank among the most cost effective of all options.
Malaria
Prevention and effective treatment options of this disease are highly cost-effective and can yield large health gains in areas where malaria is endemic. Methods of prevention include insecticide-treated bednets ($5–17 per DALY averted) and indoor residual spraying with DDT, malathion, deltamethrin, or cyhalothrin ($9–24 per DALY averted for sub-Saharan Africa).

Intermittent preventive treatment of malaria during pregnancy, using sulfadoxine-pyrimethamine, is a highly cost-effective ($13–24 per DALY averted) means of reducing neonatal mortality, mainly from low birthweight, and severe maternal anaemia. Changing of first-line treatment for malaria from chloroquine, an ineffective drug in much of the world, to an artemisinin-based combination offers faster cures and potential reductions in transmission, with cost-effectiveness of better than $150 per DALY averted. A change to sulfadoxine-pyrimethamine might be slightly more cost effective initially because this drug costs less than artemisinin-based combinations; however, this advantage would probably be eroded quickly because of the expected rapid growth of parasite resistance.

Lymphatic filariasis, onchocerciasis, and Chagas’ disease
Yearly drug administration to the entire population at risk for long enough to interrupt transmission represents a cost-effective way to eliminate lymphatic filariasis in high prevalence areas ($4–8 per DALY averted). An alternative is to fortify salt with diethylcarbamazine ($1–3) and to use ivermectin where onchocerciasis is coendemic. Onchocerciasis control programmes have been highly successful in west Africa: investigators estimate the cost-effectiveness of community-directed ivermectin treatment at roughly $7 per DALY averted when the drug is provided free of charge. The cost of vector control to prevent—and perhaps eliminate—Chagas’ disease is about $260 per DALY averted.

Leishmaniasis and African trypanosomiasis
Intervention opportunities exist even for tropical diseases for which control measures are less effective. Improved management of patients with dengue ($587 per DALY averted) is more cost effective than environmental management or insecticides (more than $2000). Treatment for leishmaniasis is extremely cost effective ($315 per death averted and $9 per DALY averted), as is treating patients with African trypanosomiasis in the second stage of the disease, using melarsoprol or eflornithine ($10–20 per DALY averted).

Helmintic infections
Helmintic infections, although not a great cause of death in tropical regions, have a great effect on wellbeing, growth, and physical fitness, and on school attendance, worker productivity, and earning potential. Mass school-based treatment of soil-transmitted helminths (Ascaris lumbricoides, Trichuris trichuria, and hookworm) with albendazole costs $2–9 per DALY averted. Although the cost of treating schistosomiasis with praziquantel is much higher ($336–692), a combination of albendazole and praziquantel is extremely cost effective ($8–19).

Reproductive health
Given the hugely disproportionate burden of maternal and neonatal deaths in low-income and middle-income countries, identifying affordable, easy-to-implement preventive interventions is a priority. Improved primary-level coverage with a package of prenatal and delivery care is very cost effective in lowering both maternal and perinatal deaths ($3337–6129 per death averted and $92–148 per DALY averted) as are improvements in quality of prenatal and delivery care ($2729–5107 per death averted and $82–142 per DALY averted). Notably, improving the quality of care and expanding coverage are comparably cost effective.

Nutrition
Direct and indirect effects of undernutrition and micronutrient deficiencies account for about a third of the disease burden in low-income and middle-income countries. Interventions to prevent malnutrition, such as breastfeeding support programmes ($3–11 per DALY averted and $100–300 per death averted) and growth monitoring and counselling ($8–11 per DALY averted), are moderately cheap. Large-scale community health and nutrition programmes that promote such interventions and better child feeding practices can reduce stunting—and the sequelae of cognitive impairment, increased susceptibility to obesity, and later chronic disease—by an additional 1–2 percentage points per year at an annual cost of $5–10 per child or $200–250 per DALY averted, often without the need for additional food. Micronutrient intake can be supplemented with capsules or by fortifying sugar, salt, water, or other essentials. For vitamin A deficiencies, capsule distribution ($6–12 per DALY averted) is more cost effective than sugar fortification ($33–35), especially where the prevalence of vitamin A deficiency is low. Fortification of salt, sugar, and cereal to correct iron deficiency and of water and salt to correct iodine deficiency is less expensive than distributing supplements for mild deficiency, though pregnant women and severely anaemic or iodine-deficient people might still need to take a supplement. Overall cost-effectiveness is $66–70 per DALY averted for iron fortification and $34–36 per DALY averted for iodine fortification.

Cancer prevention and treatment
Initial treatment costs between $1300 and $6200 per year of life saved for the more treatable cancers of the cervix, breast, oral cavity, colon, and rectum, and between $53 000 and $163 000 per year of life saved for less treatable liver, lung, stomach, and oesophagus cancers. Postmastectomy radiation might be cost effective in developing countries,
where the cost of treatment can be lower than in developed countries. Palliative care for terminally ill patients is a challenge, especially where opioid drugs, a cost-effective option, are in short supply.

Biennial screening by clinical breast examination is estimated to be cost effective at $552 per life-year saved for women from age 40–60 years, indicating the large proportion of tumours with a poor prognosis in developing countries. In this setting, clinical breast examination is more cost effective than mammography: mammograms every 2 years save 10% more life-years than yearly clinical breast examination, but the cost is more than 100% higher. As with any screening programme, cost-effectiveness is greater with higher underlying prevalence.

Mental and neurological disorders
Mental disorders are heterogeneous conditions that vary considerably in intervention cost and associated burden reduction. Treatments for depression are much more cost effective in general than are those for bipolar disorder and schizophrenia. For the latter two disorders, the potentially great benefits to family members and to society as a whole are not captured by DALYs and should be balanced against the relatively high cost of improving health for some individuals. For many disorders, drugs are effective, especially when combined with psychosocial treatment, including group therapy, family interventions, and cognitive-behavioural approaches to managing symptoms and improving adherence to medications. Stigma is a major challenge, for which creative interventions are needed.

Schizophrenia and bipolar disorder
Community-based drug treatment accompanied by psychosocial treatment is the most cost-effective approach for these severe mental disorders. Newer antipsychotic and mood-stabilising drugs have become less expensive; even so, they are less cost effective than drugs that have been available for a while. A combination of haloperidol and family psychoeducation is typically much more cost effective ($1743–4847 per DALY averted) than a combination of a new antipsychotic drug (risperidone) with family psychoeducation ($10 232–14 481) in the treatment of schizophrenia. For bipolar affective disorder, family psychoeducation is more cost effective when combined with the older medication lithium ($1587–4928 per DALY averted) than with valproate ($2765–5908).

Depression and panic disorder
Treatment for the more common disorders of depression and anxiety is more cost effective than treatment for the more severe disorders; interventions are less expensive and the reduction in disability is greater. For depression, drug therapy with tricyclic antidepressants (imipramine or amitriptyline) costs $478–1288 per DALY averted. Management of chronic depression to reduce relapses is similarly cost effective ($749–1760). Use of newer medications with fewer side-effects and potentially greater compliance (an advantage for long-term use)—for example fluoxetine, a generic selective serotonin reuptake inhibitor (SSRI)—increases costs ($1229–2459 per DALY averted). Finally, the treatment of panic disorder with tricyclic antidepressants ($305–619) and SSRIs ($567–865) is more cost effective than treatment with tricyclic antidepressants combined with psychosocial interventions. Psychosocial treatment without drugs is comparably cost effective ($338–927).

Tricyclic antidepressants are more cost effective than benzodiazepines, which are still often prescribed for anxiety disorders and produce dependence in many patients. A package of mental-health interventions to address all four disorders costs between $1429 and $2902 per DALY averted, depending on the region.

Parkinson’s disease and epilepsy
Traditional Indian ayurvedic treatment is relatively cost effective for Parkinson’s disease ($750 per DALY averted) compared with a combination of levodopa and carbidopa ($1500) to treat the debilitating symptoms and delay the progress of the disease, or deep-brain stimulation ($31 000).

Cost-effective options exist for epilepsy—eg, phenobarbital to help control seizures ($89 per DALY averted)—but few eligible patients receive treatment. Options such as lamotrigine or surgery are significantly less cost effective than phenobarbital for first-line treatment; however, they are cost effective for the small proportion of patients who do not respond to phenobarbital. The emphasis must be on extending treatment with phenobarbital to the many who do not receive it.

Prevention and treatment of cardiovascular disease
Cardiovascular diseases, including ischaemic heart disease, congestive heart failure, and stroke, account for more than a quarter of all deaths in low-income and middle-income countries; treatment is likely to account for an increasing proportion of health-care expenditure in these countries.

Population-based primary prevention
Interventions to modify lifestyles can effectively lower the risk of coronary artery disease and stroke at a moderately low cost without expensive health infrastructure. Replacing dietary trans fat with polyunsaturated fat is likely to be effective in settings where trans fat intake is high. If such replacement occurs during manufacture rather than through changes in individual behaviour, the cost would be $25–73 per DALY averted. Replacement of saturated fat with monounsaturated fat in manufactured foods accompanied by a public education campaign is relatively expensive ($1865–4012 per DALY averted), although the cost per DALY averted is highly sensitive to the relative risk reduction in cardiovascular events as well as the cost per individual. Reduction of salt levels in manufactured
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foods through a combination of legislation and education campaigns is also expensive ($1325–3056 per DALY averted), but could be much more cost effective in populations with a high salt intake. Little evidence is available on the cost-effectiveness of programmes to encourage exercise and other behavioural changes.

**Personal interventions**

Prevention strategies targeted at individuals at high risk for cardiovascular disease—measured as a combination of non-optimal blood pressure, poor lifestyle, poor nutrition, tobacco and alcohol use, and genetic risk factors—can be effective, especially when implemented in tandem with population-based measures. A previous cardiovascular event reliably predicts a second event. Single-pill combinations of blood pressure-lowering medications, statins, and aspirin offer the dual benefit of lowering the risk of cardiovascular disease and facilitating compliance with the drug regimen. A hypothetical multidrug regimen, including aspirin, a β blocker, a thiazide diuretic, an angiotensin-converting-enzyme (ACE) inhibitor, and a statin might be implemented at a cost of $721–1065 per DALY averted compared with no treatment in a population with an underlying 10-year risk of cardiovascular disease of 35%. The use of a multidrug regimen for prevention in patients with a lower underlying risk improves health benefits, but costs increase more than proportionately.

**Acute management of cardiovascular disease**

The cost of treating acute myocardial infarction with aspirin and β blockers is less than $25 per DALY averted in all regions. Relatively more expensive interventions that offer marginally greater effectiveness include thrombolysis, such as streptokinase ($630–730 per DALY averted), and tissue plasminogen activator ($16 000).

In regions with poor access to hospitals, a combination of aspirin plus the β blocker atenolol is highly cost effective in preventing the recurrence of a vascular event ($386–545 per DALY averted). The incremental cost-effectiveness of sequentially adding an ACE inhibitor such as enalapril ($660–866), a statin such as lovastatin ($1700–2000), and coronary artery bypass graft (more than $24 000 per DALY averted) to the baseline therapy is less favourable. In all regions, treating congestive heart failure with enalapril and the β blocker metoprolol is also highly cost effective (about $200 per DALY averted).

**Acute management and secondary prevention of stroke**

Treatment of acute ischaemic stroke with aspirin costs $150 per DALY averted. The use of a tissue plasminogen activator ($1300) and anticoagulants such as heparin or warfarin ($2700) is relatively cost ineffective. Aspirin is the cheapest option for secondary prevention of ischaemic stroke ($3·80 per single percentage point decrease in the risk of a second stroke within 2 years, or $70 per DALY averted). Since having had a stroke indicates an individual to be at high risk for subsequent ischaemic heart disease, it will generally make sense to use more than aspirin for secondary prevention. The combination of the antiplatelet medication dipyridamole and aspirin is equally cost effective ($93 per DALY averted). By contrast, carotid endarterectomy is a costly option for secondary prevention ($1500 per DALY averted).

**Strategies for injury prevention**

Economic development and increased motor vehicle use have led to a rise in traffic-related deaths and injuries; these events account for roughly a third of the burden from all unintentional injuries in low-income and middle-income countries.

Speed bumps are the most cost-effective method of prevention, costing less than $5 per DALY averted in all regions if installed at the most dangerous junctions that account for 10% of junction-related deaths. Increased speeding penalties, media coverage, and enforcement of traffic laws are only slightly less cost effective. Motorcycle helmet legislation ($467 per DALY averted in Thailand), bicycle helmet legislation ($107 per DALY averted in China), and improved enforcement of traffic codes through a combination of policing and information campaigns ($55–169 per DALY averted) cost more, but deserve greater attention, given the growing health burden associated with rising vehicle ownership. Seat belts and child restraints are effective in the developed world; lowering their costs and encouraging their routine use should improve cost-effectiveness in low-income and middle-income countries.

Interventions to reduce intentional violence, both self-inflicted (suicides) and interpersonal (homicides and war-related deaths), include changing cultural norms, reducing access to guns and deadly pesticides, and improving criminal justice and social welfare systems, but these interventions are difficult to assess with a cost-effectiveness framework, and a cost-benefit analysis is more appropriate. Findings of studies in developed countries show that behavioural, legal, and regulatory interventions cost less than the money they save, in some cases by an order of magnitude. Provision of shelters for victims of domestic violence in the USA results in a benefit–cost ratio of 6·8–18·4 to one. Interventions for troubled young people to reduce criminal activity include mentoring (with net benefits ranging from $231 to $4651 per participant), family therapy ($14 545–60 721), and aggression replacement therapy ($8519–34 071).

**Conditions that require surgery**

Types of surgery that are highly cost effective include care to injury victims (eg, those with head trauma and burns); handling of obstetric complications (eg, obstructed labour or haemorrhage); and elective surgery for conditions that seriously affect quality of life (eg, cataracts and otitis media). In areas of high prevalence, cataract surgery can be highly cost effective (about $100 per DALY averted).
Many surgical interventions—resuscitation and airway management with simple procedures such as chest tubes and tracheostomy, and management of fractures and of burns covering less than 30% of the body—require only the facilities offered by district hospitals. The quality of surgery and the risk of complications vary widely, and adequate health-service capacity is an important consideration. For the typical surgical facility in a district hospital in a low-income or middle-income country, the average cost per DALY averted for a representative set of surgical procedures is between $70 and $230. General surgery at a district hospital is cost effective in south Asia and sub-Saharan Africa because of low infrastructure costs and high avertable disease burden. Surgical interventions with poor cost-effectiveness include first-line treatment of epilepsy, which helps only patients who are resistant to drug treatment, and percutaneous transluminal coronary angioplasty for cardiovascular events.

**Alcohol and tobacco use**

The growing prevalence of smoking, especially in women in low-income and middle-income countries, seriously threatens health. Interventions to reduce tobacco use are not only highly cost effective, but they can avert a large burden of deaths. Tobacco tax increases often increase tax revenues as well as discouraging smoking initiation and encouraging smokers to quit. The cost-effectiveness of increasing cigarette prices by 33% ranges from $13 to $195 per DALY averted globally, with a better cost-effectiveness ratio ($3–42 per DALY averted) in low-income countries. Nicotine replacement therapy ($55–751) and non-price interventions, including banning advertising, providing health education information, and forbidding smoking in public places, are relatively less cost effective ($54–674) in low-income countries, but still belong in any tobacco control programme. Comprehensive tobacco control programmes that use price and non-price interventions, and which aim specifically to help the current 1·1 billion smokers quit, should be increasingly implemented, especially now that more than 110 countries have adopted the global Framework Convention on Tobacco Control.

Where high-risk alcohol use is prevalent—especially in Europe and central Asia, Latin America and the Caribbean, and sub-Saharan Africa—tax increases to lower alcohol use are very cost effective ($105–225 per DALY averted). Where high-risk use is less prevalent—east Asia and the Pacific and south Asia—tax-based policies can be among the least cost-effective interventions (more than $2500 per DALY averted). Advertising bans are among the most cost-effective of all interventions to reduce high-risk drinking in all regions ($134–280). In east Asia and the Pacific, a comprehensive ban on advertising and reduced access to retail outlets are highly cost-effective interventions ($123–146). In many regions, random breath testing is one of the least cost-effective interventions ($973–1856); however, in southeast Asia, avert the burden associated with drink driving is an important priority, addressed effectively through random breath testing and stricter enforcement of drink-driving laws ($531 per DALY averted). Provision of brief advice to high-risk drinkers by a primary care physician is of intermediate cost-effectiveness ($480–819) in all regions; combining this advice with a tax on alcohol should improve cost-effectiveness ($260–533), except in sub-Saharan Africa.

**Delivering interventions**

Interventions are rarely freestanding, but are delivered through a service infrastructure. Community health status is correlated with the quality of health-service facilities, which can be enhanced even in resource-constrained settings, with greatest potential for improving quality at low cost. Intervention and service quality greatly affect cost-effectiveness, and improving quality can be an efficient use of resources. Improvement of the quality of care of acute respiratory infections through an educational activity for providers costs from $132–$800 per life saved ($4–28 per DALY averted) when initial intervention quality is poor and infections are widespread. Quality improvements cost $2000–5000 per life saved ($70–176 per DALY averted) with better baseline quality, low disease prevalence, or both. Educational interventions to improve treatment for diarrhoea can be extremely cost effective (less than $18 per DALY averted), depending on these two factors.

In DCP2, cost-effectiveness analysis was done not just of specific interventions, but also for levels of care (eg, primary care, district hospitals, surgery). Evidence suggests that it is highly cost effective to develop a well functioning general primary-care system, encompassing local–district hospital levels, which can address up to 90% of health-care demand in developing countries.

