

## Community involvement in dengue vector control

Is effective but the contribution of human behaviour needs to be defined



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**John P Elder** professor of public health, Graduate School of Public Health, San Diego State University, San Diego, CA 92182, USA  
[jelder@projects.sdsu.edu](mailto:jelder@projects.sdsu.edu)

**Kara Ballenger-Browning** research manager, Graduate School of Public Health, San Diego State University, San Diego, CA 92182, USA

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The effectiveness of community health programmes can be evaluated within the “REAIM” framework (the reach, efficacy, adoption, impact, and maintenance of the programme).<sup>1</sup> Programmes for the control of *Aedes aegypti* mosquitoes and prevention of dengue fever are deemed successful if they reach a large proportion of an extensive audience, are effective under ideal conditions, are adopted by most of the community, have a confirmed effect on human behaviour related to control of the vector, and can be maintained over a sufficiently long time.

In the linked cluster randomised trial, Vanlerberghe and colleagues assess the effectiveness of community involvement in the control of the dengue vector in Guantánomo, Cuba.<sup>2</sup> The trial randomised 32 districts (“circumscriptions”) of about 2000 inhabitants each to control and intervention clusters. The routine *Aedes* control programme (entomological surveillance, breeding site reduction, selective killing of adult mosquitoes, and health education) was in place in the control clusters, whereas in the intervention clusters this programme was combined with a community based environmental management approach. As part of this last approach, dengue control activities were identified, designed, planned, and executed in the community, with the support of newly set up grassroots “community working groups.” The intervention significantly improved outcomes (as measured by household indices, Breteau indices, and number of pupae per inhabitant) at one year.

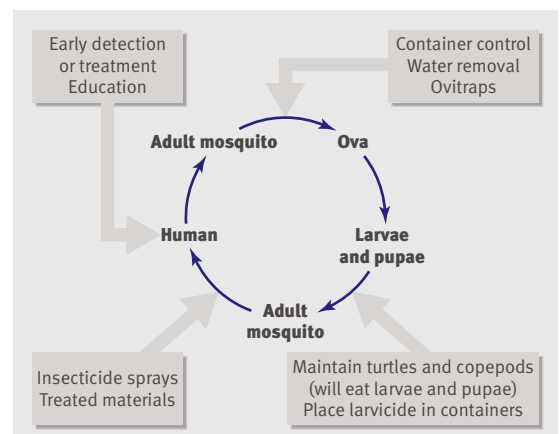
The intervention was also successful in terms of community involvement. The strategy was controlled by relevant local stakeholders, a local steering committee was formed, formal community working groups were formed at grassroots level, coordination mechanisms were established between these groups, health services and local government structures were set up to strengthen the intersectoral coordination, and the strategy was coordinated with the existing local vector control programme.

Vanlerberghe and colleagues implemented a comprehensive integrated abatement programme with both vertical and horizontal components as recommended by previous authors.<sup>3-5</sup> However, community based grassroots movements, community involvement, and community organisation in themselves do not kill mosquitoes. Instead, this is accomplished through control of containers, spraying, hanging and using bed nets, and other direct human actions, which effectively link community involvement to ultimate

abatement. In other words, although we can be fairly certain that the Guantánomo programme was effective, we do not know what specific human actions were responsible for the effect (or which ones were ineffective or not even attempted). Other societies have different forms of national and local organisation, which makes it important to identify exactly which changes in human behaviour produced the impressive results. Without this knowledge it seems unlikely that even in Guantánomo the intensive effort will be maintained in the long term.

The stages of dengue transmission from vector to human present several possibilities for behavioural intervention, through horizontal or vertical programmes, or a combination of the two. The figure shows how specific human behaviours can interrupt the transmission cycle. By pinpointing the direct activities that affect mosquito control, unnecessary components of the intervention can be eliminated. Each of these actions has different implications for the reach, adoption, effect, and maintenance of the programme, and these implications may vary among localities, regions, and nations.

