

Using 'Freakonomics' to Understand Human Behaviour

Hands up all those who, like me, do not have a full CD survival kit tucked away in their garage. Probably the same number who know about but ignore healthy living choices and a balanced diet. We all know what is good for us but have little or no difficulty in rationalising taking a little extra of what tastes good; or in the ways we can get by with the stuff we do have in our garage or cupboards.

New insights from a comprehensive study of over 1,000 U.S. adults reveal that Americans largely ignore healthful food choices, as well as diet and exercise guidelines. In "*Wellness in America: Lifestyles Spell Disaster*" from Landis Strategy and Innovation, the critical role of stress in the failure to achieve personal health and wellness goals is explored and documented.

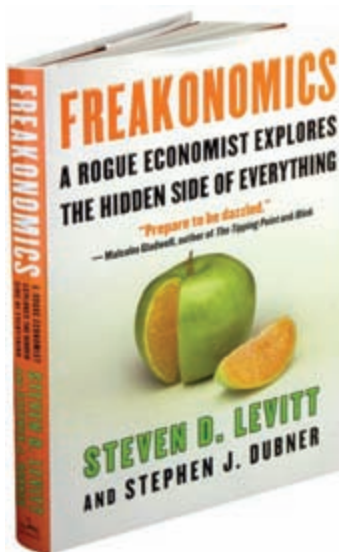
"Solutions lie in understanding the cultural and behavioural limits of Americans," says Chris McCarthy, the author of the consumer study. "One of the key findings of the study is the relationship of stress in goal achievement or failure, especially where health and wellbeing is concerned. That stress, inherent in American lifestyles, leads to a resulting need for comfort, which in turn is the willpower buster."

The solutions and recommendations in "Wellness in America" are particularly relevant, given the findings of the newly released "*F as in Fat: How Obesity Policies Are Failing in America*," which found that during the past year no states have reduced their obesity rates. The Trust for America's Health sponsored study showed that residents of an additional 31 states have actually increased their girth. A study in New Zealand would produce similar findings.

Now we could look to psychologists for some of the answers to the question of why we do not do what we know is good for us, and those planning for Exercise Ruaumoko are doing just that. It might be more fun however to turn to modern economic theory. Not so long ago, economists not named Milton Friedman mostly kept to themselves, impressing each other with their inscrutable theories. Now they're the pop stars of academia. Spurred on by *Freakonomics*, the 2005 best seller by Steven Levitt and Stephen Dubner, economists realized that, if only they can learn to communicate normally, they have the tools to explain people's lives to them. Like, why won't my teenage daughter wash the dishes?

Among this new crowd of economists, Tyler Cowen, a 45-year-old professor at George Mason University, is a cult hero, insofar as he co-runs an influential blog called marginalrevolution.com. You don't need to be an economist to enjoy it. There are only a handful of posts a day, but the range of ideas is awe-inspiring. Cowen weighs in on everything from "wage compression"—when bosses give raises at a rate below productivity gains—to household pets, arguing that "if you must support the life of either a cat or a dog, choose the undervalued cat." (Dogs' friendly disposition increases the odds of their being well-cared for by other

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people, while the natural diffidence of cats makes them more susceptible to neglect).

In his latest book, *Discover Your Inner Economist: Use Incentives to Fall in Love, Survive your Next Meeting, and Motivate Your Dentist*, Cowen attempts to put serious economics in the service of self-help. He starts by arguing against money as the prime shaper of human behaviour. "The critical economic problem is scarcity," he says. "Money is scarce, but in most things the scarcity of time, attention, and caring is more important."

In a highly discursive style, Cowen rockets from topic to topic, covering everything from how to talk your spouse out of buying a warranty on a new purchase (sound economics is on your side, but the cost to marital harmony is likely to exceed the cost of the warranty; so in other words, don't fight over peanuts) to the reason a Malaysian woman spent 32 days in a glass room filled with 6,000 scorpions (she was attempting to "signal" her status in the world).

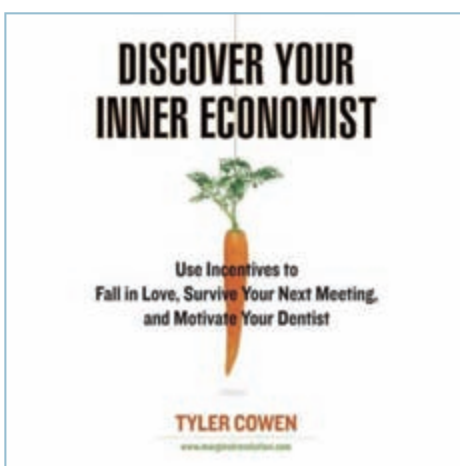
The best sections of the book concern tactics for maximizing one's cultural consumption, or what amounts to imitating Cowen. He lists eight strategies for taking control of one's reading, which include ruthless skipping around, following one character while ignoring others, and even going directly to the last chapter. Your year eight English teacher would faint. But the principle here is valuing the scarcity of your own time, which people often fail to do. It works for movies, too - Cowen will go to the multiplex and watch parts of three or four movies, rather than just sit through one. Why wait for a highly predictable ending when a fabulous scene might be unfolding in the movie playing next door?

