

How clean is the fuel in your tank?

One of the success stories of the July flood events was the prolonged uninterrupted running of hospital emergency generators. That's the good news. There have been more than enough failures of hospital generators in the recent past (for diverse reasons) to take away any "ring of confidence" we might be wearing. And as extreme weather events become the norm rather than the exception, the need to have reliable emergency generators will become more and more critical. While the success of your emergency generators will most often go unnoticed, their failure will make headlines.

In contrast to our recent flood experience, the experience of many hospitals in the United States has not been so reassuring. Their failures have been varied and widespread. In events this century including the July 2003 Memphis straight line windstorm, the August 2003 North-east Blackout, the East Coast's Hurricane Isabel, California's Northridge earthquake then alternating blackouts and wildfires, numerous tornados in the Midwestern states, the 2004 and 2005 Gulf Coast hurricanes, Katrina and Rita and the winter ice, snow and wind storms that affected areas from the East Coast to the West Coast, there have been waves of catastrophic generator failures.

As a result of these events, US hospitals have increased their onsite fuel oil storage as a part of their emergency management improvements. These decisions are being made out of the necessity to survive longer utility outages when outside support may be unavailable. And this increased storage capacity has caused the issue of fuel aging to become critical.

Many articles and papers have been written about the reasons for diesel engine failures, citing reasons such as: water and impurities in fuel oil due to system condition, maintenance error, fuel stagnation, storage tank corrosion, clogged or fouled fuel oil filter, day tank and large storage tank micro-organism contamination, inconsistent fuel oil quality from the supplier, incorrect diesel additive usage and as an afterthought, inadequate sampling techniques.

Of these, diesel fuel sampling techniques may be the least understood. In New Zealand, the Environmental Risk Management Agency (ERMA) is responsible for fuel tank certification and guidelines but the emphasis is on making sure that the tank and its contents are safe, rather than the quality of the product in the tank. Laboratory testing of samples is not an industry standard practice.

In the US, hospitals and other organizations accredited by the Joint Commission (on Accreditation of Healthcare Organizations) have put generator and fuel testing issues as a top ranking priority. The expectation of a clearly documented fuel testing process is placed directly on each accredited agency and engineering associations are urging all facilities with an emergency generator to take a closer look at the way their fuel testing is being done. Yet researchers have uncovered some disturbing trends:

1. Medical and other facilities expect that the responsibility for the fuel quality is in the hands of the fuel supplier, regardless of the age of the fuel.

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2. Medical and other facilities choose to blindly believe that the fuel testing is being done properly and consistently.

3. Engineers and service technicians nationwide are taking fuel samples from incorrect fuel locations while the generator is running during load bank testing.

4. Administration staff assume that the laboratory tests being run on their fuel samples are giving an adequate and accurate analysis of their fuel quality.

5. Filtered fuel samples being run through inadequate laboratory testing packages have been rendering a false sense of security by giving false positive findings and are at the root of the catastrophic events mentioned above.

Samples

Drawing samples from different points in the same tank can produce startling different results. A field test produced the results illustrated here. The first sample was pulled using the methods described by facility engineers and service technicians as standard fuel sampling technique – from the generator filter housing. Samples were then pulled from the middle and bottom of the storage tank. The differences are clear to see.

Running the generator for a periodical short test period is not going to suck up the rubbish found at the bottom of the tank. Run it all day and the story will be different.

Submitting samples to a laboratory for testing is of little value unless appropriate testing is carried out. A common procedure is to test for engine wear. That's appropriate for engine oil but of no use for engine fuel.