Vanlerberghe and colleagues’ trial has several weaknesses. Unfortunately the trial was stopped early after a crude interim analysis by the provincial health authorities, which resulted in the intervention being extended to the whole city of Guantánomo. This meant that the full potential of the community mobilisation programme had not been realised when the study was ended. Despite the extension of the intervention, maintenance of the abatement programme was merely assumed, and this may compromise the longevity of the effect. Although



Human actions to reduce transmission of dengue fever vectors

the communities identified a need for vector control and people helped vector control workers identify breeding sites, routine surveillance during the study period yielded no dengue activity; thus, the perceived value of efforts to sustain mosquito populations may be lost over time. In addition, no material incentive was given to the members of the community working group, which may reduce their willingness to cooperate in the long term. Finally, the researchers acknowledge that this highly integrated intervention was possible only because an established vector control programme was in place before the study started. This type of study design may not be suitable in places with less centralised governments.

Ultimately, finding cost effective and sustainable solutions is the goal for dengue vector control

programmes. Vanlerberghe and colleagues provide an excellent model for future research in regions with well organised communities.

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## Independent midwifery care versus NHS care in the UK

A need to balance risks, benefits, and choice



BSIP/VILLAREAU/SPL

A commitment to quality and safety, together with choice and continuity of care, underpins current directions for the reform of maternity services in the United Kingdom and Australia.<sup>1,2</sup> Recognition that midwifery-led care will be central to these changes, with options for women to give birth at home, has stimulated research about the safest and most effective models of care. Symon and colleagues compare clinical outcomes between pregnant women accessing an independent midwife and women using the National Health Service (NHS).<sup>3</sup> They found that obstetric risk factors were an important predictor of perinatal outcomes. Unwittingly the authors illustrate pitfalls involved in attempting to match disparate datasets. Nevertheless, they confirm some of what we already know about the benefits of continuity models of midwifery care and the important role of risk selection in achieving good perinatal outcomes.

Symon and colleagues attempted to match two groups of women, which is predictably problematic because women choosing independent midwifery care were a self selected group.<sup>3</sup> Unfortunately, the matching process was largely unsuccessful, with numerous important differences remaining, including nutritional status, smoking status, alcohol consumption during pregnancy, geographic location of residence, obstetric risk from previous pregnancy, medical complications during current pregnancy, incidence of breech presentation, differences in preterm birth rates, and incidence of low birth weight.<sup>3</sup> These differences should not be present if the matching process was successful in producing comparable groups. Substantial data gaps, including circumstances regarding transfers of women from home to hospital, leaves discussion about perinatal death hazardously speculative. Further, odds ratios relevant to deaths are implausibly large relative to unadjusted counterparts, with unstable estimates produced because of limited variability in the dependent variable (few perinatal deaths), and should be discounted.

Another problem relates to the generalisability of the results. Of the 2.8 million births in the UK between 2002 and 2005, independent midwives attended only 0.0007% of UK births, and only 2.2% of all home births.<sup>4,7</sup> Given this tiny percentage, findings of this study should not be applied to the general population of home births, or to the population of midwives who attend home births.

The study shows the difficulties researchers face in trying to compare outcomes between independent midwifery services and NHS care. Currently available data do not capture the important differences between the two groups of women. Moreover, it would be neither feasible nor useful to attempt to conduct a randomised controlled trial, again due to the problem of self selection.

If researchers and policy makers are serious about comparing independent midwifery care with NHS care, they need to recognise that women choosing the former are not typical of the general population of women giving birth, and identify these differences. More comprehensive data from the independent midwifery sector and NHS are required to capture these differences.

Despite methodological flaws, Symon and colleagues' results are consistent with international literature about benefits of midwifery-led care, including planned home birth for low risk women.<sup>8-10</sup> Women attended by an independent midwife were more likely to go into labour spontaneously, less likely to require pharmacological analgesia, more likely to achieve unassisted vaginal birth, less likely to give birth prematurely, and more likely to breast feed.<sup>3</sup> Moreover, for these "low risk" women, as in other studies, no significant differences in perinatal mortality are found to offset these outcomes. However, for women who choose independent midwifery care or home birth in high risk situations (such as twin pregnancy, breech birth), there seems to be a higher risk of perinatal mortality.