"We are all Keynesians now," President Nixon is said to have declared in 1971. His words affirmed the influence of John Maynard Keynes, the famed British economist who decades earlier had argued that smart governments could fine-tune a nation's economy and avert major slumps by manipulating taxes and spending.

These days, though, big-think economic theories feel a little passé. Why worry about inflation or unemployment or budget deficits when you can use economics to figure out why hotel minibars are so expensive? Or why people pay for gym memberships they rarely use? Or which first name will maximize your newborn's lifetime earnings?

We may have been Keynesians once, but times change. We are all Freakonomists now.

The Inner Economist may not be the best organized or most graceful "freakonomics" book written, but it could prove the most useful of the lot, especially if you share the author's interests. The key to tapping your Inner Economist, Cowen explains, is the ability to identify people's true incentives, which are usually more than money. Suppose you want your daughter to help out around the house by washing dishes. Should you pay her?



Bad idea, Cowen warns. If you explain that washing dishes is her family responsibility, she may not always obey, but at least she'll feel some obligation. Bring payment into the picture, and her motivation changes. It becomes a market transaction, writes Cowen, and "the parent becomes a boss rather than an object of deserved loyalty." Your daughter will be less likely to reach for the Palmolive and more inclined to find part-time work that earns respect from her friends. "Expect dirtier dishes," Cowen concludes.

If you're visiting an art museum, your Inner Economist has tips to improve your experience. In each room, decide which painting you'd steal. "This forces

us to keep thinking critically about the displays," Cowen writes. "If the alarm system was shut down and the guards went away, should I carry home the Cezanne, the Manet, or the Renoir?" If imaginary theft gives you qualms, pretend you're shopping. "We are probably better trained at shopping than looking at pictures," Cowen explains. How would you spend \$500,000 at the Met? The smaller your imaginary budget, the better chance you'll avoid famous paintings and find interesting, lesser-known works.

Cowen also offers techniques for fine dining. At upscale restaurants, many people mistakenly order items they could easily cook at home. Instead, Cowen suggests, "order the item you are least likely to think you want." Chances are, you'll be happily surprised.

Cowen encourages readers to disregard so-called sunk costs - the money or time we've already spent on something - and to make decisions based on future prospects. If a waiter doesn't know what entrée to recommend, walk out of the restaurant. If a movie is boring, leave halfway. If the book you're reading isn't "the best possible book I can be reading right now," find another.

That's all very well, I suppose. But what if finding parking near another restaurant could consume half your evening? What if you're at that movie with a date? And what if that book you're reading is, say, *Discover Your Inner Economist*?

No doubt the Freakonomics craze will pass by. Sure, it's fun to use economic principles to unravel everyday riddles. But cutting-edge researchers are going further, deploying the tools of psychology and neuroscience to probe economic behaviour, using imaging technology to map our brains and understand how we invest, buy and save. If only they could help out with our eating habits and emergency preparedness. Now that would be real freaky. #

Pandora and Bengkulu: Art imitating reality

In a perverse way, the timing could not have been better. Just as we were about to launch Exercise Pandora (our major earthquake exercise) yet another undersea earthquake off the west coast of Sumatra created mayhem and misery for that troubled land. Data and photographs from Bengkulu, the town closest to the epicentre, added a solid measure of realism and introspection to our Pandora discussions and decision making.

The 8.4 magnitude quake struck off the coast of western Sumatra on Wednesday the 12th and has been followed by at least 40 big aftershocks and several tsunami warnings. At least two areas in Bengkulu province were hit by tsunamis. About 100 houses were damaged by a 3 metre wave in Serangai, 70 km north of Bengkulu. There were no casualties but some houses were shifted about 10 metres by the water and tree trunks and large logs littered the main road. Padang Bakung, a village two hours drive south of Bengkulu, also suffered a tsunami that inundated houses 60 metres from the coast. The village chief commented that their tsunami siren did not work because the earthquake had knocked out its power supply.

The official toll is reported as 23 dead and 88 injured. Compared with the 5000 plus who died in last years Yogyakarta quake, it seems the people of Bengkulu have escaped lightly - although photographs of makeshift hospital activity suggest the number injured may be rather under reported. More than 22,000 houses in the area either collapsed or were damaged. Victims needed food, cooking implements, tents and medicine.

Despite rain, many people slept out in the open, either because their homes had been destroyed or because they were too scared to return home in case of further quakes. "There is nothing we can do, we can't stop earthquakes," said Rina Fitrie, a mother of two who had set up a tent in front of her house which she was sharing with neighbours.

"But I worry about my house falling down. I worry about my kids. I can't keep running outside every time the ground shakes. It's easier to just stay out here."