The cost per death averted of training lay first-responders to emergencies and volunteer paramedics is between $130 and $283 ($5–11 per DALY averted), depending on the region. Ambulances equipped with trained paramedics can avert deaths at a cost of $1148–3479 ($46–137 per DALY averted) in urban settings and $3457–10 449 ($140–410) in rural settings. Evidence about district and referral hospitals is limited, but indicates that basic district-level hospital care could be highly cost effective ($13–104 per DALY averted).

Strengthening of referral hospitals has various benefits that are difficult to quantify, including providing more complex clinical care to referred cases, disseminating appropriate health technologies, and lending clinical, managerial, and administrative support to other health-care levels.

**Strengthening health systems**

Cost-effectiveness data for interventions and packages indicate what a reasonably well functioning health system can achieve. They represent potential cost-effectiveness and need to be supplemented with evidence and guidance on how health systems can provide interventions effectively, efficiently, and equitably. Although we have
deal with mainly the chapters in DCP2 that deal with intervention selection, one of the chapters in the book provides a more extended summary of findings concerning health systems. Panel 1 summarises the key points in this chapter. To accelerate progress towards the health-related Millennium Development Goals and ensure that the poor are not left behind requires new thinking about effective service delivery for priority interventions. Human resources for health is one of the biggest challenges that faces health systems.

Conclusion

Improvements made to health constitute an enormous success for human welfare in the 20th century. Four important challenges face the world, however, at the dawn of the 21st century: high levels and rapid growth of non-communicable conditions in developing countries; the unchecked HIV/AIDS pandemic; the possibility of a successor to the influenza pandemic of 1918; and the persistence in many countries and population subgroups of high but preventable levels of mortality and disability from malaria, tuberculosis, diarrhoea, and pneumonia.

Existing cost-effective interventions need to be adopted on a wider scale. For communicable diseases, interventions that have been highly cost effective in the past remain so despite emerging infections and drug resistance. Non-communicable diseases, including ischaemic heart disease and stroke, can be prevented, importantly by comprehensive tobacco control programmes, and managed effectively in low-income countries at a reasonable cost. Many interventions first developed in the industrial world are now largely available in the developing world, challenging health-care systems in low-income and middle-income countries to recognise the importance of these conditions and respond to them.

For prevention and treatment programmes to work, policymakers must have access to the best possible research and analysis to ensure that their health investments save as many lives as possible. The demographic, epidemiological, and economic information in DCP2 should help to fill an important gap, but knowledge alone is not sufficient. Increasing the flow of resources to health, drawing on both donor support and national spending, is essential to purchase the cost-effective interventions described in the book.

Conflict of interest statement

We declare that we have no conflict of interest.

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References

Monday, October 9, 2017

Lecturer: Lisa Abuogi

Lecture: Customs and Culture in Global Health


**The Significant Harm of Worst Practices.** Unite for Sight http://www.uniteforsight.org/global-health-course/module8
Global Health Training

Ethics and Best Practice Guidelines for Training Experiences in Global Health

John A. Crump,* and Jeremy Sugarman,* and the Working Group on Ethics Guidelines for Global Health Training (WEIGHT)†

Abstract. Academic global health programs are growing rapidly in scale and number. Students of many disciplines increasingly desire global health content in their curricula. Global health curricula often include field experiences that involve crossing international and socio-cultural borders. Although global health training experiences offer potential benefits to trainees and to sending institutions, these experiences are sometimes problematic and raise ethical challenges. The Working Group on Ethics Guidelines for Global Health Training (WEIGHT) developed a set of guidelines for institutions, trainees, and sponsors of field-based global health training on ethics and best practices in this setting. Because only limited data have been collected within the context of existing global health training, the guidelines were informed by the published literature and the experience of WEIGHT members. The Working Group on Ethics Guidelines for Global Health Training encourages efforts to develop and implement a means of assessing the potential benefits and harms of global health training programs.

PREFACE

Educational institutions, foundations, and governmental and non-governmental organizations have shown a growing interest in applying their technical expertise, energy, talent, research capability, and resources to addressing global health challenges and disparities. Students increasingly request global health content in curricula and often wish to experience global health challenges firsthand. Accordingly, global health educational programs frequently include field experiences that often involve crossing international borders and during which trainees often encounter ethical challenges related to cultural and professional differences.

Health science students participating in global health field experiences have been shown to be more likely to care for the poor and ethnic minorities, to change focus from sub-specialty training to primary care medicine, to report improved diagnostic skills, and to express increased interest in volunteerism, humanitarianism, and public health. For these and other trainees, such experiences may form the foundations for a career focused on or oriented toward global health or other's environments. Experiences may vary in duration from as short as a few days to as long as 12 months and may vary considerably in quality. The goals of training experiences also vary; some can be viewed as training opportunities for the primary benefit of the trainee, whereas others claim to provide some form of service to the host or may involve research. However, little is known about the benefits and unintended consequences of global health training experiences to host institutions and host trainees and, if a component of service is anticipated, whether benefit is realized and at what cost. Global health training that benefits the trainee at the cost of the host is clearly unacceptable; mutual and reciprocal benefit, geared to achieving the program goals of all parties and aiming for equity, should be the goal.

Exploitation of one partner for the benefit of another must be avoided. Although global health training experiences offer potential benefits to trainees and to sending institutions and appear to be growing rapidly in scale, these experiences are sometimes problematic and raise ethical challenges. Such challenges include substantial burdens on the host in the resource-constrained setting; negative impact on patients, the community, and local trainees; unbalanced relationships among institutions and trainees; and concerns related to sustainability and optimal resource utilization. Although considerable attention has been given to ethical issues surrounding research conducted across international borders and under circumstances...
of unequal wealth or power, much less attention has been
given to the ethical issues associated with education and ser-
vice initiatives of global health programs and no formal ethical
guidelines are available for global health training experiences.
To develop ethics and best practice guidelines, we formed
the Working Group on Ethics Guidelines for Global Health
Training (WEIGHT). The WEIGHT members were selected
by JAC and JS through a process of consultation with leaders
in global health and ethics. The goal was to select members
with experience and expertise with global health training and
ethics from a range of perspectives and geographic locations.
Of 13 initial membership invitations, 10 (77%) accepted. Those
who declined were replaced by persons with similar expertise
and experience to create a balanced membership.

GUIDELINE DEVELOPMENT PROCESS

The international, peer-reviewed literature was searched
for publications relevant to ethics of global health training
and a paper was published raising ethical concerns for global
health training programs. Reflecting the nascent nature of
ethics research and scholarship in the area of global health
training, published literature on the topic represented case
reports, case series, and expert opinion. Following the forma-
tion of WEIGHT, the literature review was updated and an
annotated bibliography was sent to members. The WEIGHT
met in person in March 2010 in London to draft a prelimi-
nary set of ethics and good practice guidelines through
group discussion around ethical issues that have arisen for
individuals and institutions that send or receive trainees in
global health. The guidelines were developed through a
moderated workshop format. All members were given the
opportunity to raise and discuss dissenting views for each
recommendation. Agreement was reached by consensus.
The primary goal of the guidelines is to facilitate the structuring
of an ethically responsible global health training program
and to discourage the implementation and perpetuation of
imbalanced and inequitable global health training experiences
and programs.

SCOPE OF THE GUIDELINES

The guidelines are structured to address the multiple stake-
holders involved with global health training experiences. The
main stakeholders are host institutions, including program
directors, mentors, other faculty, and support staff based at the
receiving institution; trainees both foreign and local; send-
ing institutions, including program directors, mentors, admin-
istrators, and managers; patients and the community at the
host site; sending countries, including committees or councils
responsible for medical and research ethics, and other health
professional education; and sponsors of global health train-
ing. The guidelines are designed to apply to multiple levels of
trainees, including undergraduates, graduate and medical stu-
dents, post-graduate students, and others such as faculty or
other professionals seeking to apply or expand their skills in
the global health arena. Although the guidelines are predomi-
nantly focused on ethical issues for programs sending trainees
from wealthier to less wealthy settings, many of the principals
also apply to bi-directional trainee exchanges. The guidelines
encompass the multiple disciplines and multiple activities
that take place under the umbrella of global health including
in the clinical, public health, research, and education arenas.
Although these guidelines were developed in response to the
global health activities of educational institutions, the prin-
ciples are applicable and adaptable to informal programs and
individual global health efforts. They also apply to programs
of varying duration, while recognizing that duration can affect
the nature of issues encountered. Although the guidelines can
apply to exchange programs locally and internationally, they
are not intended to address ethics issues encountered during
long-term (> 1 year) global health service or by experts providing
technical assistance. The WEIGHT recognizes that the evi-
dence available to inform the guideline development process
was limited and expects that the proposed approach to global
health training will be refined in the future as new data are
accumulated.

GUIDELINES

Sending and host institutions. Well-structured programs
seem to be the optimal means of ensuring optimal training
programs in global health. Developing and maintaining well-
structured programs generally involves a sustained series of
communications and seems to have a common set of attributes
as listed below, and may include clear delineation of roles and
responsibilities of all parties, budgets, duration of attachments,
participation in and distribution of written reports, and other
products. We recommend that sending and host institutions
should do the following:

1. Develop well-structured programs so that host and sender
as well as other stakeholders derive mutual, equitable ben-
et including:
   a. Discuss expectations and responsibilities of both host
      and sending institutions and agree on terms before pro-
      gram implementation; the terms may be outlined within
      a memorandum of understanding. Revisit the expecta-
      tions and responsibilities on a periodic basis;
b. Consider local needs and priorities regarding the optimal structure of programs;
c. Recognize the true cost to all institutions (e.g., costs of orientation, insurance, translation, supervision and mentoring, transportation, lodging, health care, administration) and ensure that they are appropriately reimbursed;
d. Aspire to maintain long-term partnerships so that short-term experiences may be nested within them; and
e. Promote transparency regarding the motivations for establishing and maintaining programs (e.g., to meet an educational mission, to establish a relationship that might be used to support research, to meet student need) and identifying and addressing any conflicts of interests and conflicts of obligations (e.g., to local patients, communities, or local trainees compared with the global health trainees) that may result from such a program.

2. Clarify goals, expectations, and responsibilities through explicit agreements and periodic review by
   a. Senders and hosts;
   b. Trainees and mentors; and
   c. Sponsors and recipients.

3. Develop, implement, regularly update, and improve formal training for trainees and mentors, both local and foreign regarding material that includes:
   a. Norms of professionalism (local and sending);
   b. Standards of practice (local and sending);
   c. Cultural competence, e.g., behavior (local and sending) and dealing effectively with cultural differences;
   d. Dealing appropriately with conflicts (i.e., professionalism, culture, scientific and clinical differences of approach);
   e. Language capability;
   f. Personal safety; and
   g. Implications of differential access to resources for foreign and local trainees.

4. Encourage non-threatening communication to resolve ethical conflicts as they arise in real-time and identify a mechanism to involve the host and sending institutions when issues are not readily resolved.

5. Clarify the trainees’ level of training and experience for the host institution so that appropriate activities are assigned and patient care and community well-being is not compromised.

6. Select trainees who are adaptable, motivated to address global health issues, sensitive to local priorities, willing to listen and learn, whose abilities and experience matches the expectations of the position, and who will be good representatives of their home institution and country.

7. Promote safety of trainees to the extent possible (e.g., vaccinations, personal behaviors, medications, physical barriers, security awareness, road safety, sexual harassment, psychological support, insurance and knowledge of relevant local laws).

8. Monitor costs and benefits to host institutions, local trainees, patients, communities, and sponsoring institutions to assure equity.

9. Establish effective supervision and mentorship of trainees by the host and sending institution, including the selection of appropriate mentors and supervisors and facilitating communication among them.

10. Establish methods to solicit feedback from the trainees both during and on completion of the program, including exit interviews, and track the participants post-training to evaluate the impact of the experience.

Trainees. Trainees themselves play an important role in the quality of global health experiences. It is essential that trainees understand their responsibility in this regard, not only to ensure their personal experience is a good one, but that their actions and behaviors can have far-reaching and important implications. To help meet such responsibilities, we recommend that trainees should do the following:

1. Recognize that the primary purpose of the experience is global health learning and appropriately supervised service. The duration of the training experience should be tailored so that the burden to the host is minimized.
2. Communicate with their local mentor through official channels regarding goals and expectations for the experience before the training, and maintain communication with mentors throughout the experience.
3. Learn appropriate language skills relevant to the host’s locale as well as socio-cultural, political, and historical aspects of the host community.
4. Seek to acquire knowledge and learn new skills with appropriate training and supervision, but be cognizant and respectful of their current capability and level of training.
5. Participate in the process of communicating to patients and the community about their level of training and experience so that appropriate activities are assigned and patient care and community well-being is not compromised.
6. Recognize and respect divergent diagnostic and treatment paradigms.
7. Demonstrate cultural competency (e.g., personal dress, patient privacy, culturally appropriate and inappropriate gestures, gender issues, traditional beliefs about health, truth telling, social media) and engage in appropriate discussions about different perspectives and approaches.
8. Take measures to ensure personal safety and health.
9. Meet licensing standards, visa policies, research ethics review, training on privacy and security of patient information, and other host and sending country requirements.
10. Follow accepted international guidelines regarding the donation of medications, technology, and supplies.
11. If research is planned as part of the training experience, develop the research plan early and in consultation with mentors; focus on research themes of interest and relevance to the host, understand and follow all research procedures of the host and sending institution, obtain ethics committee approval for the research before initiation of research, and receive appropriate training in research ethics.
12. Follow international standards for authorship of publications emanating from the global health experiences and discuss these issues and plans for presentations early in collaborations.
13. When requested, be willing to share feedback on the training experience and follow-up information on career progression.
14. When seeking global health training outside of a well-structured program, potential trainees should follow the guidelines for institutions (above) so as to maximize the benefits and minimize potential harms of such training experiences.
**Sponsors.** Sponsors of global health training programs understandably desire high quality experiences for trainees as well as minimizing any potential adverse consequences related to programs they support. By requiring recipients to be involved with high quality global health training programs as a condition of receiving funds, sponsors can play an important role in creating and maintaining such programs. Where practicable, we recommend that sponsors should do the following:

1. Promote the implementation of these guidelines.
2. Consider local needs and priorities, reciprocity, and sustainability of programs.
3. Ensure that the true costs are recognized and supported (e.g., costs of orientation, insurance, translation, supervision and mentoring, transportation, lodging, health care, administration, monitoring and evaluation).
4. Execute explicit agreements with recipients, with periodic review, to help clarify goals, expectations, and responsibilities.
5. Aim to select trainees who are adaptable, motivated to address global health issues, sensitive to local priorities, willing to listen and learn, whose abilities and experience match the expectation of the position, and who will be a good representative of their home institution and country.
6. Promote safety of trainees to the extent possible (e.g., vaccinations, personal behaviors, medications, physical barriers, security awareness, road safety, sexual harassment, psychological support, insurance, and knowledge of relevant local laws).
7. Encourage effective supervision and mentorship by the host and sending institution.
8. Require that sponsored programs comply with licensing standards, visa policies, research ethics review, training on privacy and security of patient information, and other host and sending country requirements.
9. Encourage the collection and evaluation of data on the impact of the training experiences.

**CONCLUSIONS**

Global health training programs are associated with a range of ethical issues for all stakeholders. These ethics and best practice guidelines set out a range of measures designed to minimize the pitfalls of such programs. It is hoped that these guidelines will be used to reassess and improve existing programs, be applied in the design of new programs, and, where necessary, promote the discontinuation of programs or activities that cannot meet basic practices described in these guidelines.

Although these guidelines are based on a range of published data and the unpublished experience of WEIGHT members in consultation with stakeholders, they have limitations. The principal limitation is the lack of available systematic data collected within the context of existing global health training programs reflecting the scope of programs and challenges experienced by partners. WEIGHT encourages work aimed at developing and implementing means of assessing the potential benefits and harms to institutions, personnel, trainees, patients, and the community in host countries of global health training programs. Data from such assessments would inform and support future refinement of these guidelines. Although efforts were made to ensure that WEIGHT represented a range of perspectives and geographic locations, membership could be further expanded to include other groups such as trainees.

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**REFERENCES**

Monday, October 9, 2017

Lecturer: John Brett

Lecture: Ethical Issues in International Development and Global Health

The Belmont Report

Office of the Secretary

Ethical Principles and Guidelines for the Protection of Human Subjects of Research

The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research

April 18, 1979

AGENCY: Department of Health, Education, and Welfare.

ACTION: Notice of Report for Public Comment.

SUMMARY: On July 12, 1974, the National Research Act (Pub. L. 93-348) was signed into law, thereby creating the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. One of the charges to the Commission was to identify the basic ethical principles that should underlie the conduct of biomedical and behavioral research involving human subjects and to develop guidelines which should be followed to assure that such research is conducted in accordance with those principles. In carrying out the above, the Commission was directed to consider: (i) the boundaries between biomedical and behavioral research and the accepted and routine practice of medicine, (ii) the role of assessment of risk-benefit criteria in the determination of the appropriateness of research involving human subjects, (iii) appropriate guidelines for the selection of human subjects for participation in such research and (iv) the nature and definition of informed consent in various research settings.