An Australian study published in the *BMJ* over 10 years ago raised similar issues about birth at home for women with breech presentation and twins, finding that

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**Allison Shorten** senior lecturer, School of Nursing, Midwifery and Indigenous Health, Faculty of Health and Behavioural Sciences, University of Wollongong, NSW, Australia 2522  
ashorten@uow.edu.au

**Brett Shorten** statistical consultant, Informed Health Choices Trust, NSW, Australia

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higher mortality occurred in these higher risk scenarios.<sup>11</sup> It was suggested that women may have felt they had no alternative other than to give birth outside of mainstream services because of lack of choices within hospital settings, limited opportunities for physiological birth, and policies directing birth by caesarean section for breech and twins.<sup>11</sup> Similarly in the UK, there is an apparent inability within public maternity services to meet the needs of some women who engage private midwifery services.<sup>12</sup> The question is whether some women who employ independent midwives will ever be able to find what they need within mainstream services and whether independent midwives would feel comfortable working within NHS guidelines if it meant limiting choices for the women they know well as individuals and care for in partnership.

With professional indemnity insurance for independent midwifery care and contracting arrangements with the NHS being explored for independent midwives,<sup>3</sup> it will be important to examine strategies for better supporting women who, despite being assessed as high risk, may perceive that they have little choice other than to opt for services independent of the NHS. This lays down the challenge for mainstream services to move beyond the rhetoric of policy documents and provide the type of services that women demand.

Savings that come from promoting physiological childbirth and reducing unnecessary and potentially harmful birth interventions could help fund restructuring of services required to enact new maternity frameworks, as well as making available services more attractive to women who currently opt for independent midwifery care. Documented attributes of such care—including choice, continuity of care, and partnership with a known midwife—should be expected of all maternity services. However, historically women who have been unable to access models of care that can genuinely provide this

look to independent midwives to support them in meeting their individual needs.<sup>3 12</sup>

It is hoped that in the future most women will have the opportunity to be supported throughout their pregnancy, childbirth, and post partum by a known and trusted midwife. Health systems will need to cultivate models that foster open referral and consultation between professional groups and, most importantly, make genuine efforts to include women in decision making. Collaboration within and between disciplines will increase the likelihood of providing higher quality, safe services for women and families.

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## HIV infection in older people

Increased longevity as a result of HAART raises new questions about the best treatment

**Kelly A Gebo** associate professor of medicine, epidemiology, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD 21287, USA

[kgebo@jhmi.edu](mailto:kgebo@jhmi.edu)

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The median age of people living with HIV in the developed world is increasing because of improved longevity from highly active antiretroviral therapy (HAART) and an increase in new HIV infections in older people.<sup>1</sup> The prevalence of HIV in older people will continue to increase over the next decade, and around 50% of people living with HIV will be older than 50 by 2015.<sup>2</sup> Although 50 years is not a common threshold for advanced age, early in the HIV epidemic the Centers for Disease Control and Infection identified HIV infected patients aged 50 or more as a separate group because the mean age of infected people was then much lower than 50.

In the early days of the HIV epidemic older patients had higher morbidity, higher mortality, and

a shorter AIDS free survival than younger people with HIV. Some of this disparity was caused by late diagnosis in older patients as a result of inadequate screening by healthcare providers<sup>3 4</sup> and denial of high risk behaviours by older patients.<sup>5</sup> With HAART, older people with HIV are more likely than their younger counterparts to achieve virological suppression, although they may have a lower immunological response, as measured by reconstitution of CD4 positive cells. As expected, mortality is higher in older people living with HIV than in younger ones.<sup>6-8</sup> Whereas HIV and other coinfections like tuberculosis and malaria are leading causes of death in the developing world, in developed countries the causes of death in people with



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HIV treated with HAART have changed from HIV related complications to non-HIV related causes.<sup>9</sup>

HAART has several potential side effects—it is hepatotoxic and can cause dyslipidaemia, impaired glucose metabolism, pancreatitis, neuropathy, and lactic acidosis. Older patients may be more likely to develop toxicity than younger patients. In addition, older people are more likely to have comorbidities such as cardiovascular disease, renal disease, and diabetes that complicate the use of HAART. They are also at higher risk of bacterial and viral infections. Thus, a balance must be reached between the need to treat older people early in the course of their disease to preserve immune function and the potentially greater risk of cumulative toxicity from HAART. Other factors to consider when making treatment decisions are that older people with HIV have a higher prevalence of alcohol and drug use than their uninfected counterparts and come mainly from ethnic minorities.