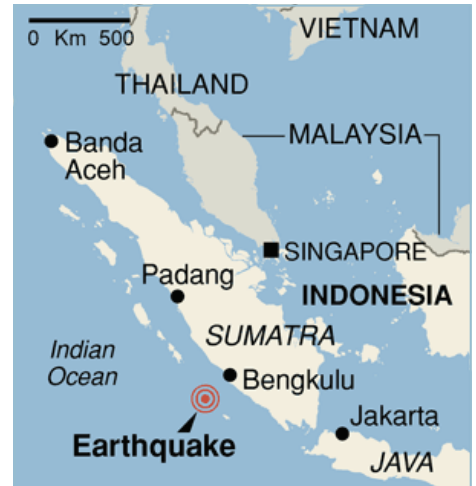
Aid was quickly offered and delivered from neighbouring provinces, government agencies, and international organisations. The U.N. Office for Coordination of Humanitarian Affairs said that its initial assessment was that the Indonesian government could cope.

In Bengkulu dozens of buildings were damaged, but few collapsed completely. The greatest damage was to the city's hospital, which moved its operation to tents in the parking lot.

"Luckily, I think most people only had small injuries and didn't come to the hospital," said a doctor. "I don't know if we could have handled many more patients in this situation." Crews of volunteers set out to clean up the debris in the hospital but few patients were interested in returning inside while aftershocks continued to rattle already cracked walls.

Perhaps the biggest lesson we can take from this event for our earthquake planning is the need for easy access to tents. It might not be cost efficient to buy them, just in case, but we it makes good sense to have a hot line to stores that stock them. While our buildings might withstand the shock, getting patients and staff to work inside them during a flurry of after shocks is perhaps a tad more difficult.

#



Uniforms and Workwear: short sleeves are in – ties are out

The possibility of transmitting infections via uniforms is an important issue for employers, staff and patients. In England, a Department of Health Working Group on Uniforms and Laundry has put together an evidence based guideline on the wearing and laundering of uniforms. The work considered uniforms only and did not extend to Personal Protection Equipment (PPE). The guidelines are available on line at www.dh.gov.uk/publications

The guidelines are built on two wide-ranging literature reviews carried out by Thames Valley University, plus further empirical research done by University College London Hospital NHS Trust (UCLH). The work also had input from professional healthcare groups and trade unions.

Thames Valley University carried out two literature reviews. The first looked at evidence around the role of uniforms in the transfer of infections, and the efficacy of laundry practices in removing contaminations. The second, considered how uniforms affect the image of individuals and organisations; and the symbolic meanings that people attach to uniforms and work wear.

The empirical evidence at UCLH looked at the removal of deliberate contamination from swatches of uniform material when washed at different temperatures, with and without the use of detergent. Smaller sub-studies looked at the removal of contamination from material held in the pockets of uniforms, and at the removal of contaminants during the uncontrolled washing of uniforms in a nurse's home laundry.

Conclusions:

The main conclusions drawn by the Working Group, using a combination of expert opinion, literature reviews and scientific study, are:

- There is no conclusive evidence that uniforms (or other work clothes) pose a significant hazard in terms of spreading infection.
- It seems that the public believe there is a risk. They do not like seeing hospital staff in uniform away from the workplace.
- All the components of a properly designed and operated laundry process

contribute to the removal or killing of micro-organisms on fabric. It is likely that dilution/flushing is the main contributor.

- A ten-minute wash at 60C is sufficient to remove most micro-organisms. In tests, the only organisms remaining were a small number (less than 10%) of *Clostridium difficile* spores. Microbiologists carrying out the research advise that this level of contamination is not a cause for concern.

- Using detergents means that many organisms can be removed from fabrics at lower temperatures. MRSA is completely removed following a wash at 30C

- There is no conclusive evidence of a difference in effectiveness between commercial and domestic laundering in removing micro-organisms.

Good Practice Examples

Based on the literature reviews and empirical evidence, the Working Group devised a set of good (and poor) practice examples. Whilst the emphasis is on work wear for those who have direct patient contact, much of it applies to other staff, including non-clinical staff.

The Working Group also identified examples of accepted good (or poor) practice that are based on informed common sense rather than scientific evidence. That "common sense" reflects a culture that is a little different to ours.

Evidence Based examples of good and poor practice

It is good practice to:

- Dress in a manner which is likely to inspire public confidence because people may use general appearance as a proxy measure of competence.
- Wear short-sleeved shirts/blouses and avoid wearing white coats when providing patient care because cuffs become heavily contaminated and are more likely to come into contact with patients
- Change into and out of uniform at work because while there is no evidence of an infection risk from travelling in uniform, patient confidence may be undermined

- Cover uniform completely when travelling to and from work because while there is no evidence of an infection risk from travelling in uniform, patient confidence may be undermined

- Change immediately if uniform or clothes become visibly soiled or contaminated because visible soiling or contamination might be an infection risk, and is likely to affect patient confidence

- Wash uniforms at the hottest temperature suitable for the fabric as a wash for ten minutes, at 60C, removes most micro-organisms

- Keep finger nails short and clean because long and/or dirty nails can present a poor appearance and long nails are harder to keep clean

It is poor practice to

- Wear neck-ties (other than bow-ties) in any care activity which involves patient contact. Ties perform no beneficial function in patient care and have been shown to be colonised by pathogens.