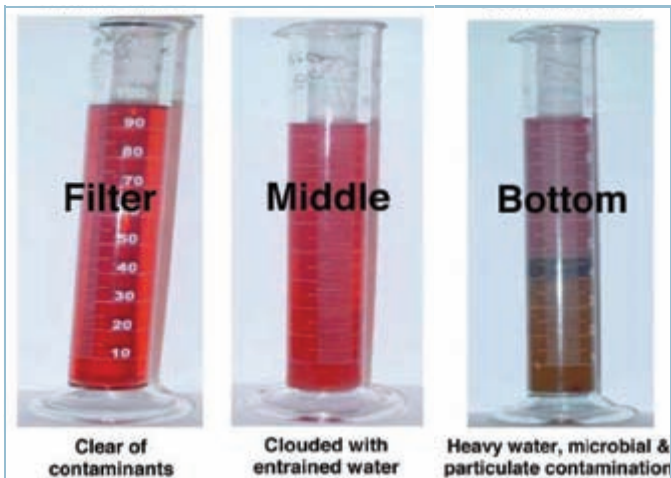
Benchmark testing should look for:

Aerobic Bacteria: Aerobic bacteria testing determines the presence of bacteria and how many colonies there are.

API Gravity: API gravity is the measure of a diesel fuel's density, or weight per volume. The higher the API gravity, the

less dense the fuel. API gravity can provide valuable information about a fuel's composition and performance characteristics including power economy, low temperature properties and smoking tendencies.

Bacteria, Fungi, Mould: Bacteria, fungi and mould are indications that fuel storage tanks have not been properly maintained. Water can build up at the bottom of storage tanks and create an excellent breeding ground for biological growth.



Distillation: Distillation temperature is the temperature at which 90 percent of the fuel volume can be distilled off. This temperature is directly related to the fuel's volatility and, therefore, it's Cetane Index, density, flash point and viscosity as well. A #2 diesel fuel's minimum distillation temperature should be approximately 300° F and its maximum should be approximately 700° F.

Flash Point: Flash point is the lowest temperature at which the vapours of a combustible liquid will ignite momentarily in air. Low diesel fuel flash points indicate contamination by more volatile fuels such as gasoline.

Sulphur: Sulphur content will affect SOx emissions and can have adverse effects on many NOx and PM emission reduction devices. The amount of sulphur allowed in diesel fuel is regulated by the government. Bulk delivery of diesel fuel should be tested to include sulphur levels.

Water and Sediment: Water and sediment in fuel can cause corrosion, wear, bacterial growth and premature fuel

filter clogging. The amount of water in fuel should not exceed 500 ppm (0.05 percent). Sediment should be no greater than 100 ppm (0.01 percent).

Stability Accelerated Aging: This gives the ability to forecast the way the fuel will respond with age and exposure to heat. There are many requirements now mandating that facilities document the age of the fuel and show that there is a process for tracking the age of the fuel and showing the plan for replacing fuel aged past its usability.

So, what is the process in your facility?

Are fuel samples being taken and if so, what methodology is being used? Is the fuel tested? Do your engineers or generator maintenance people have the proper sample extracting equipment and the training to know where the samples should be extracted from?

The volume size of the storage tank determines how many samples should be taken per test cycle. A tank of less than 2500 litres should have a 500mm sample extracted from the middle of the fuel in the storage tank and a 100mm sample extracted from the bottom of the fuel in the storage tank.

A tank of 2500 litres or greater should have a 500mm sample extracted from the middle and from the bottom of the fuel in the storage tank, the combination of both tests rendering the most accurate results.

Having got this far you are ready to go and talk to your engineers or generator maintenance company. Dollars to doughnuts you will be told that all is hunky dory and there is no need to worry your little head about it. Well, that is your call. It is your emergency generator and you have installed it to keep yourself in business and out of the headlines.

Sleep well the next time a wild weather front moves our way #

Using Virtual games as a 'disease model'

A report in *Lancet Infectious Diseases* suggests an outbreak of a deadly disease in a virtual world can offer insights into real life epidemics because the experience provides essential clues to how people behave in such crises.

In 2005 a "corrupted blood" disease spread rapidly within the popular online *World of Warcraft* game, killing off thousands of players in an uncontrolled plague. Despite quarantine measures, the infection raged, wreaking social chaos.

Game players showed a real diversity in their response to the threat of infection, similar to those seen in real life. Some acted selflessly, rushing to the aid of other characters even though that meant they risked infection themselves. Others fled infected cities in an attempt to save themselves. And some who were sick made it their mission to deliberately infect others.