Unfortunately, we have little evidence to help us decide on the optimum treatment regimen in older people. Most randomised controlled trials of antiretroviral drugs exclude older patients or those with comorbidities. There are few data on the effect of specific components of HAART (boosted protease inhibitors versus non-nucleosides) in terms of effectiveness or toxicity by age group. We need more data about when HAART should be started in older people compared with younger ones, the tolerability of HAART, drug-drug interactions, short term and long term toxicity, and interactions with other non-HIV drugs by age group. Until then current guidelines for HAART regimens should be applied to older people with HIV.

We do not know whether older people taking HAART have higher rates of comorbidities than age matched HIV infected controls not on HAART. Although HAART may improve immune function and reduce the development of certain comorbidities, such as malignancies and complications of hepatitis, HAART may concomitantly increase the incidence of other comorbidities, such as hyperlipidaemia

and cardiovascular disease. Future studies need to evaluate in what order comorbidities should be co-managed in older people with HIV. For example, do comorbidities affect mortality so much that they warrant more aggressive surveillance and treatment than HIV in HIV infected patients? To answer this question we must determine the prevalence and incidence of comorbidities and their effect on HIV related clinical outcomes in older patients.

Care should be started sooner rather than later in older patients with HIV. Recent data suggest that waiting until the CD4 count is below 350 cells/mm<sup>3</sup> is too late,<sup>10,11</sup> and that it may be better to start when the CD4 count is still above 500 cells/mm<sup>3</sup>.<sup>11</sup> When choosing the most appropriate HAART regimen in older patients, comorbid disease such as renal or hepatic insufficiency must be taken into account and drugs that are likely to cause toxicity or exacerbate underlying comorbidities must be avoided. After starting HAART in older patients, close screening for both effectiveness and toxicity is essential.

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## The economic crisis and suicide

Consequences may be serious and warrant early attention

The past few years have seen steady progress towards the Department of Health's target to reduce suicide in England ([www.lgbtmind.com/content/suicide-prevention-annual-report-2007.pdf](http://www.lgbtmind.com/content/suicide-prevention-annual-report-2007.pdf)). However, we are now amid a serious financial crisis, with frequent media reports linking the recession to suicides. What is the likely impact of the crisis on suicide and what can be done to offset any adverse effects?

The crisis is expected to lead to a sharp and sustained rise in unemployment, and observational studies indicate that unemployed people are at

2-3 times more risk of suicide.<sup>1</sup> Although this high risk is partly because people with psychiatric illness are at greater risk of losing their jobs,<sup>2</sup> even in people with no record of serious mental illness unemployment is still associated with about a 70% greater suicide risk.<sup>3</sup> Also, prospective studies with repeat measures of employment and mental health show that unemployment has a causal influence on depression and suicidal thinking.<sup>4,5</sup>

Longitudinal ecological research shows that rises in unemployment in the United Kingdom in the

**David Gunnell** professor of epidemiology, Department of Social Medicine, University of Bristol, Bristol BS8 2PS  
d.j.gunnell@bristol.ac.uk

**Stephen Platt** professor of health policy research, School of Clinical Sciences and Community Health, University of Edinburgh, Edinburgh EH8 9AG

**Keith Hawton** professor of psychiatry, Centre for Suicide Research, University Department of Psychiatry, Warneford Hospital, Oxford OX3 7JZ

**Competing interests:** DG and KH are members of the Department of Health's (England) National Suicide Prevention Advisory Group. SP is trustee of Samaritans.