- Carry pens/scissors etc in outside breast pockets as these may cause injury when moving patients. Such items should be carried in hip pockets or inside breast pockets

- Wear uniform sloppily - eg wearing a cardigan on duty, or wearing uniform dress without tights/stockings because patients expect staff to have a neat appearance. Sloppy dress might be taken to indicate lack of professional pride, and poor personal standards

The guidelines note that not all staff need to wear uniforms, and it seems unlikely that uniforms are a significant source of cross-infection. Nevertheless, the way staff dress sends messages to the patients they care for, and to the public. While both infection control and public confidence should underpin a hospital's uniform policy, the two are not necessarily interchangeable.

And now the DHS has sorted out uniforms it might be able to turn its attention to hand washing. #

Sizing up SurvINZ

ESR's new state of the art national surveillance system EpiSurv7, demonstrated its value during the national pandemic planning exercise Cruikshank

Public Health Service users from throughout the country accessed 'real-time exercise data' to track how the mock avian flu pandemic was spreading throughout the country, while observers sitting at their desks overseas were able to follow the progression of the exercise, create reports and view maps of the situation.

"We were extremely pleased with the capabilities of the new system and how it performed," said ESR's Dr Bruce Adlam. "As the scenario developed, it was great to see live disease data come rolling in on EpiSurv7, and watch as cases and contacts of cases were being updated from all over New Zealand as it happened," said Dr Adlam.

The National Centre for Biosecurity and Infectious Disease Programme Leader Dr Virginia Hope said that Exercise Cruickshank was a good trial for a whole range of systems that would be utilised in the event of a national emergency such as an influenza pandemic.

"We were able to test a developmental contact-tracing module that would be used to estimate the spread of disease among people and to predict an epidemic's likely spread, as well as for the more obvious benefits of tracking of contact status and response."

EpiSurv7 is just one of several applications to be hosted on ESR's new SurvINZ platform. It is also housing ESR's water surveillance systems, with laboratory and food safety to be added soon. Ultimately all ESR systems that generate surveillance data will operate from this one platform. Users need highly secure password access to enter many of the applications to ensure security of confidential or sensitive data.

The SurvINZ system, a secure web enabled application, allows users throughout the New Zealand public health sector to enter, retrieve and compare real-time data quickly and easily from any computer. Users will eventually be able to use information from various sources including EpiSurv7 and international surveillance in a risk assessment module to profile a variety of likely disease outbreak scenarios.

Public health users and national crisis managers will be able to model early on in an outbreak how a disease might spread through a particular district or across the country. This will help guide the disease control measures to reduce the impact of the disease.

The SurvINZ system is on small bandwidth to ensure its capability with dial-up connection as well as broadband. #



ESR staff analyse disease data on SurvINZ, during Exercise Cruickshank

Work starts on new laboratory at NCBID

Building of the ESR laboratories at the National Centre for Biosecurity and Infectious Disease - Wallaceville started in June with completion expected by the end of the year. ESR Programme Leader Dr Virginia Hope said the new building would house up to 30 staff in three new PC2 laboratories and new office space.

The laboratories will cater for virology, bacteriology and molecular biology work. They are in addition to MAF's PC3 laboratory at Wallaceville, which would be utilised by ESR staff for certain pathogens, such as H5N1, that require PC3 levels of containment.

The building has capacity for more staff than currently needed to ensure it is future-proofed and can house additional staff in the event of an emergency.



Planning for Individual and Community Recovery: Principles for Psychosocial Support

Initially commissioned as part of the Pandemic planning process, guidelines or principles for psychosocial support have now been completed and are being delivered to emergency planners and civil defence groups around the country. They are also available at www.moh.govt.nz/moh.nsf/indexmh/planning-individual-community-recovery-in-emergency-event?Open

This high-level principles document outlines the importance of psychosocial recovery when planning how to respond to and recover from an emergency event. Aimed primarily at a health sector audience, it should also be useful for other agencies, organisations, providers and non-governmental organisations (NGOs). Its purpose is to help orient these organisations towards good practice principles for providing psychosocial support to promote recovery in an emergency event.

The document consists of two sections. Part A outlines key evidence-based principles and good practice for providing psychosocial support to promote recovery in an emergency event. Part B gives suggestions for operational planning actions - how to translate the principles into practice.

What is 'psychosocial recovery'?