Researcher, Professor Nina Fefferman, from Tufts University School of Medicine, said: "Human behaviour has a big impact on disease spread. And virtual worlds offer an excellent platform for studying human behaviour. "The players seemed to really feel they were at risk and took the threat of infection seriously, even though it was only a game." She acknowledged that a virtual setting might encourage riskier behaviour, but

said this could be estimated and allowed for when drawing conclusions.

She said that at the moment, a major constraint for epidemiologists studying disease dynamics was that they were limited to observational and retrospective studies. For example, it would be unethical to release an infectious disease in real life in order to study what the consequences might be.

Computer models allow for experimentation on virtual populations without such limitations, but still rely on mathematical rules to approximate human behaviour. A virtual world may be a way to bridge this gap, said Professor Fefferman. Her team at Tufts are looking to use models such as the *World of Warcraft* to further study human behaviour, particularly in relation to disease outbreaks.

Dr Gary Smith, professor of Population Biology and Epidemiology at the University of Pennsylvania, has been working on modelling infectious diseases. He said: "Very few mathematical models of disease transmission take host behaviour into account."



A typical *World of Warcraft* screen with the virtual bodies galore

But he questioned how representative of real life a virtual model could be. "Although the characteristics of the disease could be defined before hand, once released into the virtual world, the study is just as 'observational' as disease outbreak studies in the real world. "Nevertheless, I suppose one could argue that the proposal describes an opportunity for study that we might not otherwise have."

The "Corrupted Blood" plague is not the first virtual disease to break out in game worlds. In May 2000 many players of *The Sims* were outraged when their game characters died because of an infection contracted from a dirty virtual guinea pig. #

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food, water and supplies were moved to the disaster zone by air and road. Electricity is slowly returning; officials hope water supplies will soon follow.

Aid groups said Peru's government should have been better prepared. Towns did not have basic equipment like back-up generators to keep hospitals open, phones working and water flowing. "Something went wrong in terms of preparedness," said Richard Hartill, South America program director for the aid group Save the Children.

Many survivors fled the area in buses and pick-up trucks over the weekend but

tens of thousands of people still in the area are completely reliant on government aid. In hardest hit Pisco, people were reluctant to go to shelters and instead wanted help to arrive so they could start rebuilding their ruined homes. But the logistics are bad and there is no banks and no money.

Survivors, camped in the streets with rescued possessions as strong aftershocks continue to shake their confidence, are hampering efforts to clear areas of destruction so rebuilding could begin. Besides homes, the government will need to rebuild most schools—only one of 91 day nurseries in Pisco is still

standing—and some hospitals and prisons. Two prisons collapsed: 600 prisoners escaped from one after the walls fell down.

Despite the carnage, Peru may have escaped lightly. Had the quake struck closer to Lima, where more than 7 million people live, damage would likely have been much worse. While the quake was one of Peru's biggest, in 1970, a lesser magnitude earthquake killed 50,000 people in avalanches that buried the town of Yungay. #

Cruikshank a.k.a. Dungeons and Dragons

Christine Martin

Do you remember Exercise Cruikshank? Seems so long ago and a lot of water has literally flowed under (and over) the bridge since then. For those of us who have been through exercises many times it was a bit of a stretch, but no more. For others new to exercise activity it was a whole new experience.

The impressions of these people are important. They are the foot soldiers we need to volunteer to respond to a real event. Those who have had bad experiences are unlikely to willingly offer their services more than once.

For Christine Martin, a Project Officer at the Northern DHB Shared Service Agency, Cruikshank was her first exposure to exercises. Thrust into the Northern Regional P&I team she had a real baptism of fire. Her impressions follow.

It's July and I'm finally able to talk about it. If you were involved in May's Exercise Cruikshank, you'll know what I mean.

With no background in emergency planning, the simulation exercise was a new

experience for me. I now hold all you Health Emergency Managers in the highest regard. I just don't know how you do it.

You see, I had visions of *Dungeons & Dragons* type role playing, and I was looking forward to slaying menacing creatures.



Alas, the only creatures at Cruikshank were the monsters we became as we wrestled with communicating with each other, making decisions jointly, and analysing floods of data which poured in through fax, emails, WebEOC, and phone calls.