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1920s and '30s were associated with steep rises in male suicide.<sup>6</sup> Similar effects were seen in other Western nations. A recent analysis of the Asian economic crisis (1997-8) indicated that it led to about 10 000 suicides in Hong Kong, Japan, and Korea.<sup>7</sup>

Improvements in welfare support and other changes since the 1930s may offset the impact of the recession on suicide. Evidence for the benefit of more welfare support comes from the contrasting trends in suicide among male youth in New Zealand and Finland during the recession of the 1980s and '90s. Although unemployment rose to a greater extent in Finland than New Zealand, increases in male suicide were smaller in Finland where, in contrast to New Zealand, social spending rose as a percentage of gross domestic product.<sup>8</sup> Similarly, an analysis of changes in suicide rates in the United States indicated that reductions in welfare spending were associated with rises in suicide.<sup>9</sup>

Job loss is not the only stress during economic crises. People fear losing their jobs and experience financial difficulties. In a recent meta-analysis job insecurity was associated with 33% more risk of common mental disorder.<sup>10</sup> In Hong Kong 24% of all suicides in 2002 concerned people in debt.<sup>11</sup> In countries without comprehensive healthcare provision, people most in need of mental health services may be less inclined to access them because of the costs involved.

Several approaches could be taken to offset the likely impact of the recession on suicide. Firstly, and most crucially, are social policy measures to create new jobs, adequate welfare benefits for unemployed people, and provision of alternatives to early entry into the labour market, such as increasing the number of university places. Although these strategies lie outside the health sector's control, it is nevertheless essential for the royal colleges, representatives of other healthcare organisations, and academics to remind the government of the health impact of recession and its duty of care to the electorate.

Secondly, employers should be reminded of the potential impact of redundancy on mental health and suicide risk and ensure workers are directed to appropriate sources of advice. Likewise, trade unions should be urged to fulfil their duty of protection for members in and out of work. The Department of Health, primary care trusts, and health boards should ensure that information is available for people who lose their jobs and help employers and trade unions to deliver advice. In the US, for example, the Substance Abuse and Mental Health Services Administration has provided helpful advice for affected people and their families on dealing with the impact of financial difficulties on mental health ([www.samhsa.gov/economy](http://www.samhsa.gov/economy)). Furthermore, the families, friends, and communities of those affected by unemployment should be reminded of its impact on an individual's emotional wellbeing and encouraged to give support. Special attention

should be paid to the mental health needs of people aged 16-24 years: this is the age group whose labour market security is likely to be most affected by the economic downturn.

Thirdly, community support agencies should be adequately resourced to help people with problems arising from job loss, debt, and mortgage arrears. The UK government's recent £13m (€15m; \$20m) investment in services to help unemployed people who have mental health problems, including a plan to further increase the number of psychological therapists, should therefore be welcomed. In a randomised trial, group cognitive behavioural therapy delivered to unemployed people was shown to facilitate return to work and improved mental health,<sup>12</sup> but the success of any such approach will depend on job availability. Lastly, the government and primary care trusts should work with the media to prevent overly simplistic and high profile reporting of the suicides of business executives, financiers, and unemployed people. Most people who lose their jobs or whose businesses fail do not kill themselves, and there is convincing evidence that media reporting may provoke copycat suicides.<sup>13</sup>

The evidence base for the effectiveness of these possible preventive approaches is modest at best. In the absence of such evidence, commonsense approaches are required. Research should be commissioned to investigate measures to support the people affected by the economic crisis while we wait to see the full extent of its impact on the nation's health.

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## Confidentiality and sharing health information

Rights to health care should be balanced with duties to share information for reasonable purposes

**Julian Sheather** ethics manager, Medical Ethics Department, British Medical Association, BMA House, London WC1H 9JR

[jsh Heather@bma.org.uk](mailto:jsh Heather@bma.org.uk)

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It is hardly contentious to say that there is a sea change taking place in the way health information is managed in the NHS. The government's vision—if not its practice—is clear: the power of information technology will be fully unleashed to support the provision of 21st century health care ([www.connectingforhealth.nhs.uk](http://www.connectingforhealth.nhs.uk)). The flow of high quality, up to date information, accessible to patients and immediately available to appropriate health professionals, will create a virtuous circle: clinicians will be able to do a better job, and patient outcomes will improve. The world being what it is, the government's plans have not met with unanimous applause. Setting to one side the public sector procurement nightmares, the widespread fear of the unknown, and unease about the uses to which big government will put the data, the changes have nevertheless given new energy to a long running debate: who should have control of personal information, and what should be its limits?