It is important that everyone involved in emergency planning has a shared understanding of what is meant by the term 'psychosocial recovery'. In the past, psychosocial recovery has been understood and implemented in different ways by different organisations, both in New Zealand and overseas. Recovery encompasses the psychological and social dimensions that are part of the regeneration of a community. The process of psychosocial recovery from emergencies involves easing the physical and psychological difficulties for individuals, families/whānau and communities, as well as building and bolstering social and psychological wellbeing.

Many components of psychosocial recovery will not be delivered by the health and disability system, but by individuals and families; community

organisations such as church groups; welfare agencies; or other groups convened for recovery purposes under the umbrella of the regionally based Civil Defence Emergency Management (CDEM) groups. Most people affected by an emergency event will not need a psychiatrist or psychologist, but they will need food, shelter, security, family reunion and related social interventions. By meeting these needs, agencies and organisations are contributing to psychosocial recovery.

Good practice principles

This document summarises the principles derived from the evidence base, and covers:

- incidence and course
- risk and protective factors
- practice principles
- organisational principles

The principles are drawn from an evolving knowledge base on the process of psychosocial recovery following a range of natural, technological and mass casualty emergency events. They also align with international best practice guidelines.

Challenges for agencies

The challenges for all agencies are to:

- be aware of the principles of psychosocial recovery
- recognise the breadth of the interventions required
- identify what your agency can deliver that will contribute to psychosocial recovery
- work out how to deliver that particular intervention in a way that coordinates with the efforts of other agencies involved with emergency management through the CDEM group governance structure

What does it mean for service delivery?

This might mean service delivery practices such as:

- a District Health Board (DHB) mental health service working as part of a CDEM group welfare advisory group to

identify staff with specialist skills who can assist with screening for higher-risk people at recovery centres

- a mental health service working with other partner agencies such as Work and Income, Child Youth and Family, local authorities and Victim Support to help provide information for community groups
- a DHB mental health service contributing to the training of Victim Support or other psychological outreach community workers to assist with the appropriate delivery of social and psychological interventions

However, these functions might also be provided by other agencies or individuals who have the requisite skills and links.

We need to plan for clients/patients and staff

The evidence indicates that most people will recover without the need for specific psychosocial interventions, but organisations with a mandate for psychosocial recovery will need to plan for access to outreach services, psychological first aid, screening and referral to assist those who may need other interventions to help in their recovery. Health care and emergency service agencies also need to plan for the psychosocial welfare of staff working in emergency situations.

The Severe Acute Respiratory Syndrome (SARS) outbreak in 2003/04 provided critical research evidence for agencies to factor into their psychosocial recovery planning. The education of workers about expected stress reactions and the importance of stress management can help these workers to anticipate and manage their own response to the emergency event.

During the emergency event, consistent adherence to administrative controls is essential. For example, health worker shifts should be limited to no more than 12 hours, and staff should be rotated between high-, medium- and low-stress areas. #

World health report 2007: International spread of disease threatens public health security

More than at any previous time in history, global public health security depends on international cooperation and the willingness of all countries to act effectively in tackling new and emerging threats. That is the clear message of this year's *World health report* entitled *A safer future: global public health security in the 21st century*, which concludes with six key recommendations to secure the highest level of global public health security:

1. full implementation of the revised International Health Regulations (IHR 2005) by all countries;
2. global cooperation in surveillance and outbreak alert and response;
3. open sharing of knowledge, technologies and materials, including viruses and other laboratory samples, necessary to optimize secure global public health;
4. global responsibility for capacity building within the public health infrastructure of all countries;
5. cross-sector collaboration within governments; and
6. increased global and national resources for training, surveillance, laboratory capacity, response networks, and prevention campaigns.

In our increasingly interconnected world, new diseases are emerging at an unprecedented rate, often with the ability to cross borders rapidly and spread. Since 1967, at least 39 new pathogens have been identified, including HIV, Ebola haemorrhagic fever, Marburg fever and SARS. Other centuries-old threats, such as pandemic influenza, malaria and tuberculosis, continue to pose a threat to health through a combination of mutation, rising resistance to antimicrobial medicines and weak health systems.

Universal vulnerability

"Given today's universal vulnerability to these threats, better security calls for global solidarity," said Dr Margaret Chan, Director-General of WHO. "International public health security is both a collective aspiration and a mutual responsibility. The new watchwords are diplomacy, cooperation, transparency and preparedness."

The need for global solidarity is especially clear in the response to outbreaks of infectious diseases. WHO has been closely involved in the response to an outbreak of Marburg fever in Uganda. Together with partners in the Global Outbreak Alert and Response Network (GOARN), WHO is supporting the Ministry of Health to strengthen active surveillance, contact tracing, infection control, logistics, and social mobilization activities in an effort to contain the outbreak and improve understanding of where the virus resides in nature and how it passes to humans, thereby improving the ability to predict and prevent outbreaks in the future.