The Belmont Report attempts to summarize the basic ethical principles identified by the Commission in the course of its deliberations. It is the outgrowth of an intensive four-day period of discussions that were held in February 1976 at the Smithsonian Institution's Belmont Conference Center supplemented by the monthly deliberations of the Commission that were held over a period of nearly four years. It is a statement of basic ethical principles and guidelines that should assist in resolving the ethical problems that surround the conduct of research with human subjects. By publishing the Report in the Federal Register, and providing reprints upon request, the Secretary intends that it may be made readily available to scientists, members of Institutional Review Boards, and Federal employees. The two-volume Appendix, containing the lengthy reports of experts and specialists who assisted the Commission in fulfilling this part of its charge, is available as DHEW Publication No. (OS) 78-0013 and No. (OS) 78-0014, for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
Unlike most other reports of the Commission, the Belmont Report does not make specific recommendations for administrative action by the Secretary of Health, Education, and Welfare. Rather, the Commission recommended that the Belmont Report be adopted in its entirety, as a statement of the Department's policy. The Department requests public comment on this recommendation.

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research

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Ethical Principles & Guidelines for Research Involving Human Subjects

Scientific research has produced substantial social benefits. It has also posed some troubling ethical questions. Public attention was drawn to these questions by reported abuses of human subjects in biomedical experiments, especially during the Second World War. During the Nuremberg War Crime Trials, the Nuremberg code was drafted as a set of standards for judging physicians and scientists who had conducted biomedical experiments on concentration camp prisoners. This code became the prototype of many later codes(1) intended to assure that research involving human subjects would be carried out in an ethical manner.

The codes consist of rules, some general, others specific, that guide the investigators or the reviewers of research in their work. Such rules often are inadequate to cover complex situations; at times they come into conflict, and they are frequently difficult to interpret or apply. Broader ethical principles will provide a basis on which specific rules may be formulated, criticized and interpreted.

Three principles, or general prescriptive judgments, that are relevant to research involving human subjects are identified in this statement. Other principles may also be relevant. These three are comprehensive, however, and are stated at a level of generalization that should assist scientists, subjects, reviewers and interested citizens to understand the ethical issues inherent in research involving human subjects. These principles cannot always be applied so as to resolve beyond dispute particular ethical problems. The objective is to provide an analytical framework that will guide the resolution of ethical problems arising from research involving human subjects.

This statement consists of a distinction between research and practice, a discussion of the three basic ethical principles, and remarks about the application of these principles.

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Part A: Boundaries Between Practice & Research

A. Boundaries Between Practice and Research

It is important to distinguish between biomedical and behavioral research, on the one hand, and the practice of accepted therapy on the other, in order to know what activities ought to undergo review for the protection of human subjects of research. The distinction between research and
practice is blurred partly because both often occur together (as in research designed to evaluate a therapy) and partly because notable departures from standard practice are often called "experimental" when the terms "experimental" and "research" are not carefully defined.

For the most part, the term "practice" refers to interventions that are designed solely to enhance the well-being of an individual patient or client and that have a reasonable expectation of success. The purpose of medical or behavioral practice is to provide diagnosis, preventive treatment or therapy to particular individuals. By contrast, the term 'research' designates an activity designed to test an hypothesis, permit conclusions to be drawn, and thereby to develop or contribute to generalizable knowledge (expressed, for example, in theories, principles, and statements of relationships). Research is usually described in a formal protocol that sets forth an objective and a set of procedures designed to reach that objective.

When a clinician departs in a significant way from standard or accepted practice, the innovation does not, in and of itself, constitute research. The fact that a procedure is "experimental," in the sense of new, untested or different, does not automatically place it in the category of research. Radically new procedures of this description should, however, be made the object of formal research at an early stage in order to determine whether they are safe and effective. Thus, it is the responsibility of medical practice committees, for example, to insist that a major innovation be incorporated into a formal research project.

Research and practice may be carried on together when research is designed to evaluate the safety and efficacy of a therapy. This need not cause any confusion regarding whether or not the activity requires review; the general rule is that if there is any element of research in an activity, that activity should undergo review for the protection of human subjects.

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Part B: Basic Ethical Principles

B. Basic Ethical Principles

The expression "basic ethical principles" refers to those general judgments that serve as a basic justification for the many particular ethical prescriptions and evaluations of human actions. Three basic principles, among those generally accepted in our cultural tradition, are particularly relevant to the ethics of research involving human subjects: the principles of respect of persons, beneficence and justice.

1. Respect for Persons. -- Respect for persons incorporates at least two ethical convictions: first, that individuals should be treated as autonomous agents, and second, that persons with diminished autonomy are entitled to protection. The principle of respect for persons thus divides into two separate moral requirements: the requirement to acknowledge autonomy and the requirement to protect those with diminished autonomy.

An autonomous person is an individual capable of deliberation about personal goals and of acting under the direction of such deliberation. To respect autonomy is to give weight to
autonomous persons' considered opinions and choices while refraining from obstructing their actions unless they are clearly detrimental to others. To show lack of respect for an autonomous agent is to repudiate that person's considered judgments, to deny an individual the freedom to act on those considered judgments, or to withhold information necessary to make a considered judgment, when there are no compelling reasons to do so.

However, not every human being is capable of self-determination. The capacity for self-determination matures during an individual's life, and some individuals lose this capacity wholly or in part because of illness, mental disability, or circumstances that severely restrict liberty. Respect for the immature and the incapacitated may require protecting them as they mature or while they are incapacitated.

Some persons are in need of extensive protection, even to the point of excluding them from activities which may harm them; other persons require little protection beyond making sure they undertake activities freely and with awareness of possible adverse consequence. The extent of protection afforded should depend upon the risk of harm and the likelihood of benefit. The judgment that any individual lacks autonomy should be periodically reevaluated and will vary in different situations.

In most cases of research involving human subjects, respect for persons demands that subjects enter into the research voluntarily and with adequate information. In some situations, however, application of the principle is not obvious. The involvement of prisoners as subjects of research provides an instructive example. On the one hand, it would seem that the principle of respect for persons requires that prisoners not be deprived of the opportunity to volunteer for research. On the other hand, under prison conditions they may be subtly coerced or unduly influenced to engage in research activities for which they would not otherwise volunteer. Respect for persons would then dictate that prisoners be protected. Whether to allow prisoners to "volunteer" or to "protect" them presents a dilemma. Respecting persons, in most hard cases, is often a matter of balancing competing claims urged by the principle of respect itself.

2. **Beneficence.** -- Persons are treated in an ethical manner not only by respecting their decisions and protecting them from harm, but also by making efforts to secure their well-being. Such treatment falls under the principle of beneficence. The term "beneficence" is often understood to cover acts of kindness or charity that go beyond strict obligation. In this document, beneficence is understood in a stronger sense, as an obligation. Two general rules have been formulated as complementary expressions of beneficent actions in this sense: (1) do not harm and (2) maximize possible benefits and minimize possible harms.

The Hippocratic maxim "do no harm" has long been a fundamental principle of medical ethics. Claude Bernard extended it to the realm of research, saying that one should not injure one person regardless of the benefits that might come to others. However, even avoiding harm requires learning what is harmful; and, in the process of obtaining this information, persons may be exposed to risk of harm. Further, the Hippocratic Oath requires physicians to benefit their patients "according to their best judgment." Learning what will in fact benefit may require exposing persons to risk. The problem posed by these imperatives is to decide when it is
justifiable to seek certain benefits despite the risks involved, and when the benefits should be foregone because of the risks.

The obligations of beneficence affect both individual investigators and society at large, because they extend both to particular research projects and to the entire enterprise of research. In the case of particular projects, investigators and members of their institutions are obliged to give forethought to the maximization of benefits and the reduction of risk that might occur from the research investigation. In the case of scientific research in general, members of the larger society are obliged to recognize the longer term benefits and risks that may result from the improvement of knowledge and from the development of novel medical, psychotherapeutic, and social procedures.

The principle of beneficence often occupies a well-defined justifying role in many areas of research involving human subjects. An example is found in research involving children. Effective ways of treating childhood diseases and fostering healthy development are benefits that serve to justify research involving children -- even when individual research subjects are not direct beneficiaries. Research also makes it possible to avoid the harm that may result from the application of previously accepted routine practices that on closer investigation turn out to be dangerous. But the role of the principle of beneficence is not always so unambiguous. A difficult ethical problem remains, for example, about research that presents more than minimal risk without immediate prospect of direct benefit to the children involved. Some have argued that such research is inadmissible, while others have pointed out that this limit would rule out much research promising great benefit to children in the future. Here again, as with all hard cases, the different claims covered by the principle of beneficence may come into conflict and force difficult choices.

3. Justice. -- Who ought to receive the benefits of research and bear its burdens? This is a question of justice, in the sense of "fairness in distribution" or "what is deserved." An injustice occurs when some benefit to which a person is entitled is denied without good reason or when some burden is imposed unduly. Another way of conceiving the principle of justice is that equals ought to be treated equally. However, this statement requires explication. Who is equal and who is unequal? What considerations justify departure from equal distribution? Almost all commentators allow that distinctions based on experience, age, deprivation, competence, merit and position do sometimes constitute criteria justifying differential treatment for certain purposes. It is necessary, then, to explain in what respects people should be treated equally. There are several widely accepted formulations of just ways to distribute burdens and benefits. Each formulation mentions some relevant property on the basis of which burdens and benefits should be distributed. These formulations are (1) to each person an equal share, (2) to each person according to individual need, (3) to each person according to individual effort, (4) to each person according to societal contribution, and (5) to each person according to merit.

Questions of justice have long been associated with social practices such as punishment, taxation and political representation. Until recently these questions have not generally been associated with scientific research. However, they are foreshadowed even in the earliest reflections on the ethics of research involving human subjects. For example, during the 19th and early 20th centuries the burdens of serving as research subjects fell largely upon poor ward patients, while
the benefits of improved medical care flowed primarily to private patients. Subsequently, the exploitation of unwilling prisoners as research subjects in Nazi concentration camps was condemned as a particularly flagrant injustice. In this country, in the 1940's, the Tuskegee syphilis study used disadvantaged, rural black men to study the untreated course of a disease that is by no means confined to that population. These subjects were deprived of demonstrably effective treatment in order not to interrupt the project, long after such treatment became generally available.

Against this historical background, it can be seen how conceptions of justice are relevant to research involving human subjects. For example, the selection of research subjects needs to be scrutinized in order to determine whether some classes (e.g., welfare patients, particular racial and ethnic minorities, or persons confined to institutions) are being systematically selected simply because of their easy availability, their compromised position, or their manipulability, rather than for reasons directly related to the problem being studied. Finally, whenever research supported by public funds leads to the development of therapeutic devices and procedures, justice demands both that these not provide advantages only to those who can afford them and that such research should not unduly involve persons from groups unlikely to be among the beneficiaries of subsequent applications of the research.

Part C: Applications

C. Applications

Applications of the general principles to the conduct of research leads to consideration of the following requirements: informed consent, risk/benefit assessment, and the selection of subjects of research.

1. Informed Consent. -- Respect for persons requires that subjects, to the degree that they are capable, be given the opportunity to choose what shall or shall not happen to them. This opportunity is provided when adequate standards for informed consent are satisfied.

While the importance of informed consent is unquestioned, controversy prevails over the nature and possibility of an informed consent. Nonetheless, there is widespread agreement that the consent process can be analyzed as containing three elements: information, comprehension and voluntariness.

Information. Most codes of research establish specific items for disclosure intended to assure that subjects are given sufficient information. These items generally include: the research procedure, their purposes, risks and anticipated benefits, alternative procedures (where therapy is involved), and a statement offering the subject the opportunity to ask questions and to withdraw at any time from the research. Additional items have been proposed, including how subjects are selected, the person responsible for the research, etc.
However, a simple listing of items does not answer the question of what the standard should be for judging how much and what sort of information should be provided. One standard frequently invoked in medical practice, namely the information commonly provided by practitioners in the field or in the locale, is inadequate since research takes place precisely when a common understanding does not exist. Another standard, currently popular in malpractice law, requires the practitioner to reveal the information that reasonable persons would wish to know in order to make a decision regarding their care. This, too, seems insufficient since the research subject, being in essence a volunteer, may wish to know considerably more about risks gratuitously undertaken than do patients who deliver themselves into the hand of a clinician for needed care. It may be that a standard of "the reasonable volunteer" should be proposed: the extent and nature of information should be such that persons, knowing that the procedure is neither necessary for their care nor perhaps fully understood, can decide whether they wish to participate in the furthering of knowledge. Even when some direct benefit to them is anticipated, the subjects should understand clearly the range of risk and the voluntary nature of participation.

A special problem of consent arises where informing subjects of some pertinent aspect of the research is likely to impair the validity of the research. In many cases, it is sufficient to indicate to subjects that they are being invited to participate in research of which some features will not be revealed until the research is concluded. In all cases of research involving incomplete disclosure, such research is justified only if it is clear that (1) incomplete disclosure is truly necessary to accomplish the goals of the research, (2) there are no undisclosed risks to subjects that are more than minimal, and (3) there is an adequate plan for debriefing subjects, when appropriate, and for dissemination of research results to them. Information about risks should never be withheld for the purpose of eliciting the cooperation of subjects, and truthful answers should always be given to direct questions about the research. Care should be taken to distinguish cases in which disclosure would destroy or invalidate the research from cases in which disclosure would simply inconvenience the investigator.

**Comprehension.** The manner and context in which information is conveyed is as important as the information itself. For example, presenting information in a disorganized and rapid fashion, allowing too little time for consideration or curtailing opportunities for questioning, all may adversely affect a subject's ability to make an informed choice.

Because the subject's ability to understand is a function of intelligence, rationality, maturity and language, it is necessary to adapt the presentation of the information to the subject's capacities. Investigators are responsible for ascertaining that the subject has comprehended the information. While there is always an obligation to ascertain that the information about risk to subjects is complete and adequately comprehended, when the risks are more serious, that obligation increases. On occasion, it may be suitable to give some oral or written tests of comprehension.

Special provision may need to be made when comprehension is severely limited -- for example, by conditions of immaturity or mental disability. Each class of subjects that one might consider as incompetent (e.g., infants and young children, mentally disable patients, the terminally ill and the comatose) should be considered on its own terms. Even for these persons, however, respect requires giving them the opportunity to choose to the extent they are able, whether or not to participate in research. The objections of these subjects to involvement should be honored,
unless the research entails providing them a therapy unavailable elsewhere. Respect for persons also requires seeking the permission of other parties in order to protect the subjects from harm. Such persons are thus respected both by acknowledging their own wishes and by the use of third parties to protect them from harm.

The third parties chosen should be those who are most likely to understand the incompetent subject's situation and to act in that person's best interest. The person authorized to act on behalf of the subject should be given an opportunity to observe the research as it proceeds in order to be able to withdraw the subject from the research, if such action appears in the subject's best interest.

**Voluntariness.** An agreement to participate in research constitutes a valid consent only if voluntarily given. This element of informed consent requires conditions free of coercion and undue influence. Coercion occurs when an overt threat of harm is intentionally presented by one person to another in order to obtain compliance. Undue influence, by contrast, occurs through an offer of an excessive, unwarranted, inappropriate or improper reward or other overture in order to obtain compliance. Also, inducements that would ordinarily be acceptable may become undue influences if the subject is especially vulnerable.

Unjustifiable pressures usually occur when persons in positions of authority or commanding influence -- especially where possible sanctions are involved -- urge a course of action for a subject. A continuum of such influencing factors exists, however, and it is impossible to state precisely where justifiable persuasion ends and undue influence begins. But undue influence would include actions such as manipulating a person's choice through the controlling influence of a close relative and threatening to withdraw health services to which an individual would otherwise be entitled.

2. **Assessment of Risks and Benefits.** -- The assessment of risks and benefits requires a careful arrayal of relevant data, including, in some cases, alternative ways of obtaining the benefits sought in the research. Thus, the assessment presents both an opportunity and a responsibility to gather systematic and comprehensive information about proposed research. For the investigator, it is a means to examine whether the proposed research is properly designed. For a review committee, it is a method for determining whether the risks that will be presented to subjects are justified. For prospective subjects, the assessment will assist the determination whether or not to participate.

**The Nature and Scope of Risks and Benefits.** The requirement that research be justified on the basis of a favorable risk/benefit assessment bears a close relation to the principle of beneficence, just as the moral requirement that informed consent be obtained is derived primarily from the principle of respect for persons. The term "risk" refers to a possibility that harm may occur. However, when expressions such as "small risk" or "high risk" are used, they usually refer (often ambiguously) both to the chance (probability) of experiencing a harm and the severity (magnitude) of the envisioned harm.

The term "benefit" is used in the research context to refer to something of positive value related to health or welfare. Unlike, "risk," "benefit" is not a term that expresses probabilities. Risk is
properly contrasted to probability of benefits, and benefits are properly contrasted with harms rather than risks of harm. Accordingly, so-called risk/benefit assessments are concerned with the probabilities and magnitudes of possible harm and anticipated benefits. Many kinds of possible harms and benefits need to be taken into account. There are, for example, risks of psychological harm, physical harm, legal harm, social harm and economic harm and the corresponding benefits. While the most likely types of harms to research subjects are those of psychological or physical pain or injury, other possible kinds should not be overlooked.

Risks and benefits of research may affect the individual subjects, the families of the individual subjects, and society at large (or special groups of subjects in society). Previous codes and Federal regulations have required that risks to subjects be outweighed by the sum of both the anticipated benefit to the subject, if any, and the anticipated benefit to society in the form of knowledge to be gained from the research. In balancing these different elements, the risks and benefits affecting the immediate research subject will normally carry special weight. On the other hand, interests other than those of the subject may on some occasions be sufficient by themselves to justify the risks involved in the research, so long as the subjects' rights have been protected. Beneficence thus requires that we protect against risk of harm to subjects and also that we be concerned about the loss of the substantial benefits that might be gained from research.