The idea that personal health information should be shared among health professionals who are directly involved in providing care to the patient is not controversial. Consent to this sharing is a presumption of ordinary health care. Problems begin when those data are required for ancillary uses such as audit, research, care planning, or accounting. The current approach is confused. On the one hand, there is a perception in the research community that the principle of respecting confidentiality is a major impediment to good quality research. For example, as a result of the requirement to seek consent to identify individuals for potential enrolment in research—what has been called “consent for consent”—improvements in health care and technology are said to be withering on the vine. Given that different social groups respond differently to requests for them to participate in research, a consent based approach also leads to fragmentation and bias.<sup>1</sup> On the other hand, custom and practice support the routine exchange of identifiable health information for such secondary purposes as planning and audit. Both these uses are important and both support substantive public aims, but the approach, in practice if not in law, is divergent. Adding to the confusion is the fact that the area is governed by a bewildering patchwork of common law, statute, and professional guidance.<sup>2</sup>

In some respects, these differing approaches have something to do with trust and history. The organ retention scandals at Alder Hey led to a collapse in public trust and, as a result, increased scrutiny of medical research.<sup>3</sup> In view of the possibilities that a central national health database presents, in terms of individual and public benefits, and in terms of potential threats from data leakage, a coherent approach based on sound principles is surely needed.

Although the terms of this discussion are often shrouded in jargon, and muddled by factional interests and legal complexity, at heart it is an ethical debate requiring a balancing of important interests. The primary purpose for which individuals share sensitive personal information is the provision of health care. In the absence of either a legal obligation or an overwhelming public interest—preventing a terrorist outrage, for example—disclosure for other purposes is ordinarily governed by consent. This reflects the underlying belief that, where patients do not believe that their health information will be kept confidential, they will not disclose sensitive personal information to appropriate health professionals, and the health of individuals and the public will suffer.

Confidentiality therefore serves a substantial public interest. A number of other significant public interests are in tension with this. A centralised health database offers enormous potential for research, which will itself feed into potential future health benefits. How should these interests be traded against each other? The provision of high quality health care also requires large data flows for planning, audit, and accounting. If an absolute requirement for consent impedes this process, patient care is affected, and the projects for which the original data were gathered begin to suffer. Given the importance of these competing interests, and that the legal waters are muddled, perhaps it is time for a complete overhaul.

The *Data Sharing Review Report* by the Information Commissioner Richard Thomas and Mark Walport, head of the Wellcome Trust, was an interesting step forward.<sup>1</sup> Unfortunately the government's permissive response in the first draft of the Coroners' and Justice Bill, subsequently amended, put to flight many who might otherwise have been sympathetic.<sup>4</sup> Recent work by the General Practice Extraction Service, which has been looking at data havens and honest brokers to ensure appropriate data governance, is clearly moving in the right direction, but more work is needed.<sup>5</sup>

The issues are clearly important and complex, so here is a long shot for the future: perhaps in time we could seek to balance rights to health care with duties to share information for reasonable health related purposes. Health could be a true contract, a system from which we all benefit and to which we all contribute, in kind if not in cash.

1 Thomas R, Walport R. Data Sharing Review Report. 2008. <http://www.justice.gov.uk/reviews/docs/data-sharing-review-report.pdf>.

2 General Medical Council. *Research: The role and responsibilities of Doctors*. London: GMC, 2002.

3 Royal Liverpool Children's Inquiry Report 2001. <http://www.rlcinqury.org.uk/download/index.htm>.

4 Coroners and Justice Bill 2008-09. <http://services.parliament.uk/bills/2008-09/coronersandjustice.html>.

5 NHS Information Centre. General Practice Extraction Service (GPES). <http://www.ic.nhs.uk/services/in-development/general-practice-extraction-service>.