Evolution of outbreak surveillance and response

This *World health report* traces the history of efforts to contain infectious diseases (including plague, cholera and smallpox). It describes the evolution of outbreak surveillance and response activities of international partnerships of agencies and technical institutions. These include GOARN, the chemical and environmental health incident alert and response system, and the Global Polio Eradication Initiative, which is supporting surveillance of many other vaccine-preventable diseases.

The report shows how and why diseases are increasingly threatening global public health security. High and rapid mobility of people is one factor. Airlines now carry more than 2 billion passengers a year, enabling people and the diseases that travel with them to pass from one country to another in a matter of hours. The potential health and economic impact was seen in 2003 with SARS, which cost Asian countries an estimated US\$ 60 billion of gross expenditure and business losses.

The report outlines some of the human factors behind public health insecurity, including:

- inadequate investment in public health resulting from a false sense of security in the absence of infectious disease outbreaks;
- unexpected policy changes such as a decision temporarily to halt immunization in Nigeria, which led to

the re-emergence of polio cases;

- conflict situations when forced migration obliges people to live in overcrowded, unhygienic and impoverished conditions heightening the risk of epidemics;
- microbial evolution and antibiotic resistance; and
- and animal husbandry and food processing threats such as the human form of bovine spongiform encephalopathy (BSE) and Nipah virus.

Strategy to tackle pandemic influenza

Pandemic influenza is described as the most feared threat to health security in our times. The report sets out the WHO strategic action plan to respond to a pandemic, draws attention to the need for stronger health systems and for continued vigilance in managing the risks and consequences of the international spread of polio and the newly emerging strain of extensively drug-resistant TB (XDR-TB). New health threats have also emerged, linked to potential terrorist attacks, chemical incidents and radionuclear accidents.

The revised International Health Regulations (2005) are based on the premise that no country can fully protect its citizens in isolation or through traditional border controls. The IHR 2005 is a set of rules that governs how countries should assess and report to WHO public health emergencies of potential international concern. The broad definitions of "public health risk", "disease" and "event" ensure that risks caused by the accidental or intentional release of pathogens or chemical or radionuclear materials are covered by the Regulations.

Since the IHR 2005 entered into force, WHO has been receiving alerts of health events on a regular basis, conducting joint risk assessments with the notifying State(s) and sharing real-time information with other Member States.

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Preparedness for An Influenza Pandemic in Africa

The next influenza pandemic, if it plays out like the 1918 pandemic, would likely cause more deaths proportionately in sub-Saharan Africa than anywhere else in the world. Poor nutritional status, high rates of concurrent diseases such as HIV/AIDS, and limited access to healthcare could contribute to high mortality rates by exacerbating unaddressed public health problems and require immense humanitarian emergency assistance. And this assistance might not be available because of limited global resources and restrictions on movement of persons worldwide.

Sub-Saharan Africa is uniquely characterized by vast geographic areas that are difficult to access; uneven socioeconomic development; nearly trans-continental limitations in epidemiologic, surveillance, and laboratory capacity; and profound infrastructure weaknesses relating to communications and health systems and capacity of government organizations to effectively focus limited resources. An awareness of this situation has put substantial pressure on nations in Africa to implement or strengthen detection and rapid response capacities. Animal health strategies have focused on improving surveillance in birds, supporting culling teams, and enhancing laboratory capability to detect influenza A, including H5 strains. On the human side, an early warning system is needed for an emerging influenza pandemic. This must include surveillance to detect clusters of influenza-like illness in healthcare facilities and communities. Effective preparedness and responses will require fresh, innovative thinking relevant to local circumstances, determination, political will, and national and international resources.

Robert F. Breiman, Abdulsalami Nasidi, Mark A. Katz, M. Kariuki Njenga, and John Vertefeuille discuss the issues in *Preparedness for Highly Pathogenic Avian Influenza Pandemic in Africa*, an e-publication ahead of print of the

October Emerging Infectious Diseases.

Balancing Pandemic Influenza Concerns with Ongoing Health Priorities

The potential effects of pandemic influenza on human health and political stability in sub-Saharan Africa cannot be denied. Of paramount concern, however, is that this potential disaster emerges onto a backdrop of countries struggling to address epidemics of HIV, tuberculosis, and malaria; resurgence of paralytic poliomyelitis; and high childhood mortality rates due to pneumonia and diarrhoeal diseases. Many of the severe effects of these diseases could be prevented by use of proven public health tools (e.g., antiretroviral drugs; improved detection and treatment of tuberculosis; insecticide-treated bed nets; vaccines against *Streptococcus pneumoniae*, *Haemophilus influenzae* type b, and rotavirus), but African countries lack the resources and infrastructure to take full advantage of these tools.

In fact, the frenetic global activity around avian influenza's potential threat to human health is diverting critical financial and human resources and focus from the real ongoing, distressing effects of the major infectious disease syndromes. This diversion may be acceptable for a short time if the most pressing challenges for preparedness can be quickly and effectively addressed.

However, for many months critical programs have been put on hold as ministries of health personnel in countries throughout Africa have been deeply immersed in pandemic preparedness and response planning.