The Systematic Assessment of Risks and Benefits. It is commonly said that benefits and risks must be "balanced" and shown to be "in a favorable ratio." The metaphorical character of these terms draws attention to the difficulty of making precise judgments. Only on rare occasions will quantitative techniques be available for the scrutiny of research protocols. However, the idea of systematic, nonarbitrary analysis of risks and benefits should be emulated insofar as possible. This ideal requires those making decisions about the justifiability of research to be thorough in the accumulation and assessment of information about all aspects of the research, and to consider alternatives systematically. This procedure renders the assessment of research more rigorous and precise, while making communication between review board members and investigators less subject to misinterpretation, misinformation and conflicting judgments. Thus, there should first be a determination of the validity of the presuppositions of the research; then the nature, probability and magnitude of risk should be distinguished with as much clarity as possible. The method of ascertaining risks should be explicit, especially where there is no alternative to the use of such vague categories as small or slight risk. It should also be determined whether an investigator's estimates of the probability of harm or benefits are reasonable, as judged by known facts or other available studies.

Finally, assessment of the justifiability of research should reflect at least the following considerations: (i) Brutal or inhumane treatment of human subjects is never morally justified. (ii) Risks should be reduced to those necessary to achieve the research objective. It should be determined whether it is in fact necessary to use human subjects at all. Risk can perhaps never be entirely eliminated, but it can often be reduced by careful attention to alternative procedures. (iii) When research involves significant risk of serious impairment, review committees should be extraordinarily insistent on the justification of the risk (looking usually to the likelihood of benefit to the subject -- or, in some rare cases, to the manifest voluntariness of the participation). (iv) When vulnerable populations are involved in research, the appropriateness of involving them should itself be demonstrated. A number of variables go into such judgments, including the
nature and degree of risk, the condition of the particular population involved, and the nature and level of the anticipated benefits. (v) Relevant risks and benefits must be thoroughly arrayed in documents and procedures used in the informed consent process.

3. Selection of Subjects. -- Just as the principle of respect for persons finds expression in the requirements for consent, and the principle of beneficence in risk/benefit assessment, the principle of justice gives rise to moral requirements that there be fair procedures and outcomes in the selection of research subjects.

Justice is relevant to the selection of subjects of research at two levels: the social and the individual. Individual justice in the selection of subjects would require that researchers exhibit fairness: thus, they should not offer potentially beneficial research only to some patients who are in their favor or select only "undesirable" persons for risky research. Social justice requires that distinction be drawn between classes of subjects that ought, and ought not, to participate in any particular kind of research, based on the ability of members of that class to bear burdens and on the appropriateness of placing further burdens on already burdened persons. Thus, it can be considered a matter of social justice that there is an order of preference in the selection of classes of subjects (e.g., adults before children) and that some classes of potential subjects (e.g., the institutionalized mentally infirm or prisoners) may be involved as research subjects, if at all, only on certain conditions.

Injustice may appear in the selection of subjects, even if individual subjects are selected fairly by investigators and treated fairly in the course of research. Thus injustice arises from social, racial, sexual and cultural biases institutionalized in society. Thus, even if individual researchers are treating their research subjects fairly, and even if IRBs are taking care to assure that subjects are selected fairly within a particular institution, unjust social patterns may nevertheless appear in the overall distribution of the burdens and benefits of research. Although individual institutions or investigators may not be able to resolve a problem that is pervasive in their social setting, they can consider distributive justice in selecting research subjects.

Some populations, especially institutionalized ones, are already burdened in many ways by their infirmities and environments. When research is proposed that involves risks and does not include a therapeutic component, other less burdened classes of persons should be called upon first to accept these risks of research, except where the research is directly related to the specific conditions of the class involved. Also, even though public funds for research may often flow in the same directions as public funds for health care, it seems unfair that populations dependent on public health care constitute a pool of preferred research subjects if more advantaged populations are likely to be the recipients of the benefits.

One special instance of injustice results from the involvement of vulnerable subjects. Certain groups, such as racial minorities, the economically disadvantaged, the very sick, and the institutionalized may continually be sought as research subjects, owing to their ready availability in settings where research is conducted. Given their dependent status and their frequently compromised capacity for free consent, they should be protected against the danger of being involved in research solely for administrative convenience, or because they are easy to manipulate as a result of their illness or socioeconomic condition.
Since 1945, various codes for the proper and responsible conduct of human experimentation in medical research have been adopted by different organizations. The best known of these codes are the Nuremberg Code of 1947, the Helsinki Declaration of 1964 (revised in 1975), and the 1971 Guidelines (codified into Federal Regulations in 1974) issued by the U.S. Department of Health, Education, and Welfare Codes for the conduct of social and behavioral research have also been adopted, the best known being that of the American Psychological Association, published in 1973.

Although practice usually involves interventions designed solely to enhance the well-being of a particular individual, interventions are sometimes applied to one individual for the enhancement of the well-being of another (e.g., blood donation, skin grafts, organ transplants) or an intervention may have the dual purpose of enhancing the well-being of a particular individual, and, at the same time, providing some benefit to others (e.g., vaccination, which protects both the person who is vaccinated and society generally). The fact that some forms of practice have elements other than immediate benefit to the individual receiving an intervention, however, should not confuse the general distinction between research and practice. Even when a procedure applied in practice may benefit some other person, it remains an intervention designed to enhance the well-being of a particular individual or groups of individuals; thus, it is practice and need not be reviewed as research.

Because the problems related to social experimentation may differ substantially from those of biomedical and behavioral research, the Commission specifically declines to make any policy determination regarding such research at this time. Rather, the Commission believes that the problem ought to be addressed by one of its successor bodies.
Monday, October 9, 2017

Lecturer: Gretchen Domek

Lecture: Jeopardy: Can You Name the Key Global Health Players?

Section IV of Module I in the Pediatrics and Disasters text (Organizations pgs. 24-34)
OBJECTIVES

- Identify national and international organizations that may respond to a humanitarian emergency in your country.
- Recognize the available resources, strengths, and limitations of these organizations.

Organizations capable of providing assistance during humanitarian emergencies

When local resources are insufficient, assistance from multiple national or perhaps multinational organizations will be needed. Each involved organization has its own institutional structure and culture, in addition to other features, such as capacity for response, technical and logistic resources, and thematic or regional approach.

Several international agencies may have activities in the country prior to the event. In response to the disaster these agencies may re-target their resources in the country to emergency relief. Effective coordination and cooperation among involved organizations are essential but very difficult to achieve in the chaotic situation of a massive emergency. There are two major types of organizations that can get involved in assistance when a disaster occurs: governmental and nongovernmental organizations (NGOs).

Governmental organizations

Governmental organizations work under the authority of one or multiple governments. The most common include:

National ministries—These are agencies at the national ministry level that have authority for disaster planning and response. A regional conference on disasters took place in 1986 to optimize the preparedness and response mechanisms of Latin American and Caribbean nations. As a result of this conference, most nations established a health disaster coordinator within the Ministry of Health (MoH.) The health disaster coordinator not only coordinates health-related relief efforts in the event of a disaster, but also continuously updates emergency plans and conducts preparedness training for health care professionals.

Pan American Health Organization (PAHO)—This is an international public health agency serving as the Regional Office for the Americas of the World Health Organization. It provides health policy guidance and technical assistance in disaster planning and response (Box 7). More information is available at: www.paho.org.

World Health Organization (WHO)—The WHO provides technical advice and
develops health policies relating to disasters. More information is available at: www.who.int.

SUMA (Humanitarian Supply Administration System, developed by the PAHO)—This organization facilitates the reception, inventory, and rapid distribution of essential humanitarian supplies and equipment. In the event of a disaster, PAHO can send SUMA-trained staff to the affected country to assist in managing the inflow of supplies.

United Nations (UN)—The UN is a multinational organization that functions mainly through its sub-agencies, which are independently funded. More information is available at: www.un.org.

The Office of the United Nations High Commissioner for Refugees (UNHCR)—The agency is mandated to lead and co-ordinate international action to protect refugees and resolve refugee problems worldwide. Its primary purpose is to safeguard the rights and well being of refugees. It strives to ensure everyone can exercise the right to seek asylum and find safe refuge in another State, with the option to return home voluntarily, integrate locally, or to resettle in a third country. More information is available at: www.unhcr.org.

World Food Program (WFP)—This organization coordinates the delivery of food to regions in need around the world. More information available at: www.wfp.org.

United Nations International Children’s Emergency Fund (UNICEF) This organization was created by the UN General Assembly to advocate and protect children’s rights, to help fulfill their basic needs, and to provide opportunities for maximizing the development of their potential. When an emergency occurs, UNICEF focuses on ensuring that basic needs of

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**BOX 7. Some technical recommendations for disaster situations issued by the PAHO**

- **Specific topics related to disasters** – For example, frequent effects of specific types of disasters, such as volcanic eruptions.
- **Special needs** – Special considerations regarding vulnerable groups.
- **Transmissible diseases** – Vector control; specific behaviors for cholera and tuberculosis in the context of disasters.
- **Food safety** – Guidelines for food preparation and nutrition.
- **Immunization** – For example, the adequate use of measles and equine encephalitis vaccines in the context of disasters.
- **Environmental sanitation** – Rodent prevention; general health recommendations for camps and shelters; guidelines for temporary shelters.

Source: www.paho.org
women and children are fulfilled and on protecting their basic rights. More information is available at: www.unicef.org.

Office for the Coordination of Humanitarian Affairs (OCHA)—In 1998 the OCHA resulted from the reorganization of the UN Department of Humanitarian Affairs (DHA). Its mission was expanded to include the coordination of humanitarian response, policy development, and advocacy. OCHA’s tasks are done through the Inter Agency Permanent Committee that includes multiple participating organizations, such as UN agencies, funds, and programs, the Red Cross, and NGOs. More information is available at: http://www.unocha.org.

Foreign organizations that provide help in case of disaster—Box 8 identifies some of the governmental agencies of developed countries that provide funding and technical help to countries affected by humanitarian emergencies. PAHO and WHO have developed guidelines to assist disaster-affected countries in managing donor offers from various agencies. According to the 1999 PAHO publication Humanitarian Assistance in Disaster Situations: A Guide for Effective Aid, “In the most advanced developing countries, in particular in Latin America, national health services, voluntary organizations and the affected communities mobilize their own resources to meet the most compelling medical needs in the early phase after a disaster. Requirements for external assistance are generally limited to highly skilled expertise or equipment in a few specialized areas.”

Military help—Both local and foreign military can be mobilized to assist in the response to natural disasters or complex emergencies. Certain unique features make military organizations useful in a disaster.

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**Box 8. Foreign agencies for disaster assistance**

- **US Aid for International Development – Office for Foreign Disaster Assistance (OFDA)**
  - [www.gov/our work/humanitarian assistance/disaster assistance](http://www.gov/our work/humanitarian assistance/disaster assistance)
- **Canadian International Development Agency (CIDA)**
  - [www.acdi-cida.gc.ca](http://www.acdi-cida.gc.ca)
- **European Commission Humanitarian Organization (ECHO)**
  - [www.acdi-cida.gc.ca](http://www.acdi-cida.gc.ca)
- **United Kingdom Department for International Development (DFID)**
  - [www.dfid.gov.uk](http://www.dfid.gov.uk)
- **Japan International Cooperation Agency (JICA)**
Advantages

Speed: Few organizations are capable of implementing a large logistic response as rapidly as the military.

Security: The military can secure a specified environment, population, and material.

Transportation: Their fleet of planes and helicopters, as well as land and naval equipments, enable them to transport resources readily.

Logistics: They have experience in maintaining supply lines in problematic environments and situations.

Command, control, and communication: They have a well-defined and responsive organizational structure.

Self-sufficiency in the field: When military arrive to the region where the event has occurred, they are capable of fulfilling the needs of their own personnel.

Specialized units: They often have specifically trained and equipped units. These include engineers who can provide technical assistance and preventive medicine teams capable of rapidly performing epidemiologic evaluations and surveillance, outbreak investigations, vector control, and water purification and treatment.

Field hospitals and capacity for medical evacuation: Hospitals can be helpful in certain circumstances. See the WHO-PAHO guidelines for the use of field hospitals in sudden-impact disasters.

Shortcomings

Despite all the advantages mentioned above, the use of the military can have significant shortcomings and limitations in some situations.

Medical care: Field hospitals are designed for the care of soldiers wounded in combat (i.e., for the care of wounds suffered by healthy adults). During a disaster, primary care and preventive interventions for women and children are major needs.

Logistics: Supplies available in the military response system may not be appropriate for a disaster in terms of prevailing diseases or types of food.

Political objectives: The military are an asset of governments; in addition, certain humanitarian objectives can be subordinated to other political or strategic goals. The presence of the army in certain scenarios can cause tension in certain groups of the population and compromise relief workers who, for their own safety and function, wish to be considered neutral.

Cost: Military activities are expensive.

Nongovernmental organizations

NGOs are nonprofit organizations working on a full-time basis in assistance for appropriate development. Thousands of NGOs, both international and national, are functioning throughout the world. Most NGOs are small agencies focusing on very specific development projects (e.g., providing education, working tools, or training in sustainable development). Only a few of them have the resources required for supporting activities targeted to promote development and to respond to disasters in multiple countries or regions. Each NGO is specialized in specific aspects of assistance in emergencies (Box 9). Although NGOs may receive contributions from individuals, most of their funds come from the governments of industrialized countries. These governments distribute their money for assisting projects through contracts with NGOs. Unlike the International Committee of the Red Cross (ICRC), some NGOs maintain a “right to interfere.” This means
they can operate across borders without written approval of their hosts. Although usually looking for the neutrality of the ICRC, some NGOs may be more willing to report any perceived injustice. They perform well in emergencies within their area of specialty (e.g., water provision, food distribution), but most cannot achieve self-sufficiency in an emergency setting and rely on UN, military, or other agencies for security, transportation to remote sites, communication, support of logistics, or medical care for their own personnel. NGOs have enhanced ability to provide person-to-person assistance because they are likely to have a pre-disaster relationship with the affected communities and understand the local culture and public health issues. They can also shift easily from disaster relief to development, and are willing to make a long-term commitment to community development and rebuilding.

International Committee of the Red Cross (ICRC)—This is a hybrid agency: neither private nor controlled by a government. A number of its characteristics are unique; its mission is defined by the international humanitarian law passed by the 1949 Geneva Convention and the two 1977 protocols. The ICRC gets involved mainly when civil disturbances are present; it has the right and duty to intervene across borders when national or international conflicts break out, regardless of whether a “state of war” has been declared. The ICRC brokers relief assistance during war, assures legal protection for victims, and monitors the way Prisoners of War are managed. Also, the ICRC plays a critical role in reuniting families. The ICRC strives to preserve its neu-

<table>
<thead>
<tr>
<th>Box 9</th>
<th>Most important NGOs and their specialization fields</th>
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<tbody>
<tr>
<td><strong>Action Contre La Faim</strong></td>
<td>Prevention, detection and treatment of malnutrition</td>
</tr>
<tr>
<td><a href="http://www.actioncontrelafaim.org/en">http://www.actioncontrelafaim.org/en</a></td>
<td></td>
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<tr>
<td><strong>Catholic Relief Services</strong></td>
<td>Food distribution</td>
</tr>
<tr>
<td><a href="http://www.crs.org">www.crs.org</a></td>
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<tr>
<td><strong>Cooperative for the American Relief Everywhere (CARE)</strong></td>
<td>Assistance in logistics and feeding; camp management</td>
</tr>
<tr>
<td><a href="http://www.care.org">www.care.org</a></td>
<td></td>
</tr>
<tr>
<td><strong>International Medical Corps</strong></td>
<td>Health care training, relief and development programs</td>
</tr>
<tr>
<td><a href="http://www.internationalmedicalcorps.org">www.internationalmedicalcorps.org</a></td>
<td></td>
</tr>
<tr>
<td><strong>International Rescue Committee</strong></td>
<td>Medical care</td>
</tr>
<tr>
<td><a href="http://www.theirc.org">www.theirc.org</a></td>
<td></td>
</tr>
<tr>
<td><strong>Irish Concern</strong></td>
<td>Feeding supplementation</td>
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<tr>
<td><a href="http://www.irishconcern.org">www.irishconcern.org</a></td>
<td></td>
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<tr>
<td><strong>Médecins sans Frontières</strong></td>
<td>Medical care</td>
</tr>
<tr>
<td><a href="http://www.paris.msf.org">www.paris.msf.org</a></td>
<td></td>
</tr>
<tr>
<td><strong>Medicins Du Monde</strong></td>
<td>Emergency relief and advocacy</td>
</tr>
<tr>
<td><a href="http://www.medicinsdumonde.org">www.medicinsdumonde.org</a></td>
<td></td>
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<tr>
<td><strong>Oxford Committee for Famine Relief (Oxfam)</strong></td>
<td>Water and sanitary services</td>
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<tr>
<td><a href="http://www.oxfam.org.uk">www.oxfam.org.uk</a></td>
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<tr>
<td><strong>Plan International</strong></td>
<td>Child health and development</td>
</tr>
<tr>
<td><a href="http://www.plan-international.org">www.plan-international.org</a></td>
<td></td>
</tr>
<tr>
<td><strong>Save the Children Fund</strong></td>
<td>Assistance in feeding and development</td>
</tr>
<tr>
<td><a href="http://www.savethechildren.org.uk">www.savethechildren.org.uk</a></td>
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</tr>
<tr>
<td><strong>World Vision</strong></td>
<td>Assistance in feeding and development</td>
</tr>
<tr>
<td><a href="http://www.worldvision.org">www.worldvision.org</a></td>
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</table>
trality, which is essential for its mission and enables its members to work unarmed in war regions under the control of any of the involved parties. The ICRC provides a complete account of its activities to all the parties involved in the conflict. It will refuse to participate in any activity that can be seen as showing favoritism. This may include transportation in vehicles belonging to one of the parties or joining efforts with groups that have their own interests. The ICRC is usually self-sufficient and can use its own resources for air lifts, communication, and logistics. It will participate only if all parties involved in the conflict sign an agreement recognizing and showing respect for its neutrality and mission. The ICRC is related to but independent from the Red Cross and the Red Crescent Societies national agencies. These organizations provide assistance primarily to victims of disasters or wars within their own nations. They have a similar commitment with neutrality, provision of assistance based only on the need, and independence from national governments.