The Dungeon Master at the Northern Region Health Coordinating Centre (NRHCC), a.k.a Exercise Facilitator, can attest to the psychotic episodes that took place. There were unsubstantiated rumours on whether we were in Code Red, and it was difficult to separate fantasy and reality when the National Centre reported "two cases in Auckland" which did not exist!

People console me though and they say "Cruikshank was so much better than Makgill". I am relieved to know this and it does focus me on the fact that we are on a journey of preparedness. In the words of football coach Vince Lombardi: perfection is not attainable, but if we chase perfection we can catch excellence.

I'm looking forward to striving for excellence in pandemic planning. This I intend to do by learning from seasoned emergency planners at the DHBs, St John and CDEM who are all part of our Regional Team, and listening to the needs of our primary care partners. #

Peru and Pandora

As we prepare for Exercise Pandora – the South Island annual earthquake shake up – it is useful to examine the Peru earthquake last week and the health issues it created.

As expected, those hospitals that remained standing were inundated with survivors with crush injuries. This is a reflection of the mud brick and unreinforced buildings which crumbled on top of those inside and in the near vicinity accounting for most of the 500+ dead.

But of more concern was the destruction of more than 35,000 homes leaving 100,000 cold and hungry homeless survivors to make do in improvised shelters rigged up in football stadiums and other open areas. Thousands lined up for blankets, food and water as President Alan Garcia struggled to solve a logistical nightmare in the disaster zone.

Note that Garcia arrived in the disaster zone hours after the quake and spent days there personally trying to sort out the confusion. Note also that emergency management practitioners here are acknowledging that leadership is critical to recovery after a disaster. A poll by a newspaper showed 72 percent of people approve of Garcia's personal handling of the crisis, but 92 percent said Peru was unprepared for a major quake. Tonnes of foreign aid has arrived in the capital Lima and despite a damaged



A survivor of last week's earthquake in Peru looks out from a tent in San Andres Stadium in Pisco

highway and what critics say is poor organization, more than 12,000 tonnes of

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Paternalistic government measures can lower community resilience

Robert Patton

Some years ago when I was working in developing countries in Asia I was being interviewed for a position at the Asian Development Bank in Manila. I was asked "Which country in Asia do you think is the most advanced with disaster mitigation and preparedness?" I ran all the countries in Asia that I could think of through my mind. After much thought I gave my answer. The interviewers responded "What about Japan?" I felt a little stupid that I hadn't given this stark, staring obvious right answer. My experience blinded me, I just didn't think of Japan.

Recently I had my first opportunity to conduct a workshop in Japan to facilitate the development of the emergency preparedness and response plan for a humanitarian organization. While in Japan I took every opportunity to learn as much as I could about what it was doing in the area of disaster mitigation and preparedness.

The most fascinating (and frightening) place I visited was the Hanjo Disaster Prevention Training Centre in Tokyo. Here, not only is information given about what to do before, during and after any of the major disaster events that could happen in Tokyo, they have simulators where you can experience rain and winds up to 100 km/hr and an earthquake of magnitude 7 while the furniture in the 'kitchen' falls around you. There is also a theatre showing a 3D movie, illustrating what it would be like in Tokyo during an earthquake similar in intensity to the 1923 Kanto earthquake when 105,000 people died. The movie ends with tens of thousands of people at a public evacuation centre receiving food, drink and shelter provided by the government.

I also visited the Tokyo Metropolitan Government Disaster Prevention Centre. It is from here that the response to an actual or threatened disaster in Tokyo will be coordinated. The setup is impressive. The room is designed to seat 107 people with two 200 inch digi-

tal screens on which up-to-date information can be displayed. An attached emergency communication centre is staffed around-the-clock by a team of four people, so that a response can be initiated immediately. To ensure ready access to staff in the event of a disaster, housing for 200 disaster prevention staff is provided within 30 minutes walk of the Disaster Prevention Centre.

Monthly exercises are held to test key components of the disaster response plan and there is an annual comprehensive exercise that practices the implementation of the full plan. All of this is actively promoted by the Metropolitan Government to the population of Tokyo.