In Nigeria, while senior health officials were struggling to maintain Global Fund resources for HIV and malaria, as well as to improve polio vaccination coverage and stop the export of polio

to other nations, considerable immediate pressure was exerted to ramp up influenza surveillance, containment, and preparedness activities after the initial confirmation of bird flu. Similarly, when avian influenza was confirmed in poultry in Juba, Sudan, in September 2006, the newly formed Ministry of Health staff of the government of South Sudan had to balance already demanding commitments to battle HIV, tuberculosis, and an ongoing cholera epidemic with the need to prepare for potential influenza A virus (H5N1) infection of humans. The substantial effort required added more weight to a grossly overstressed public health system. Tension between existing disease concerns and the potential threat of a pandemic raises several questions: whose concern is avian influenza; and what are appropriate, balanced responses, particularly in countries with severely limited public health resources and overwhelming health problems? A pandemic strain emerging in Africa is a global concern as much as an African concern. Without rapid detection systems and effective control measures, a highly transmittable strain would quickly spread globally. Wealthier nations have recognized this and pledged nearly \$2.5 billion to address the problem, although most is not specifically for use in Africa.

In addition, an influx of massive resources from more developed nations, if not well coordinated and balanced in scope, could distort the sense of priorities and damage other critical public health and agricultural programs. How then can a balance be achieved and result in appropriate enhancements to address the threat of pandemic influenza while keeping focus on the existing major health priorities facing Africa? One approach, detailed below, would be to use new resources in a way that is broadly applicable to building public health capacity in recipient nations.

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Reduced Sensitivity of H5N1 to Tamiflu

Since 2003 two different strains of highly pathogenic avian influenza A (H5N1) have been in circulation. Clade 1 has been found in Vietnam, Thailand, Cambodia, Lao People's Democratic Republic, and Malaysia. In 2004-2005, Clade 2 emerged and spread from the People's Republic of China to Indonesia, Europe, and Africa. Because of its systemic availability, oseltamivir (Tamiflu) is the drug of choice for treating infected persons.

Jennifer L. McKimm-Breschkin, Paul W. Selleck, Tri Bhakti Usman, and Michael A. Johnson set out to test the neuraminidase drug sensitivity of clade 1 and clade 2 influenza A virus (H5N1). Their findings are reported in *Emerging Infectious Diseases* September epublication ahead of print.

They report that all viruses demonstrated a similar sensitivity to zanamivir, but compared to the 2004 clade 1 viruses, the Cambodian 2005 viruses were 6-fold less sensitive and the Indonesian clade 2 viruses were up to 30-fold less sensitive to oseltamivir.

Because none of the sequence variations in the public databases correlates with any mutation known to confer oseltamivir resistance, and none of the

variations are in the active site, this suggests that the decrease in sensitivities may be due to drift mutations rather than from exposure to oseltamivir.

The specific decrease in sensitivity to oseltamivir of both 2005 Cambodian clade 1 and especially the Indonesian clade 2 influenza (H5N1) isolates is disturbing, especially since they maintain their pathogenicity and transmissibility in birds and are clearly pathogenic in humans, as the high death rate in Indonesia confirms.

Their findings are in contrast to recent observations that mutations conferring zanamivir resistance in human strains have poor viability and are not genetically stable. No altered sensitivity to zanamivir occurred, which further supports the hypothesis of minimalist drug design and of maintaining the inhibitor as close as possible to the natural substrate to minimize the emergence of resistance. Their results suggest that zanamivir may also play an important role in pandemic stockpiles.

A decrease in oseltamivir sensitivity could lead to suboptimal drug dosing in treating persons infected with H5N1, which could facilitate the evolution of

viruses with a high level of resistance. Several groups have reported the emergence of resistant viruses in clade 1-infected influenza (H5N1) patients treated with oseltamivir and suggested that higher doses of oseltamivir may be needed. Because the clade 2 viruses studied have a 15- to 30-fold decrease in sensitivity compared to the clade 1 viruses, this suggests the standard dosing of oseltamivir may be even less effective in treating clade 2 influenza (H5N1)-infected patients.

Many laboratories are developing rapid PCR sequencing methods for detecting the known mutation (H274Y) that confers high-level resistance in influenza (H5N1) viruses. However, this study has shown the importance of phenotypic testing of isolates in an enzyme assay rather than just genotypic screening. And because the clade 2 virus is now spread through parts of Europe and Africa, continued global collaboration and phenotypic testing of drug sensitivity of circulating highly pathogenic avian isolates for NA inhibitor sensitivity are critical. This knowledge is essential for developing appropriate management strategies for pandemic planning. #

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Improving Pandemic Preparedness