**Coordination of organizations**

Coordinating the activities of all these organizations poses a tremendous challenge. Following a natural disaster the host nation’s government/agencies and military are likely to have operational command. Most nations now have defined governmental authorities responsible for global disaster planning and response, as well as coordinators for individual sectors such as health. External agencies or governments play a supportive role in providing technical assistance and resources. PAHO has developed a number of technical manuals and training activities to assist nations in the planning of coordinated disaster responses at the regional and national level. In complex emergencies related to a conflict, the armed forces or government authorities will have the command of operations, including the coordination of humanitarian help. The coordination in this scenario can be particularly difficult if the hostile groups are stationed nearby and try to block assistance of civilians. In this context, humanitarian help can be used as a political and strategic instrument.

**Medical Volunteering**

Following a disaster many pediatricians and other health professionals volunteer for a limited time. During the initial response phase, the greatest pediatric needs include air transport teams, surgical teams (a surgeon, OR nurse, anesthesiologist, and critical care pediatrician), as well as pediatricians with training and experience in emergency medicine and critical care. Volunteers may have to be self-sufficient for a period of time in terms of food, water, and shelter. Volunteers should work through an established NGO or governmental agency rather than simply “show up” to help. Volunteers should be prepared to respond quickly, as the quicker the response teams can provide appropriate care, the more effective they can be at saving lives and limiting morbidity. Part of preparation is anticipating the types of injuries that will be seen with different types of disasters. When sending a response team into a disaster during the acute response phase, it is important to have the personnel with the ability to treat the most likely injuries seen with the specific type of disaster. In a major earth-
It is critical to attempt to reunite children with their families as soon as possible and pay special attention to reducing their vulnerability in all disaster response planning.

quake like the one in Haiti in January 2010, one would expect the majority of the casualties to be secondary to traumatic injuries related to collapsed buildings. Therefore, a team should be prepared to have personnel and supplies that can be used to treat crush injuries, a large number of open wounds, along with a variety of orthopedic injuries. In a disaster involving an explosion (large industrial accident or terrorist attack), the pattern of injuries would include many of the same traumatic injuries as seen in an earthquake, but would also include a large number of burns and blast injuries such as blast lung. Personnel required in this type of disaster should include those with training in caring for burns as well as experience with other traumatic injuries. In the first days following the Haiti earthquake, there were a large number of complex orthopedic injuries that required emergent treatment. These included open fractures, traumatic amputations, and crush injuries. The treatment of these injuries included fracture reductions, wound debridement, and amputations. Thus it was essential to have personnel with the training to perform the needed procedures. Personnel with training in emergency medicine, general surgery, and orthopedics are best suited to be part of
the initial response team when a large number of traumatic injuries are expected. Supplies that are essential in caring for these patients include plaster splinting/casting supplies, wound dressing supplies, and medications for pain control and sedation. When caring for open wounds, the ability to appropriately irrigate and clean wounds can greatly reduce subsequent secondary infections of these wounds. Response teams should come prepared with supplies that would be able to provide pressure irrigation of wounds with either clean water or saline, antibiotic ointments, and large supplies of wound dressings. A large number of the orthopedic injuries can be treated with casting or splinting. Plaster casting material is far superior in this setting since casts made of fiberglass cannot be easily removed without a cast saw, whereas patients/families can be instructed to remove a plaster cast by soaking it in water.

Table 4 provides a list of pediatric equipment that, if possible, should be brought in if not available on site.

Communication in a disaster situation is essential between disaster relief team members as well as with coordinating groups and logistical support personnel in home countries. Modern technology has provided many different types of communication devices, which have different advantages and disadvantages. Communication networks and contingency plans are an essential part of the disaster preparedness phase. Radios are useful for short range communications when a disaster relief team is separated. However, they are limited by range and will not allow communication with the other teams or organizations that are a long distance away. Satellite phones are ideal for communication with the team as well as with the home country. They provide a reliable method of communication when telephone services are not working or there is no infrastructure, because they rely on orbiting satellites to transmit data. However, they are a scarce resource as well as an expensive resource. The main drawback for many portable satellite phones is that the phone’s antenna needs an unobstructed view of the sky. Cellular phones are an ideal method for communication. Voice calls can be made to team members as well as to coordinate in the home country. E-mail and SMS texting are other methods of communicating through the cellular network. However, cellular technology is dependent on a cellular infrastructure and network that has survived a disaster. The cellular networks may also become overwhelmed by the number of people attempting to use it in the time after the disaster, thus emergency/disaster relief providers and organizations need to have a communication system that is reliable and free of interference.

The availability of the internet through various means including satellite links and data over cellular networks has allowed for many novel methods of communication over the internet. There are traditional methods such as electronic mail. Web blogs also allow relief workers as well as those affected by the disaster to reach out to the world. Other social media tools such as Facebook and the microblogging service Twitter allow almost instantaneous updates from the field.

**Mental health considerations**

Disaster response providers are often thrust into a high stress situation with exposure to situations they may have never experienced before. The degree of
TABLE 4. Recommended equipment to bring for pediatric emergencies in disaster situations.

<table>
<thead>
<tr>
<th>Airway Management/Breathing</th>
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</thead>
<tbody>
<tr>
<td>− Tongue Blades</td>
</tr>
<tr>
<td>− Suctioning machine (portable, battery-powered)</td>
</tr>
<tr>
<td>− Suction catheters - Yankauer, 8, 10, 14F</td>
</tr>
<tr>
<td>− Simple face masks - infant, child, adult</td>
</tr>
<tr>
<td>− Pediatric and adult masks for assisted ventilation</td>
</tr>
<tr>
<td>− Self-inflating bag with 250 cc, 500 cc, and 1000 cc reservoir</td>
</tr>
<tr>
<td><strong>Optional for intubation</strong></td>
</tr>
<tr>
<td>− Laryngoscope handle with batteries (extra batteries AA, laryngoscope bulbs)</td>
</tr>
<tr>
<td>− Miller blades - 0, 1, 2, 3 Macintosh blades 2, 3</td>
</tr>
<tr>
<td>− Endotracheal tubes, uncuffed - 3.0, 3.5, 4.0, 4.5, 5.0, 6.0, cuffed - 7.0, 8.0</td>
</tr>
<tr>
<td>− Laryngeal mask airways</td>
</tr>
<tr>
<td>− Stylets - small, large</td>
</tr>
<tr>
<td>− Easycap (ETCO₂ analyzer), 2 sizes</td>
</tr>
<tr>
<td>− Adhesive tape to secure ETT</td>
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<table>
<thead>
<tr>
<th>Circulation/Intravascular Access or Fluid Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>− IV catheters - 18-, 20-, 22-, 24-gauge</td>
</tr>
<tr>
<td>− Butterfly needles - 23-gauge</td>
</tr>
<tr>
<td>− Intravenous needles - 15- or 18-gauge, or Eazy IO device</td>
</tr>
<tr>
<td>− Boards, tape, tourniquet IV</td>
</tr>
<tr>
<td>− Pediatric drip chambers and tubing</td>
</tr>
<tr>
<td>− 5% dextrose in normal saline and half normal saline</td>
</tr>
<tr>
<td>− Isotonic fluids (normal saline or lactated Ringer’s solution)</td>
</tr>
<tr>
<td>− Medications: epinephrine, atropine, sodium bicarbonate, calcium chloride, lidocaine, D25, D10</td>
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<table>
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<tr>
<th>Miscellaneous</th>
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<tbody>
<tr>
<td>− Broselow tape</td>
</tr>
<tr>
<td>− Nasogastric tubes - 8, 10, 14F</td>
</tr>
<tr>
<td>− Splints and gauze padding</td>
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<tr>
<td>− Rolling carts with supplies such as abundant blankets</td>
</tr>
<tr>
<td>− Warm water source and portable showers for decontamination</td>
</tr>
<tr>
<td>− Thermal control (radiant cradle, lamps)</td>
</tr>
<tr>
<td>− Geiger counter (if suspicion of radioactive contamination)</td>
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<tr>
<td>− Personal protective equipment (PPE)</td>
</tr>
<tr>
<td>− Pain/Sedation medications: ketamine, morphpine, ketoralac</td>
</tr>
<tr>
<td>− Other potential medications: albuterol, keflex, ancef, ceftriaxone, diazepam</td>
</tr>
<tr>
<td>− Surgical equipment for amputations, incision and drainage of wounds, laceration repairs</td>
</tr>
<tr>
<td>− Headlamps with replacement batteries</td>
</tr>
<tr>
<td>− Scissors</td>
</tr>
<tr>
<td>− Plaster for casting, not fiberglass (hard to remove)</td>
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<table>
<thead>
<tr>
<th>Monitoring Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>− Sphygmomanometer/ Blood pressure cuffs - premature, infant, child, adult</td>
</tr>
<tr>
<td>− Portable monitor/defibrillator (with settings &lt; 10)</td>
</tr>
<tr>
<td>− Pediatric defibrillation paddles</td>
</tr>
<tr>
<td>− Pediatric electrocardiogram (ECG) skin electrode contacts (peel and stick)</td>
</tr>
<tr>
<td>− Pulse oxymeter with reusable (older children) and nonreusable (small children) sensors</td>
</tr>
<tr>
<td>− Device to check serum glucose and strips to check urine for glucose, blood, etc.</td>
</tr>
</tbody>
</table>

Among the recommended equipment, elements for proper airway management in children are crucial. A major challenge of any disaster response is gathering, organizing, and moving supplies to the affected area. Resource management within the hospital and other facilities or agencies may prove to be a decisive factor in whether a mass casualty event can be handled.
SECTION IV / ORGANIZATIONS

destruction and death will likely be much greater than what the health care providers are accustomed to dealing with in their daily lives. Local first responders and medical providers thrust in to the role of the initial emergency response phase may be faced with the additional stress of personally knowing many of the victims (or their family members) that they are caring for. The emotional impact of large scale destruction, suffering, and death will elicit different responses in different people, but all volunteer providers should recognize how their experiences can affect their wellbeing both emotionally and physically. The emotional stress experienced by disaster response providers has been well documented after events such as 9/11 and Hurricane Katrina. The affect of stress is amplified by the long hours of intense work experienced during the response to a disaster. Environmental conditions (such as extreme heat/cold/rain/flooding), lack of sleep, and inadequate nutrition impair a provider’s ability to deal with the stressful situation. Crisis response workers and managers, including first responders, public health workers, construction workers, transportation workers, utilities workers,
and other volunteers, are repeatedly exposed to extraordinarily stressful events. This places them at higher than normal risk for developing stress reactions (Pan American Health Organization [PAHO], 2001). It is important for all disaster response providers to recognize the potential emotional stress they will be entering before arriving on scene. Stress prevention and management needs to be considered and addressed from the start of the deployment in order to prevent problems. By anticipating stressors and individuals’ responses to these stressors, the response team and individuals can potentially prevent a crisis within the team of care providers. The US Department of Health and Human Service, Substance Abuse and Mental Health Services Administration (SAMHSA), and Center for Mental Health Services (CMHS) have published a guide focusing on general principles of stress management and offers simple, practical strategies that can be incorporated into the daily routine of managers and workers. It also provides a concise orientation to the signs and symptoms of stress. This can be found online at http://mentalhealth.samhsa.gov/publications/allpubs/SMA-4113/default.asp. While most people are resilient, the stress response becomes problematic when it does not or cannot turn off, that is, when symptoms last too long or interfere with daily life. Table 5 provides a list of the common stress reactions.
Monday, October 9, 2017

Lecturer: Calvin Wilson

Lecture: Capacity Building and Sustainable Development in Global Health


Fighting disease or strengthening health systems?

FEATURE
Exploring a diagonal approach
Single-disease programmes help, but may weaken public health systems in the process. This need not be the case, argues Thomas Gass

INTERVIEW
Giving substance to pretty words
Wendy Johnson stresses the need for a code of conduct to prevent harm being done to health systems

GUEST COLUMN
The forgotten link
Abdul Ghaflar argues that the Millennium Development Goals will not be achieved if the strengthening of district health systems is ignored

PRACTICE
Diabetes, Cambodia’s silent killer
Maurits van Pelt and Chean Men describe how the organisation MoPoTsyo is helping Cambodians to survive diabetes

POLICY
Case study – Zambia
Carolien Aantjes and Fikansa Chanda analyse progress in applying the principles of the Paris Declaration to Zambia’s health system

CD MONITOR
The road to Busan
James Hradsky looks at how delegates to this year’s Forum on Aid Effectiveness will address the issue of capacity development
The road to Busan

The Fourth High Level Forum on Aid Effectiveness will take place in Busan, South Korea later this year. How will the question of capacity development be addressed in the forthcoming debates?

Since 2003, the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) has organised three forums to assess the effectiveness of development aid. The fourth, which will take place between November 29 and December 1, will be a political, multi-stakeholder event with up to 2000 participants from over 150 countries.

Organisers would like it to mark a milestone in international development cooperation and represent a culmination of the collective efforts of donors, partner countries and other stakeholders to tackle the question of managing the aid process. But how and where will capacity development feature in the forthcoming debates on aid effectiveness?

Certainly, capacity development will be one of the themes being debated in Busan, and one of the questions being tackled will be how to forge a South–North consensus on approaches to capacity development – a question that no one is naïve enough to believe will be easy to answer.

A stronger Southern voice

Over the past two years, a partnership comprising the OECD, the Learning Network on Capacity Development (LenCD) and a nascent Southern political advocacy group, CD Alliance, has been working with other partners to highlight priority areas. Their aim is to move the capacity development agenda from the donor–donor discussion that has characterised it over the last 50 years to an agenda with a stronger Southern voice – perhaps even the voice of leadership. Key to this partnership has been Talaat Abdel-Malek, senior economic advisor to the Egyptian Minister of International Cooperation. Dr Abdel-Malek is co-chair of both the CD Alliance and the Working Party on Aid Effectiveness (WP-EFF), the body tasked with organising the Busan process.

This partnership is not the only group intent on enlarging the circle of Southern involvement. The New Partnership for Africa’s Development (NEPAD), an African Union programme, is a radically new intervention pursuing new priorities and approaches to the political and socio-economic transformation of Africa. The African Capacity Building Foundation (ACBF) has a memorandum of understanding with NEPAD to help implement the principles of the Capacity Development Results Framework. The Capacity Development for Development Effectiveness (CDDE) Facility for Asia-Pacific is implementing the Paris Declaration and the Accra Agenda there. And the Task Team on South–South Cooperation (IT-SSC) has a strong anchor in Latin America.

Together, these partners have the potential to raise the visibility of Southern perspectives in Busan, foster better support for capacity development and translate collective knowledge about capacity development into local action. More partner country ownership will foster better donor support. Capacity is the flip side of ownership – and ownership is a precondition for capacity development.

On the horizon

It is too soon yet to be clear about what to expect from Busan, but already, the principles of good capacity development have helped to influence the direction of the aid effectiveness agenda: greater partner country ownership and leadership of aid; greater donor interest in using and supporting country systems; greater attention to the strengthening of local capacity as the foundation of sustainable development action.

It is almost certain that after Busan, capacity development will be more strongly Southern-focused than before – and will present a range of political and strategic opportunities. Already on the horizon are:

• The placement of Southern leadership at the forefront of capacity development
• Agreement on a more ‘joined-up’ approach to capacity development – a vision, language and approach that are common to both North and South
• Greater agreement to use the principles of capacity development in all key aid agency business processes, and to encourage mutually supportive learning
• Making reforms to technical cooperation that are sensitive to capacity development
• Making sectors a primary entry point for joint approaches to capacity
• Agreement to better link capacity development thinking on fragile situations with the leadership of the g7+
• Reforms of international donor business systems to be more in line with capacity development principles: more collaborative strategic planning and results measurement; more flexible project implementation; the sending of more resources into the field; and a reduction in agency fragmentation

Using the Busan process, it may be possible to call upon emerging Southern voices to seek more joined-up and united (North and South) learning and action in some of these areas.
Many developing countries have health systems that are ailing – and well-intentioned development aid is contributing to the problem. Between 2000 and 2010, annual development assistance for health surged from US$10.5 billion to US$27 billion. Most of this was channelled through donor-driven programmes targeted at specific diseases, most prominently HIV/AIDS. Such ‘vertical’ programming has undermined the development of strong national health systems and drawn resources away from countries’ other health priorities.

This problem has been on the international agenda for many years. In 2007, the International Health Partnership (IHP) was established to put the principles of the Paris Declaration on aid effectiveness into practice in the health sector. Unfortunately, little progress has been made.

**Vertical funding**

In this issue of Capacity.org we illustrate some instances where vertical funding has drawn resources away from other diseases and health priorities and produced adverse effects. For example, Maurits van Pelt and Chean Men tell us that in Cambodia, diabetes is responsible for many deaths – but because it is a non-communicable disease, it is largely ignored by external funders. And Carolien Aantjes and Fikansa Chanda describe how vertical funds have contributed to the fragmentation of Zambia’s health system, leaving it increasingly difficult for the government to manage. In Zambia, sections of health facilities have been ‘taken over’ by foreign-directed programmes focused on specific diseases.

One of the significant negative effects of aid is countries’ internal brain drain. Wendy Johnson of Health Alliance International speaks about the dilemma faced by many NGOs. Under pressure from donors to deliver results for specific disease programmes, they find themselves forced to compete with other NGOs to recruit the best local health professionals. In doing this, they undermine the very organisations whose capacities they are supposed to strengthen. In a bid to find a way out of this dilemma, a group of NGOs drafted a code of conduct pledging to refrain from practices, including employee compensation schemes, that are harmful to developing countries. But NGOs do not have the power to change the rules of the game and such a code of conduct will work only when the big funders acknowledge that they are part of the global health system, and that only they have the power to impose ‘do-no-harm’ rules.

A diagonal approach

This issue of Capacity.org also addresses the question of what can be done at district government level and in primary health care to strengthen health systems and align vertical programmes. Such programmes can be structured to help develop the capacity of primary health care systems in a way that allows a much broader spectrum of health issues to be addressed. Thomas Gass describes how the Swiss health development organisation, SolidarMed, experimented with a ‘diagonal’ approach which allows disease-specific interventions to support other elements of primary health care.

District governments have a key role in coordinating the activities of all local health players, including those running vertical programmes. In his guest column, Abdul Ghaffar argues that most district health authorities are poorly equipped to take on this leadership role and that little is done to strengthen them. Peter Lochoro, Rogers Ayiko, and Giovanni Dall’Oglio describe how, in Uganda, the partnership of Italian-based organisation Doctors with Africa, Cuamm, and UNICEF engages in strengthening such systems and enhancing the leadership capacity of district health offices.

Patients as participants

One persisting weakness of health systems, particularly in remote areas, is the lack of capacity to train, recruit and retain health care workers. One way of addressing this problem is to involve patients as active participants in health systems. Thomas Gass describes how patients work as HIV/AIDS counsellors in sub-Saharan Africa. Van Pelt and Men tell how diabetes sufferers in Cambodia run networks to help others cope with the disease and to find their way through the country’s complex health system. For solutions to gain momentum at district and local levels, a change of policy and practice is needed at national and international levels. Representatives from 91 countries due to meet at the Fourth High Level Forum on Aid Effectiveness in Busan in November must surely address the huge backlog of work that needs to be done on applying the principles of the Paris Declaration to health development aid.

The big funders who signed the IHP Global Compact are ideally placed to change the rules of the game and prevent the consequences of setting narrow targets focused on a small selection of diseases. A results-oriented approach should strengthen the capacities of health systems at all levels, and Busan provides a unique opportunity to stop development aid’s unwanted outcomes. It is an opportunity that should not be wasted.
Health is a fundamental requirement for development. If farmers, teachers, housekeepers and nurses are ill and cannot do their jobs, it affects a community’s access to nutrition, education, safe drinking water and health care – all of which can increase vulnerability to disease and lead to more illness in society. When the United Nations launched the Millennium Development Goals (MDGs) in 2000, they made a commitment to break the vicious circle of poverty and ill health by making health a priority for development cooperation. Financial development assistance for health increased from US$10.5 billion in 2000 to US$27 billion in 2010.

And considerable improvements have been made. For example, antiretroviral treatment (ART) has been introduced for the treatment of HIV/AIDS. Before ART was available in rural Africa, almost two million people died every year. Most deaths occurred at home, imposing a huge burden on families, who were frequently unable to continue paying for treatment. Often, patients were abandoned and left to die alone because primary health care networks were overstretched and hospital wards were already crowded with AIDS patients.

Changing picture
This picture has changed. ART has had a huge impact on African families, communities and society as a whole. Now that treatment is available, more and more people are ready to learn more, to talk about HIV, to protect themselves better and to show up for testing and counselling.

In parallel with this good news, a controversial debate has emerged on the drawbacks of the MDG approach and on global health policy in general. Yet critics argue that HIV/AIDS interventions absorb too big a share of the resources allocated for improving health. According to a report jointly published by the World Health Organization (WHO), the Organisation for Economic Co-operation and Development (OECD) and the World Bank, 32% of all official development assistance for health since 2000 has been spent just on HIV/AIDS intervention. And some countries in sub-Saharan Africa, including Kenya and Uganda, spend more than half their health budgets on alleviating HIV/AIDS.

This contrasts sharply with what is spent on, for example, acute respiratory infections. Such infections, according to an article published in the *British Journal of Medical Practice* in 2008, represent 26% of the communicable disease burden in the developing world, but attract only 2.5% of direct funding. Perhaps the strongest criticism in the debate comes from Roger England, who argued in the *British Medical Journal* in 2008 that the ‘international HIV/AIDS industry’ – under which umbrella he includes Western companies, consultants and HIV/AIDS bureaucracies – usurps precious resources. He even goes so far as to suggest that UNAIDS should be closed down because its mandate is harmful.

While most critics might not be prepared to go this far, there is a consensus that in their mission to achieve the health-related MDGs, global health initiatives have encouraged disease-specific or ‘vertical’ health programming. And there is widespread agreement that such vertical programmes have led to a fragmentation of primary health care. Staffing, equipment, infrastructure and data management have been planned, designed and allocated according to the budgets and requirements of various disease-specific programmes rather than according to the local disease burden and the requirements of the local health service providers.

Many vertical ART programmes have funded new laboratory equipment and supplies of reagent, and established protocols for laboratory-based routine monitoring of ART patients. Yet, according to one of the largest studies on antiretroviral treatment in sub-Saharan Africa, the DART Trial (Development of Antiretroviral Treatment in African, routine laboratory monitoring of ART patients is ineffective in settings where resources are limited – and this is so from a clinical as well as from an economic point of view. The trial highlighted instances where funding and personnel were deployed to carry out non-essential testing of HIV-positive patients who were doing perfectly well on ART, while essential diagnostic tests were not available, or affordable, for patients with other acute illnesses. The DART Trial showed that ART patients could be monitored effectively without laboratory equipment. It recommended that where laboratories and personnel are limited, they should be allocated in such a way that they deliver high-quality care to all patients, not just to those with HIV.

‘Do no harm’
The human resources crisis is another sensitive area where vertical ART programmes have adversely affected health systems. Parallel management structures and monitoring and reporting schemes have diverted well-qualified doctors and nurses away from looking after patients to administer projects. A study in McKinsey Quarterly revealed that in Tanzania, a district medical officer spends 100 days a year writing reports for international organisations. And in his commentary in *The Lancet*, former Mozambican Minister of Health, Paulo Garrido, wrote that ‘in many countries, funds are not needed specifically for AIDS, tuberculosis, or malaria. Funds are firstly and mostly needed to strengthen national health systems so that a range of diseases and health conditions can be managed effectively.’

With the aim of stemming the brain drain from the public health sector, 50 international institutions have signed the NGO Code of Conduct to ‘do no harm’ to public health systems – that is, to limit the unintended negative effects of their health programmes. (For more information on this, see the interview with Wendy Johnson on pages 10 and 11.)

The experiences of SolidarMed, a Swiss health development organisation, are a good example of how to put the do no harm principle into practice in primary health...
Long before the advent of ART, SolidarMed had been collaborating with district hospitals on primary health care development plans, targeted investments, support for nursing schools, improved housing for health workers, community-based mother and child health care, and initiatives for the prevention of malaria and tuberculosis.

**SMART**

In 2005, SolidarMed started running an HIV/AIDS treatment and prevention programme called SMART in ten district sites in Tanzania, Mozambique, Lesotho and Zimbabwe. The organisation learned that the key to fighting HIV/AIDS was to build the capacities of local health systems – it does not work the other way round. Certainly, managing HIV/AIDS requires money for drugs, but what is much more important is a strong health workforce, reliable health services that reach out to rural communities and adequate district health management capacities.

In an effort to mitigate the drawbacks of vertical health programmes, SolidarMed pursued three strategies:

- It integrated SMART into existing SolidarMed primary health care programmes and long-standing hospital partnerships.
- It harmonised SMART with existing HIV/AIDS programmes and brought it in line with national health policy. From the beginning, SMART was designed to complement government ART programmes and to be in line with national policy on HIV/AIDS. In memorandums of understanding, SolidarMed and district health authorities defined the terms of a harmonised and multi-stakeholder approach.
- It used some of SMART’s budget lines to strengthen capacity. A number of budget lines are earmarked for general capacity building interventions, such as infrastructure and salary top-ups, that are not specifically related to HIV/AIDS services.

As a result, SMART pursues a ‘diagonal’ programme approach – one where ART-specific interventions are embedded in wider primary health care support. However, as the following examples show, the SMART project has been a learning experience for SolidarMed, and there have been adverse as well as positive effects on local health systems.

**Outcomes**

- **Bricks and mortar:** SMART provided funding for the substantial reconstruction and renovation of hospital out-patient departments and peripheral health facilities at all ten of its sites – providing primary care to a population of roughly two million. SMART created more and better space for all patients as well as more housing for health personnel. However, extending and renovating out-patient departments have often been tailored to the particular needs of HIV/AIDS clients and patients to the exclusion of patients with other chronic diseases. Sometimes, these efforts have not anticipated the integration of treatments for HIV/AIDS and tuberculosis.

- **Laboratories and pharmacies:** Antiretroviral treatment requires improved diagnostic means and laboratory-based patient monitoring. Upgrading laboratories with new equipment and additional staff training remains one of SMART’s priorities. At some sites, this capacity building component has been beneficial for all areas of primary care. For example, the improvement of blood chemistry and haematology facilities has meant that patients suffering from anaemia now receive adequate treatment. However, in terms of the regular supply of essential chemical reagents and drugs, it is again the HIV-positive patients that benefit most from the vertical funding schemes. At times, hospitals have large quantities of antiretroviral drugs and CD4 test reagents while the paracetamol shelf in the pharmacy is empty. Also, while clients on ART are getting routine lab tests done free of charge even when they feel perfectly well, seriously ill patients not infected with HIV cannot afford a laboratory test. In 2009, in one of the SMART partner hospitals, it was noted that more than 80% of all laboratory tests performed were for HIV patients.

- **Human resources:** ART has been a great relief not only for patients, but also for health workers. Prior to SMART, the only treatment options primary care nurses could offer AIDS patients were painkillers, antibiotics, hospital referral or registration in a home-based care project. We saw with SMART that the roll-out of ART to primary
health facilities had a positive impact on the motivation of rural health workers. Seeing patients recover from opportunistic infections, gain weight and resume their everyday lives enhanced job satisfaction. SMART also provided a wide range of training opportunities for all health workers.

In addition to various training sessions related to the clinical management of HIV/AIDS and opportunistic infections, SMART has reinforced the clinical mentoring and supportive supervision of peripheral health workers by consultants and district hospital outreach teams. By investing in buildings, furniture, equipment and means of transport and communication, SMART has had a positive impact on working conditions – a key factor in attracting and retaining personnel. Unfortunately, the positive effects of SMART on the health workforce are undermined by severe staff shortage in remote areas. In understaffed areas, the decentralisation of ART and the steadily growing number of patients is a heavy burden on the small numbers of health workers struggling to provide essential primary health care with extremely limited resources.

Maternal and neonatal health: The roll-out of antiretroviral treatment has had both positive and negative effects on maternal health. On the positive side, pregnant women now have free access to HIV testing and counselling, and if they test positive, they can protect their babies from HIV infection. The care and treatment of babies exposed to HIV/AIDS has been an important focus at all SMART sites. As a result, the general quality of paediatric primary health care has improved. Also, because one in five maternal deaths globally is attributable to HIV/AIDS, ART programmes have a direct effect on maternal health.

SolidarMed observed that in Chuire in north-eastern Mozambique, where large parts of the SMART budget went to strengthen the local primary health care system, the programme has prompted more women to give birth in a health facility rather than at home. The percentage of births attended by skilled health personnel increased from 28% to 72% during the course of the programme. The Chuire experience was not replicated throughout all SMART sites though. It has always been an objective of SMART to prevent the transmission of the HI virus from an HIV-positive mother to her baby. To this end, SMART promoted HIV testing and counselling as part of antenatal care as well as the prophylactic antiretroviral treatment of both mother and baby. Yet, at many SMART sites, such vertical measures have had little effect on maternal and neonatal health in general. Many women are still dying during pregnancy and childbirth, and infants are still dying from neonatal complications. A comprehensive package of emergency obstetric care is an imperative for maternal health, but ART programmes may have diverted scarce resources away from maternal and reproductive health to HIV/AIDS services.

Tuberculosis: In sub-Saharan Africa, HIV/AIDS has caused a massive spread of tuberculosis (TB). This is because TB is the most frequent opportunistic infection among AIDS patients, and the most common cause of death. Despite knowing that the two diseases were so closely interlinked, SMART missed the chance to pursue a collaborative approach in the early stages of the programme. Only recently has training on HIV/AIDS included the management of TB. TB patients are tested for HIV and people living with HIV/AIDS are screened for TB. To date, across the SMART sites, one in ten ART patients receives TB treatment as well. This is a proportion that is well below the expected case load of co-infected patients. From what is now known as a result of the SMART programme, starting to treat TB and HIV concurrently can have a positive effect on the quality of clinical care.

Community health workers: Because there is a chronic shortage of doctors and nurses and because ART has been extended into the primary health care arena, lay members of the community have become involved in prevention and first contact health care. These community health workers have attracted growing recognition as an integral component of the health workforce. In the past, community health schemes had proved unsustainable because of a lack of support, supervision and training. But more recently the WHO, in collaboration with the Global Health Workforce Alliance, has reviewed the concept of community health workers and issued recommendations on how to integrate them into health systems.

Recent studies show that community health worker schemes have considerable

<table>
<thead>
<tr>
<th>Births</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2588</td>
</tr>
<tr>
<td>2007</td>
<td>3604</td>
</tr>
<tr>
<td>2008</td>
<td>4946</td>
</tr>
<tr>
<td>2009</td>
<td>5786</td>
</tr>
<tr>
<td>2010</td>
<td>6684</td>
</tr>
</tbody>
</table>

Source: SolidarMed, based on data from the Mozambique Ministry of Health

Table 1 – Births attended by skilled health personnel in Chuire District, Mozambique between 2006 and 2010

SMART outcomes

- Approximately 200,000 clients tested (including pregnant women)
- 15,800 patients on treatment (8% of whom were children)
- 21% of patients decentralised to primary health facilities
- 72% of patients retained on ART
- Just 28% of ART patients dropped out or died

Health-related MDGs

Three MDGs address health and illness directly: MDG 4 and MDG 5 aim to improve the health of mothers and children. MDG 6 targets the fight against HIV/AIDS, malaria and tuberculosis. Other MDGs are indirectly related to health. For example, MDG 1 is aimed at fighting malnutrition – an underlying cause in one out of three child deaths. Health is also a key aspect of environmental sustainability (MDG 7). In many low-income countries, drinking-water and sanitation facilities are so poor that diarrhoea remains a leading cause of childhood illness.

With only five years to go on the MDG countdown, there is both good news and bad news to report.

On the positive side, it can be reported that:
- As a result of immunisation coverage in 81% of countries worldwide, the annual number of child deaths from measles dropped from 733,000 in 2000 to 164,000 in 2008.
- Antiretroviral treatment (ART) has now reached more than 5.2 million people living with HIV/AIDS, the majority of whom live in sub-Saharan Africa. Globally, 33% of those in need now receive ART.
- Malaria initiatives have resulted in 71% children under five in sub-Saharan Africa sleeping under mosquito nets. And as a result of the scaling-up of artemisinin-based combination drugs, the coverage of malaria treatment has substantially improved.

However, there is also some bad news:

- Of all the MDGs, least progress has been made in maternal and neonatal health – particularly in sub-Saharan Africa, where 52% of all maternal deaths occur. Globally, 940 women die every day during pregnancy or delivery. More than half of these deaths are due to preventable and manageable haemorrhage and hypertension. In sub-Saharan Africa, the poor health of mothers means that 880,000 babies are stillborn every year, and more than 1.2 million die during the first 30 days of their lives.
- In contrast to the progress made in the fight against measles, other preventable and treatable diseases still kill more than 24,000 children under five every day. In sub-Saharan Africa, one child in seven dies before their fifth birthday – most commonly from pneumonia, diarrhoea, malaria or AIDS.
- The HI virus is still spreading: In 2009 alone, 2.6 million people were newly infected, 72% of them in sub-Saharan Africa. For every two individuals who start ART, five people are newly infected – and 40% of the new infections occur in the 15-24 year age group.
Antiretroviral treatment.

Care that extends beyond simply providing care to HIV/AIDS clients and patients. Carefully training and paying the salaries of HIV lay counsellors who have no medical background, SMART trains and pays the salaries of HIV lay counsellors – have become driving forces in ART projects. SolidarMed visualises a health system comprising three interlinked domains. First, the delivery of primary care services through district hospitals and primary health care facilities; second, the realm of various kinds of community-based health activities; and third, a health system management scheme that is under the leadership of the district health authorities.

The table above proposes a structure for discussing possible impacts of disease-specific programmes such as SMART on the local primary health care system.