The need and resources for rapid detection of potentially pandemic strains of influenza should be leveraged with support for surveillance for other epidemic-prone and vaccine preventable diseases; as parallel, vertical systems will ultimately not be sustainable in Africa. The drive for improved influenza surveillance can fuel the implementation of Integrated Disease Surveillance and Response (IDSR), promoted by WHO and its partners and endorsed in 1998 by 46 countries in the African region. IDSR includes surveillance for vaccine-preventable diseases and epidemic-prone diseases such as meningococcal disease, measles, cholera, typhoid, yellow fever, and viral hemorrhagic fever. If functioning well, IDSR should provide health officials with signals when dis-

ease incidence passes thresholds, suggesting an impending epidemic and the need to ramp up disease prevention activities like vaccination, safe water campaigns, or quarantine. Presently, however, IDSR is functional in a few countries, including Eritrea, Ghana, and Kenya. Strengthening IDSR throughout Africa would create an effective early warning system capable of detecting a pandemic strain of influenza or clusters of patients with severe acute respiratory illness, which could signal the beginning of person-to-person transmission. Strengthening IDSR would have the dual benefit of enhancing capacity for early detection of outbreaks of more conventional diseases and perhaps currently unrecognized threats.

Response and Containment

In a joint effort by WHO and the Centers for Disease Control and Prevention,

rapid outbreak response teams are being trained in sub-Saharan African countries to recognize outbreaks, collect information and specimens, and implement quarantine measures, if indicated, while using and distributing personal protective equipment and antiviral drugs. Training rapid response teams in each country is a relatively new concept for Africa, but such teams in Asia have responded to dengue epidemics and, more recently, to avian influenza. If these teams are functional, they will strengthen responses in Africa to a wide array of epidemics, enabling timely implementation of interventions to prevent illness and death.

Should a major health disaster such as an influenza pandemic occur, essentially no capacity exists to appropriately address the healthcare crisis while con-

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Articles and comment on emergency management issues are welcomed

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Check out our Web site at
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Up coming Events

Hospital Emergency Preparedness and Response Course

15—19 October 2007

Bangkok, Thailand

Cost \$1500 US

More information from

www.adpc.net

Leadership and Learning in Nursing and Midwifery Conference

25—26 October 2007

Mercure Hotel, Brisbane

Cost from \$650

More information from

www.matereducation.com.au/ssl/3/shopexd.asp?id=350

Understanding and Managing Landslide Hazards

7—9 November 2007

Wellington

Cost \$600 + GST

More information from

www.naturalhazards.net.nz/courses

Editor's soapbox

The 10th to 17th of October marks National Disaster Week. It is probably pure coincidence that it is programmed at the same time as our Health Board and local body elections.

Both events offer opportunities. An opportunity to utilise material prepared for disaster management week to put together your own disaster management week activity within your organisation. Some DHBs are already doing this. Health Board elections are also an opportunity to brief incoming and returning Board members of the planning we have in place to cope with major events. They will have a lot to read but their interest might be piqued by Ruamoko activity and they could just come looking for answers. (It pays to be both optimistic and prepared)

One of many Ministry working parties is looking at how we can put together a Disaster Medical Assistance Team to support or provide a medical response to an internal or off shore major casualty event. During Exercise Pandora (based on a large earthquake) I pondered on the probable needs of the hospital where I was located. Given the expected Mercalli magnitude, the hospital would be in ruins.

The response in Begkulu after a real earthquake the day before pointed out the answer—shelter was essential. Neither patients nor staff will willingly return to earthquake damaged buildings while after shocks continue to rattle the ground.

With containerised transport tarpaulins are not as common as they used to be and caravans and motor homes have replaced tents. Stocking up on tents for a 100+ year event is obviously not cost efficient so we need to look for other sources of emergency shelter. Hire firms or even defence may be able to meet our needs. Just make sure you do your investigation now to see what is available. When the quake comes they will not be answering the phone.

Bruce Parkes

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tinuing to deal with other routine health problems, which themselves can at times overwhelmingly stress healthcare systems. Preparation for a pandemic must strengthen hospital capacity to optimally and safely manage severely ill patients with potentially highly contagious illnesses. Although aiming for parity with hospitals in industrialized nations on quality standards for infection control is excessively ambitious, simple, practical approaches to implement basic infection control measures developed by WHO can be used.

Although data on the topic are limited, public awareness of avian influenza is minimal in Africa, specifically concerning the link between dying birds and human illness and the potential of catastrophic emergence of pandemic influenza. Recent efforts to strengthen information, education, and communication in Africa will improve societal mobilization for behaviour modification capacity, which can be called upon to address public health threats.

Ultimately, by developing effective health communication measures, functional surveillance systems with strong epidemiologic and laboratory support, and capable multi-sectoral rapid response teams, it may be possible to curtail spread of a lethal pandemic strain and buy time to develop and deliver effective human-administered vaccines.

An old expression says, "You can't slide uphill." The difficult work associated with preparedness for pandemic influenza will help bring Africa closer to the top of the hill, making it possible to efficiently respond to this and other threats and, when necessary, slide toward a beneficial outcome. #