Table 2 – SMART’s impact on health systems

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary care delivery</strong></td>
<td><strong>HR development</strong></td>
</tr>
<tr>
<td><strong>Infrastructure improved</strong></td>
<td><strong>HR support not embedded in a plan</strong></td>
</tr>
<tr>
<td><strong>Equipment provided</strong></td>
<td><strong>Off site training caused absenteeism</strong></td>
</tr>
<tr>
<td><strong>Quality of care enhanced</strong></td>
<td><strong>More advantages given to SMART staff and patients</strong></td>
</tr>
<tr>
<td><strong>Facility utilisation improved</strong></td>
<td><strong>Lab equipment used primarily for HIV/AIDS patients</strong></td>
</tr>
<tr>
<td><strong>Health centres strengthened</strong></td>
<td><strong>Data management capacity building exclusively for HIV/AIDS patients</strong></td>
</tr>
<tr>
<td><strong>Health centres supervised</strong></td>
<td><strong>Community schemes fragmented by inconsistent remuneration</strong></td>
</tr>
<tr>
<td><strong>Community health</strong></td>
<td><strong>HR training fragmented and inefficient</strong></td>
</tr>
<tr>
<td><strong>Community health workers mobilised</strong></td>
<td><strong>Competition for ‘sitting allowances’</strong></td>
</tr>
<tr>
<td><strong>Health promotion supported</strong></td>
<td><strong>Parallel schemes for budgeting, reporting, and monitoring and evaluation</strong></td>
</tr>
<tr>
<td><strong>Community initiatives promoted</strong></td>
<td><strong>Parallel outreach and supervision undermined district teams</strong></td>
</tr>
<tr>
<td><strong>Health system management</strong></td>
<td><strong>Geographical focus limited</strong></td>
</tr>
</tbody>
</table>

Assessing local impact

The impact that SMART has had on local systems of primary health care is difficult to assess. Its effects over the years have been both positive and negative, and while many of the consequences were desired outcomes, some were unintentional and unanticipated. We also need to examine the extent to which non-HIV/AIDS patients have benefitted from SMART’s substantial investments in HIV/AIDS treatments. The impact of SMART on the local health system has not been systematically evaluated yet. Its monitoring and evaluation efforts have been largely focused on the outcome of ART projects. SolidarMed visualises a health system comprising three interlinked domains. First, the delivery of primary care services through district hospitals and primary health care facilities; second, the realm of various kinds of community-based health activities; and third, a health system management scheme that is under the leadership of the district health authorities.

The table above proposes a structure for discussing possible impacts of disease-specific programmes such as SMART on the local primary health care system.

Relaunching primary health care

Of the 22.5 million people living with HIV/AIDS in sub-Saharan Africa, about ten million have reached an advanced stage and need ART. Despite steady up-scaling, 65% of the patients in urgent need of ART do not have access to it – some are not even aware they are HIV positive. And many more people who have been newly infected will need the treatment in the near future. This backlog of patients in need of treatment is a colossal challenge for fragile local health systems in rural Africa. The SolidarMed experience shows that decentralised ART provision works only when it is based on the foundation of a solid primary health care system, one where the health workforce – doctors, nurses and community health workers – is the core element.

Primary health care is multidimensional. It depends on self-determined community capacities, strong and durable infrastructure and equipment, and the comprehensive management of health workers, supply chains and health data systems. There is now a consensus between governments, civil society and global health initiatives that health systems should be people-centred rather than disease-centred.

A number of international organisations have adapted their funding criteria to accommodate disease-specific interventions that also strengthen the horizontal system of primary health care. In 2008, the WHO relaunched primary health care as one of the guiding principles of global health. In a reworking of the Alma-Ata Declaration, the WHO proposed health care reforms that would:

- Give universal access and social health protection
- Provide people-centred services
- Incorporate community-based public health policies
- Encourage participatory health management

A primary health care approach to ART will have to deal with growing numbers of patients. And in order to prevent resistance to antiretroviral drugs from developing, it will also have to ensure quality of care and ensure that patients on ART adhere to the treatment programme. At the same time, if ART programmes are designed in a diagonal rather than in a vertical way, primary health care will also benefit. <

Thanks to Jochen Ehmer of SolidarMed for his valuable contribution to this article.
Applying the Paris Declaration to Zambia’s health sector

Case study – Zambia

Earmarked and vertical funds are often at odds with commitments to strengthen health systems. Can such funding be tweaked to prevent a negative impact on health systems?

In 2007, a concerted international effort was made to rationalise the way in which health development aid was being deployed and to ensure that the health-related Millennium Development Goals (MDGs) would be reached.

More than 20 governments, bilateral and multilateral partners, and donor organisations such as the Bill and Melinda Gates Foundation, came together to reform the ways in which they delivered and managed aid. Calling themselves the International Healthy Partnership (IHP), the partners signed a global compact that was to be a key step in putting the Paris Declaration on Aid Effectiveness into practice in the health sector. The emphasis was to be on building and using recipient countries’ own health systems and fostering harmonisation to reduce fragmentation and the duplication of donor aid.

But have such efforts proved effective? This article looks at Zambia’s health system, as it was in 2008 and again as it is today, to see if a synergy now exists between disease-specific projects and the strengthening of the country’s overall health system.

Donor funding constitutes a significant portion of health financing in Zambia. In 2007, Official Development Aid made up 32% of the total health budget. Government allocation of public expenditure for health increased from 7.5% in 2005 to just over 11.5% in 2008 – still far short of the 15% to which African heads of state committed in Abuja in 2001.

Midterm review

A midterm review of Zambia’s National Health Strategic Plan 2006–2010 was carried out in 2008. The review was led by a senior consultant from ETC Crystal, Carolien Aantjes, one of the authors of this article, was a member of the multidisciplinary review team. It was found that there was still much to be done to put the principles of the Paris Declaration into practice in terms of donor support. Some donors – among them the Dutch government – provide budget support under a sector-wide approach, others earmark their funding, and some do both. The midterm review revealed that most of the health budget came from earmarked funds.

This situation was further compounded by the large funds from the various global health initiatives that were set aside for programmes targeting specific diseases. These initiatives included the Global Alliance for Vaccines and Immunisation (GAVI), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), the US President’s Emergency Plan for AIDS Relief (PEPFAR), the Bill and Melinda Gates Foundation, the Clinton Foundation and the World Bank Booster Program for Malaria in Africa. Calculating funds from PEPFAR and GFATM alone, public per capita expenditure rose from US$11 to approximately US$34 between 2004 and 2006.

Earmarked funds caused serious distortions in funding priorities in Zambia. The global health initiatives overrode government systems and structures with their separate planning processes, financing, implementation, accounting and reporting systems – none of which was necessarily linked to strengthening the country’s National Health Strategic Plan. The proposal-writing processes caused similar frustration. Out of seven comprehensive attempts to secure GFATM funding, the Zambian health ministry was successful with just three.

Some direct funding agencies had carved up the country into geographical zones, Balkanising the health sector. They withheld information on these activities from government and other actors in the sector, thereby increasing the duplication of efforts. And in addition, global health initiatives attracted scarce skilled health workers away from priority areas such as reproductive health, children’s health and nutrition.

The diversification of donor instruments also changed the financial support mechanisms for public and private actors in the Zambian health sector. Donors such as USAID, PEPFAR, the World Bank and GFATM provided significant support to vertical programmes and to faith-based organisations, non-governmental organisations, community-based organisations and the private sector. As a consequence, the private not-for-profit sector was able to increase its support to the health sector. But the other side of the coin was that reporting and monitoring and evaluation overheads contributed to an increased workload at district, provincial and national levels.

Types of funding

There are two broad categories of funding – earmarked funding and basket funding (also known as sector budget support). Earmarked funds are provided for very specific interventions or items such as drugs and vaccines. This funding comes with its own application procedures, timetables and monitoring requirements. It often bypasses the policy and coordination processes of the recipient country because it rarely addresses priorities across a sector. Excessive earmarking leads to fragmentation in a health system and undermines countries’ capacities to lead a development cooperation process. Earmarked funds are often seen as being at odds with the principles of the Paris Declaration, which advocates alignment, harmonisation, management for results, mutual accountability and ownership.

With basket funding, development agencies pool their funding for a particular sector into a joint bank account. This is then channelled directly to particular ministries, rather than going through the accounts of the finance ministries in the recipient countries. Basket funding often goes hand-in-hand with sector-wide approaches (SWAps). A SWAp is a partnership between governments and development agencies which allows project funds to be tied to a specific sector and sent directly to that sector. The aim is to provide all or a major share of funding for that sector as part of the government’s unified policy and expenditure programme. This strengthens government ownership and leadership. SWAps were introduced in the 1990s because development agencies were being repeatedly criticised for each funding their own self-contained projects, leading to fragmentation and duplication. SWAps are more in line with the principles of the Paris Declaration.
national levels, and coordination became more problematic.

Urban health facilities in particular were so overrun by externally managed and funded programmes that provincial and district managers often no longer knew what was happening in their facilities. The coordination of the myriad HIV/AIDS initiatives proved difficult for the health ministry because of its limited capacity and the fact that some programmes did not seek to be coordinated or streamlined into the existing health service.

The midterm review also demonstrated that the expansion of services, particularly free services, had created an overwhelming demand and moved the congestion from hospitals to the AIDS service delivery points. This was seen as compromising the overall quality of care and the assurance of proper case management because the time per patient was severely reduced. The Zambian Network of People Living with HIV/AIDS reported that up to 70% of patients faced waiting times of more than three hours, and that 66% did not regularly go for essential testing. Links between the various services had been built, but tended to be one-way. For example, the antenatal clinic would refer an HIV-positive patient to the antiretroviral treatment (ART) clinic, as would the tuberculosis (TB) clinic for its patients. But the ART clinics did not routinely refer their patients to sexual and reproductive health services or for TB screening. The review concluded that there was still much room for improvement in the areas of integration and offering a comprehensive health package to the patient.

Progress since 2008

Now, three years on, has anything changed? Has Zambia’s health system been strengthened and is the way funding is being deployed resulting in better integration and a harmonisation of donor assistance? Below are two examples of ‘diagonal’ programming under which vertical funding for HIV/AIDS has been used to benefit the broader health system in Zambia.

The Churches Health Association of Zambia (CHAZ) is a national network of mission hospitals and health centres, operated by sixteen churches. It provides approximately 30% of Zambia’s health services. GFATM and PEPFAR provide funding to CHAZ as part of the AIDS relief programme executed by Catholic Relief Services (CRS). This funding is assisting in the renovation of laboratories and pharmacies and is helping to purchase essential equipment.

Certainly, better labs, pharmacies and equipment have accelerated access to ART for HIV-positive Zambians – and at the same time they have helped to strengthen health institutions’ capacity to investigate and treat other medical conditions.

Public health institutions in Zambia have also been supported to upgrade their structures. Family Health International (FHI), has used PEPFAR funding to renovate laboratories, pharmacies and counselling rooms and procured laboratory equipment in seven provinces. It has also been assisting in improving the data management capacity of health facilities, the integration of HIV/AIDS services with other clinical areas, the coordination between health facilities and community health services, and in developing the capacity of the workforce.

Yet despite these and other examples of successful diagonal programming, the Zambian picture does not show dramatic improvement since the midterm review in 2008. This is particularly the case in terms of donor harmonisation and alignment, two of the key principles of the Paris Declaration. Funding structures have remained vertical. International organisations and funders decide on allocations and priority areas in reference to the national strategic framework on HIV/AIDS. There is no initial joint planning between the ministry and international organisations such as FHI and CRS, which are implementing the diagonal programmes discussed above.

A new mindset

On a positive note, the international debate on disease-specific programmes versus health system strengthening seems to have influenced a shift in thinking. Partners are more aware that integrating HIV/AIDS services and strengthening the health system are both priorities.

The decision to invest in the health system and to institutionalise country-led responses has been agreed in the 2011–2015 partnership framework between the governments of Zambia and the United States. The partnership between the Zambian government, GFATM, PEPFAR, FHI and CRS has now resulted in the establishment of permanent positions for among others, psycho-social counsellors and data clerks, within the ministry. While planning and budgeting remains vertical, there is much more integration at the health facility level. The transfer of skills from international non-governmental organisations to staff at the health ministry and CHAZ is being carried out successfully. Laboratory equipment, such as haematology analysers, is being used not just for HIV testing, but for a wide range of disease investigations.

Now that donor policies are explicitly stating the objective of strengthening the health system, those implementing them have more leeway to use the funding beyond the scope of one or two diseases. So there has been modest progress. However, much remains to be done to harmonise efforts, to build a more robust health system, and to implement aid effectiveness principles in Zambia. <

Further reading

Giving substance to pretty words

Promoting ‘country ownership’ in aid-dependent countries is central to the debate on aid effectiveness – but global health initiatives have often encouraged the opposite. In 2008 a code of conduct was drafted to address this trend.

The 2008 NGO Code of Conduct for Health Systems Strengthening asked international non-governmental organisations (NGOs) operating in the health sector in developing countries to scrutinise their practices. The organisers behind the code of conduct were concerned that some NGO practices, such as paying high salaries in low-income countries and luring qualified people away from national health systems, might actually weaken the management capacity of health ministries.

Wendy, what motivated you to become involved in drafting the code of conduct? Anyone who has worked in low-income countries where there is a large concentration of NGOs has seen how they compete for small pools of highly trained local staff and health personnel. I saw this in Mozambique, where the Ministry of Health cannot compete with the salaries that NGOs offer. So you get a brain drain of doctors, nurses and other clinicians from front-line ministries and local institutions to the non-governmental organisations.

Since the 1990s, the dramatic expansion in the amount of development aid being donated to the health sector has enabled undeniable progress in many areas – and not least in the fight against HIV/AIDS. But there is a fear that aid programmes can undermine national health systems in the long term.

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The management burden of government health systems has been increasing rapidly, partly as a result of the myriad health initiatives led by the NGOs – each of which requires health ministry attention. The drafters of the code of conduct realised that unless something changed in the way international health NGOs operated, their achievements would be overshadowed by the harm being done to countries’ own capacity to provide health services.

Capacity.org talked with Wendy Johnson, director of new initiatives with Health Alliance International (HAI), who was one of the architects of the code of conduct.

Wendy, what motivated you to become involved in drafting the code of conduct? Anyone who has worked in low-income countries where there is a large concentration of NGOs has seen how they compete for small pools of highly trained local staff and health personnel. I saw this in Mozambique, where the Ministry of Health

Which parts of the code of conduct were the most controversial and made the NGOs reluctant to sign? Article 2 says that ‘NGOs will enact employee compensation practices that strengthen the public sector’. In that article signatories pledge to ‘attempt to create pay structures that acknowledge differences in expertise and training, irrespective of the employee’s nationality’.

Section 1 of this article says that ‘in areas where trained personnel are scarce, NGOs will make every effort to refrain from hiring health or managerial staff away from the public sector, thus depleting ministries and their clinical operations of talent and expertise’. NGOs argue that if they are to follow the labour laws in, say, Mozambique, they have to treat everybody who applies for a job equally. The law requires that they advertise everything locally before advertising it internationally. So if they find a qualified Mozambican, they are obliged to employ that person.

Although I believe there are solutions to these dilemmas without skirting countries’ labour laws, I acknowledge that these are valid issues. Of course we cannot discriminate against local staff in our recruitment practices. But health NGOs can work to support salaries and programmes within the ministry structure.

Do you supervise whether NGOs adhere to the code of conduct, and do you monitor what impact it has had? The code of conduct does not have an enforcement mechanism. There are codes of conduct that, while not legally enforceable, are so widely accepted that non-compliance would cause embarrassment. But this code of conduct has not acquired that status.

A year after we launched the code of conduct, we conducted a survey to find out whether it was being adhered to. We did not find that health NGOs had changed their practices because of the code of conduct. But that was because the organisations that had signed up were the ones that had already
been committed to what the code of conduct advocated.

It is not the case that all the non-governmental organisations who have signed up adhere one hundred percent to the code. Rather, those who sign up like to find innovative ways of getting close to complying with the code. What was valuable in the early stages was the sharing of information and insights as part of the drafting process. The result is a knowledge product. The code of conduct functions as a way of publishing some of these practices in a way that would not have happened otherwise. So although we do not have hard evidence that it changed practices, I do believe it is a valuable resource for NGOs that want to engage in creating similar policies and procedures.

Who can sign up for the code of conduct and how do they go about it?
The code of conduct was originally meant for international health NGOs. However, donors and local non-governmental organisations can sign up to it too. Initially, local NGOs were seen as victims of the internal brain drain because they were affected in the same way as their governments. Now many of these local NGOs have become subcontractors for large international NGOs. The lines have become blurred.

There is a place on the website where local NGOs can apply to become signatories. How about donors like the Bill and Melinda Gates Foundation? Could such a donor sign up to the code of conduct? If an international institution such as the WHO or a big donor like the Bill and Melinda Gates Foundation signed up to the code of conduct, it would have a tremendous impact. These big organisations could, for example, demand that all their grantees sign up too. That would really shift the code of conduct from being a knowledge product to becoming a real tool to measure the performance of NGOs.

It would be incredibly valuable even if they were to take the code of conduct and adapt it for themselves. We had some interesting discussions early on with USAID and the International Health Partnership, but unfortunately it never got to the level where they adopted the code of conduct as part of their policy.

The core problem is that while everybody talks about country ownership, donors lack the substance to really change practices. I was working in local public health here in the United States until about 2004, before moving to work in global health. In that time, I have seen the problem getting worse rather than better. There is a lot of talk about strengthening health systems. And there is a lot of talk about building local capacity. But as I see it, it is the big international NGOs – which are getting bigger all the time – who really benefit from the influx of dollars that goes to global health.

In contrast, I was talking to a friend who was taking care of a sick friend in Ethiopia last month. Ethiopia receives about USD$400 million a year in development health aid from the United States – yet there is no X-ray machine in the national tuberculosis hospital.

In the countries in which I have worked, I am not seeing a growth in capacity in the public sector. Perhaps there is a little bit more of it in local institutions, but from where I am standing, the public sector still looks pretty anaemic. If the goal is building local capacity, I personally do not see the results in any kind of measurable way.

The challenge for those of us who care about strengthening health systems is to start thinking about how to measure those results. Pretty words such as ‘country ownership’ and ‘local control’ are all very well, but the code of conduct offers an opportunity to see what these would really look like in practice. We need to be more serious about shifting development work from charity to a model of solidarity, with the building of local capacity as our primary goal.

Interview by Heinz Greijn

Links
• www.ngocodeofconduct.org
**Inside the district health system**

In Karamoja in northern Uganda, many children do not live to see their fifth birthday. In an initiative to improve child survival, Doctors with Africa, Cuamm has formed a partnership with UNICEF to strengthen Karamoja’s district health systems.

A number of vertical programmes are being run in Karamoja. These include:
- Prevention of mother-to-child transmission of HIV/AIDS (PMTCT)
- HIV/AIDS programmes run by various partners
- Reproductive health programmes
- Nutrition programmes run by various partners
- Expanded outreach programmes
- Neglected diseases programmes, particularly for kalaazar (leishmaniasis) and filariasis (elephantiasis)

These programmes are called vertical because they have their own work plans, management structures, funding and reporting systems – although most do tend to use the same district staff to implement their activities. Vertical programmes have a tendency to cause fragmented planning, fragmented resource mobilisation, and an overlap or even a doubling of funding for certain activities. This is a waste of resources and the increased administration activity it causes takes staff away from their broader health care tasks.

All health activities in Karamoja – public facility, private facility and vertical programmes – are coordinated by the region’s seven District Health Offices (DHOs). DHOs are headed by district health officers, who are responsible for the strategic planning and management of health in their districts. Each DHO is composed of district health team members who meet regularly. Civil and political supervision is provided by the chief administrative officer and the district executive committee represented by the Secretary for Health – an elected local politician.

The District Health Management Team (DHMT), a wider stakeholder body, is composed of the district health team members and the heads of health sub-districts, heads of health units and development partners. District health officers have a key role in ensuring that the system delivers a coherent and effective service.

Forging synergy between all these agencies requires strong leadership and governance at the district level. This, unfortunately, is often lacking in Karamoja. Governance and supervision are weak. There is a shortage of highly trained staff. There is little capacity to manage logistics and supply chains and little experience of managing health information systems, infrastructure and equipment. Planning is poor, programme implementation is weak and resources are being wasted. Strengthening capacities at district level is a must if we are to address the high levels of morbidity and mortality.

Obviously, more financial resources are required in order to tackle these health system challenges effectively – and this may not happen in the near future. But even using just the resources currently available, it is still possible to improve outcomes by improving management – in planning, in the use of resources, in the coordination of various partner inputs, in the use of information, in the management of logistics, in the deployment of staff in remote areas, in enhancing skills and improving supervision. The districts need to be strengthened in these capacities and this is the hallmark of the Cuamm intervention in Karamoja. With input from the Ugandan government and other partners, improvements are continuing to be made across Karamoja’s districts.

**Strengthening the district health offices**

Through its partnership with UNICEF, Cuamm is supporting district health systems

**Karamoja** is the poorest, most remote and least developed part of Uganda. Its population of over 1.2 million people is deprived of basic services including health and access to safe water. For decades, the people here – mostly semi-nomadic pastoralists – have suffered from violence, insecurity and lack of water for their animals. Morbidity and mortality rates are very high. Out of every 1000 live births, 174 children die before the age of five – a death rate that is 27% higher than the national average. And maternal mortality is 72.4% higher than the average figure for Uganda.

Karamoja’s health system consists of 101 facilities of different sizes and types: one regional referral hospital, four general hospitals, four health centre IVs (HC IVs), 35 HC IIs and 57 HC IIs. Of these facilities, 22 are owned by the private not-for-profit sector, while the remaining 79 are public owned. There are hardly any private for-profit facilities in the region.

Karamoja is divided into health sub-districts. Each of these consists of a set of HCIs, HCIIIs and a referral facility such as an HC IV or a hospital. At the community level, each village is serviced by village health teams, which constitute an HC I. A total of 2910 village health team members work in the Karamoja region. These help to implement community health interventions such as immunisation, nutrition and sanitation campaigns. They are now also being equipped for community case management of common childhood illnesses.

Many children in Karamoja do not live to see their fifth birthday. The main causes taking children under five are malaria, measles, pneumonia and diarrhea. These diseases together account for 72.1% of all child deaths in Karamoja. In addition to the health services provided by the government, there are also a number of vertical programmes being run in Karamoja.

**Cuamm**

Doctors with Africa Cuamm is an Italian-based organisation that has been working on health issues in Africa since the 1950s. It works mainly to improve health among the poorest sections of the population. It does this through strengthening district health systems to make it easier for greater numbers of people to access primary care, by improving the quality of care available and by building the capacity of communities and local systems to recognise the health problems they are facing and find solutions to them.

Uganda is one of seven African countries where Cuamm has maintained a presence for decades. The organisation is also active in Sudan, Ethiopia, Tanzania, Mozambique, Angola and Kenya.
in all seven districts of Karamoja. Since December 2006, Cuamm has been operating a four-phase project, responding to chronic emergency in Karamoja. The object of this has been to provide technical assistance to all DHOs. The need for such assistance was identified by a team from the Ministry of Health, UNICEF and Cuamm in August 2006 when it carried out an assessment of district health sector management. They found a number of capacity gaps.

One of the major recommendations of the assessment was to use technical advisors to support and help to build the capacity of the district health teams. Based on this, Cuamm seconded a technical advisor to each district. These were experienced public health officers, usually medical doctors, who were co-opted as members of the district health teams. They paired up and worked with task officers on the district health teams to help impart essential skills. The advisors organised and continue to be involved in supervision and mentoring within the district health teams. They also participate in technical planning committee meetings with the heads of district departments. Here, they are able to interact with the civil and political leadership of the district as well as with civil society. Their ability to advocate for continuous improvements in service delivery was mainly realised through these forums.

The key roles of the technical advisors are:
1. To support districts to improve their capacities to plan, implement, monitor and report results
2. To support the building of a reliable health information system with demonstrable improvement in information collection, reliability, storage, retrieval, analysis, reporting and use
3. To promote Karamoja’s district forums as avenues of cross-district learning and solution sharing
4. To improve capacity to supervise, train and mentor health staff
5. To support enhanced accountability for the resources used and the results derived
6. To support cooperation with other technical heads in the district departments of education, water and sanitation, and planning

The relevance of the advisors in terms of minimising the negative effects of vertical programmes and achieving a synergy between horizontal and vertical programming lies mostly in roles 1, 2 and 5 above. In these roles, they work to prevent fragmentation and duplication, promote comprehensive planning and share information. Cuamm advisors see to it that vertical programmes do not negatively affect the delivery of the other components of the integrated Uganda National Minimum Health Care Package – the country’s primary health care package.

Advisors also provide on-the-job training for health information staff and periodic data quality assessments. They also facilitate the promotion of technology such as RapidSMS data collection, coordination and communication during disease outbreaks and disease surveillance. Every quarter, this health information is shared in the health, nutrition and HIV quarterly review meetings, which are attended by many stakeholders including NGOs and UN partners working in Karamoja. These reviews have become crucial in encouraging peer learning across districts and identifying new or persistent gaps in access. A web-based regional data centre has been set up to allow all those concerned to access health information for development.

Results
Through their active participation in the various consultative bodies, the Cuamm advisors have been effective in fostering synergies between stakeholders. This has led to clear improvements in the level of participation, more frequent and more productive meetings, and eventually, a better service for the community. These results are reflected in the performance figures of the various DHOs.

The use of primary health care resources disbursed by central government rose from 56% in 2005 (before the intervention started) to 100% in 2010. There was also an improvement in epidemic surveillance reporting. In 2005, only 49% of reports were submitted to the Ministry of Health on time. But by 2010, this had increased to 82%. This has led to measurable improvements of service delivery on the ground. Coverage of vaccinations against diphtheria, pertussis (whooping cough) and the DTP3 tetanus booster started to rise at the rate of about 3% a year in the region, while the national trend was falling at about the same rate. The outpatient utilisation rate has also been rising, and the trend in mothers opting to give birth in hospital is increasing slightly more steeply than the national rate.

As a result of a more participatory planning process, innovative approaches are beginning to emerge. For example in Kotido district, the tetanus toxoid immunisation given to young women and girls was carried out at the Sunday church service. This brought coverage of the second to fifth doses in that sub-district to 78.4% – well above the Karamoja district average of 36.4%, and even higher than the national target of 70%.

The DHOs in Karamoja are communication and coordination hubs. The professional demands on the district health officers and their counterparts are very high. The Cuamm project shows that supporting them in their capacity development helps them to improve the way they operate and give better health-service coverage to the people of Karamoja.

Authors’ conclusion
Vertical programming has always been a form of fire fighting. Although we often take pride in the quick and clean benefits demonstrated by instruments we have perfected over time, rarely do we measure the opportunity costs of vertical programmes. It will take time to convert every donor – and indeed in certain situations we may still need vertical programmes – but the message we deliver here is that vertical programmes must become increasingly diagonal in order to achieve better results.

In situations where there is deprivation and despair, it is of great value to demonstrate that confidence can be built, capacity can be developed and results can be seen. This was what the Cuamm intervention achieved – this and the ability to achieve a synergy between horizontal and vertical programming.
In Cambodia, diabetes is a devastating disease. Expensive clinical care is accessible only to the urban rich, while the poor remain untreated and die. The Cambodian organisation, MoPoTsyo, has an innovative solution that has already saved many lives.

In the early nineties, Cambodia’s public health system started to be rebuilt after decades of war. Health experts and international donor agencies designed a system in which most resources went to combat communicable diseases. Non-communicable diseases, many of which are chronic conditions, were largely ignored.

A prevalence survey carried out in 2010 showed that as many as 2.3% of rural Cambodians aged between 25 and 60 had diabetes and that 10% had hypertension. While the prevalence of these conditions is not particularly high in comparison with other countries, what is worrying is that a comparatively high number of lean Cambodians suffer from diabetes and hypertension. The reasons are unknown, but experts attribute it to a genetic predisposition combined with environmental factors. Cambodia’s post-war public health system is not fit for purpose in that it does not know how to deal with patients suffering from chronic diseases such as diabetes.

Health reform is needed urgently as the Cambodian health system started to be rebuilt after decades of war. Health experts and international donor agencies designed a system in which most resources went to combat communicable diseases. Non-communicable diseases, many of which are chronic conditions, were largely ignored. A prevalence survey carried out in 2010 showed that as many as 2.3% of rural Cambodians aged between 25 and 60 had diabetes and that 10% had hypertension. While the prevalence of these conditions is not particularly high in comparison with other countries, what is worrying is that a comparatively high number of lean Cambodians suffer from diabetes and hypertension. The reasons are unknown, but experts attribute it to a genetic predisposition combined with environmental factors. Cambodia’s post-war public health system is not fit for purpose in that it does not know how to deal with patients suffering from chronic diseases such as diabetes.

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90% annually. According to a study carried out by Chean Men, a senior researcher at the Center for Advanced Study in Phnom Penh and a member of MoPoTyo’s board, the average monthly spend on routine medication for PEN members is US$4 – before registration, they would have been spending about US$12.

Peer educators run courses to help patients learn about their condition, but for many patients, the personal contact between them and their trusted peer educator is just as important, especially in the early stages. Patients build up a practical understanding of how they can control the disease and slow its progress.

**Diet and lifestyle**
Courses given by the peer educator consists of six sessions:
- An explanation of basic human biology
- How diabetes affects the body’s mechanisms
- How to restore and keep the blood–glucose balance (physical activity, food intake and medicines)
- The various types of medicine and their roles
- Nutrition and healthy eating for Cambodians with diabetes
- How to self-test, set targets, self-measure and record progress

The courses emphasise the importance of lifestyle changes. Most Cambodian diabetics do not realise that white rice, particularly Cambodian rice, is highly glycaemic, meaning that the large quantities of glucose in the rice are very quickly released into the blood stream. Average Cambodians take more than 80% of their daily energy from white rice.

MoPoTyo’s food pyramid is a great help for the patients too. Every registered patient receives a poster showing where commonly eaten food items are on the glycaemic index: highly glycaemic foods are shown in red at the top of the pyramid, and foods with a low glycaemic index rating are shown in the green layer at the bottom. The pyramid helps hyperglycaemic (type 2 diabetes) patients to bring their glucose levels down by encouraging them to replace white rice with healthier sources of energy.

**Further promising results**
In rural Takeo province, over 70% of people diagnosed with diabetes had been unaware of their condition until they were detected by the peer educator. Early diagnosis is a key step in the prevention of complications, especially because the screening activity is combined with access to affordable care.

Independent assessments based on random samples of registered patients show a relatively consistent pattern of health improvements. Despite low levels of literacy, PEN members have a better understanding of their condition and of how to improve their health and lifestyle. Taken together in all random assessments, average blood glucose and blood pressure levels improve significantly after registration. The vast majority report that they are more physically active and are eating less white rice than before. Studies show that there are also fewer episodes of hospitalisation after registration with a PEN. Health expenditure is reduced by a factor of three.

**Facing the future**
The PEN approach challenges the widespread notions that diabetic patient populations can only be reached effectively through professional health services, and that any strategy aiming to deliver secondary prevention requires investment in clinic-based care and the strengthening of the capacity of professional health service providers. The results achieved by the PENs provide a strong case for attempting to scale up this initiative. There are a number of critical risks factors that need to be considered though:
- integration within the wider health system
  - Local health authorities need to get involved in governance in order to strengthen the system further. If such a system is allowed to develop on its own without adequate links to other parts of the health system, patients may miss out on opportunities for care that they would have received had they remained within the public system.
- the status of the peer educator in the system
  - At primary care level, confusion can arise about the precise definition of a peer educator in terms of:
    - hierarchy, responsibilities and accountability
    - lines of communication
    - how the PENs can complement the existing primary care system
    - how they are financed (level and mode of payment)
  - Quality of care – Many community-based peer educators have had little formal education. They are trained only in very specific health problems and have no background in general health care before becoming peer educators. This limits their scope when dealing with the complexity of the chronic cases that they follow up. It is important to bear in mind that peer educators have to remain motivated. A particular challenge will be how to deal with serious complications over time. Members are starting to live longer and develop complications in greater numbers than they would have had there been no programme. There will be a growing demand for core professional health services with the capacity to deal with complex chronic cases. This type of responsibility cannot be shifted to lay health workers.

Possibly these challenges can best be addressed through supervision, by organising training and by elaborating good policies and procedures to govern the system. More research is needed to explore the potential of this innovative approach. But it is already clear that PENs are a worthwhile investment as part of a health system response to the needs of one million Cambodian citizens affected by diabetes and high blood pressure.

**Further reading**

**Links**
- www mopotsyo.org
Why health systems are failing

The forgotten link

Both 1978 and 2000 were watershed years for world health. The conference of health leaders in Alma Ata in 1978 and the United Nations Assembly in 2000, where the Millennium Declaration was adopted, stand out as the two international gatherings that threw global health into the spotlight and put it on the development agenda.

In Alma Ata, health leaders from around the world vowed to design and build national health systems on the three pillars of equity, intersectoral collaboration and community participation. Yet despite the good intentions and the promises, more than 20 years on, we still have few national health systems based on equity and collaborative community involvement. And sadly, most countries will not meet the health-related Millennium Development Goals (MDGs) by the 2015 target date.

Fatal error

The World Development Report, published in 1993, and the World Health Report, published seven years later, turned out to be highly detrimental to achieving the health systems envisaged at the 1978 and 2000 conferences. These two reports advocated the mapping and measuring of macro indicators – based in most cases on projections. They made one fatal error. They ignored the role, relevance and contribution of district health systems in the performance of any national health system.

The poorly judged focus of these two reports unwittingly undermined the potential of the district health systems – which are crucial to any national health system. This is especially the case in low- and middle-income countries (LMICs). Problems that arose from overlooking the district health systems were further compounded when big funders started distributing millions of dollars to secure their own specific health priorities. No doubt, this funding provided poor countries with additional funds, but in some cases, it seriously undermined and distorted – and in some cases even destroyed – national health systems.

Centralised policies and plans prepared with the assistance of international donors are important – but policy makers did not consider the health workers who run health services at and below district level. They were equally remiss in not visiting primary care facilities to see the situation on the ground. They failed to grasp that it is not possession of the best equipment and the most thoroughly prepared plans that wins wars. In the end, it is the motivation and morale of the troops that determines outcomes. Regrettably, national health leaders in general, and global health players in particular, failed to recognise the role, relevance and contribution of district health systems – and they completely underestimated how important leadership here is to achieving the MDGs.

A precondition

There is sufficient evidence from LMICs that integration and collaboration at the primary health care level has significantly improved access to health services as well as quality and coverage. Improving the performance of district health systems, especially their leaders, is a precondition for improving national health systems.

It is precisely at the district level that all the vertical programmes naturally come together – and ideally, integrate. This is where community needs should be assessed and translated into actions. And it is the logical level for effectively managing, supervising and supporting primary care services – which range from preventative to curative services. National health authorities and governments must recognise the significance and potential of district health systems in achieving the MDGs. Just as importantly, they must start to invest in a capable and competent health workforce and provide the financial resources needed to build and maintain a health infrastructure. Without these fundamental elements, the existing vicious circle will persist and millions of taxpayers’ dollars will continue to be injected into the fragile health systems of developing nations without obtaining the desired results. And the health-related MDGs will remain beyond our grasp.
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