The provision of well labelled maps on every street corner is one of the things that makes exploring Tokyo on foot easy. These maps show in detail the streets in the immediate locality, major buildings, and clearly identified evacuation routes and centres for use in the event of a major disaster. I certainly studied the one outside my hotel well and knew where I should head if there was a major earthquake or something similar!

Knowing that Japan is probably one of the most prepared countries in the world for a major disaster, I was sure that my task of working with a local group on their emergency preparedness and response plan would be plain sailing. I could not have been more wrong! We worked through a planning process of first identifying the hazards Japan faces and the impact these could have on at-risk populations. That gave us the big picture. Then we focused on the

hazards specific to the organization and the impact these could have on the ability of the organization to deliver their services.

The group identified earthquake and fire as two major hazards. When I asked what could be done to mitigate these risks to the organization, the response was that it was all taken care of by the city fire service and they didn't need to worry at all.

The fire service came in once a year, checked the premises and ran a drill. Based on this, staff were reassured and confident that all was taken care of. A picture flashed into my mind of their small offices with paraphernalia and cabinets stacked high along all walls. This did not quite harmonise with my vision of a secure earthquake environment or a space with a low fire loading.



The sign says, In the event of an earthquake related disaster, evacuate to the Evacuation Centre or the designated evacuation site (and look, no graffiti!!)

Disaster response is one of the services this humanitarian organization provides. Part of the planning process is to look at how they will respond in the event of a major disaster. On broaching this subject I was told there was no need for planning for an immediate response as the government would manage this.

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When I explored further and suggested that the government might be overwhelmed and there could well be a role for NGOs, the response was that the government had learnt well from Kobe and that they could now manage post disaster.

My mind cast back to the 3D movie I had seen just a couple of days beforehand. In the closing scenes, following a major earthquake in Tokyo, tens of thousands of people were being fed and housed in an orderly tent city (on the evening of the day the earthquake had happened.) I thought of all the preparedness activities the Japanese government undertakes that are constantly in front of the people. Is this complacency amongst the population an unexpected, and dangerous side-effect of an expectation that the government is there and will do everything for them?

In fairness, the government is endeavouring to get another message across to people. I note a large heading in a publication produced by the Tokyo Met-

ropolitan Government that says "In a disaster, you help yourself; all of you are expected to protect yourselves and your communities on your own." Underneath this is detailed information about what to do at the time of an earthquake, five minutes later, ten minutes, half a day, second day and third day after the event and linked to this is information about "countermeasures to be taken in advance". Yet the question remains, which is the stronger message of the two?

My experience made me think about a not uncommon conundrum. I have met some fantastic emergency managers who are highly motivated and really give a high profile to emergency planning and preparedness within their organizations. Yet too often within those organizations there is a heavy dependence on the emergency manager and an expectation that they will always be there to manage the response. Instead of being a strength, their excellent work can become a very real weakness. How is it in your organisation? #



NSW Ambulance Officers to treat non critical patients at home

NSW Ambulance officers are to be trained to treat non-critical patients and take them to GPs or non-hospital services under a controversial plan revealed by the Sydney Morning Herald.

The shake-up of health care roles, kept secret by the NSW Health Department, is aimed at easing the workload of hospital emergency departments and is part of a growing trend to generalise health care.

A draft Ambulance Service of NSW document, obtained by the *Herald*, said ambulance officers could "safely assess and manage certain conditions in the home without the need to convey patients to hospital for care".

Like regular ambulance officers, extended-care paramedics would respond to emergency calls and treat critical patients. However, they would also be required to administer simple drugs, such as antibiotics, and arrange x-rays and other diagnostic tests as well as make direct patient referrals to GPs and community nurses.

"It is becoming increasingly recognised

that the emergency department may not necessarily be the most appropriate destination for the patient to have their health care needs met. However, [it] is often the only current option provided," the draft said. According to the draft, about 20 per cent of NSW emergency calls attended by ambulances do not result in the patient being taken to hospital.

But emergency experts see the plan as a stop-gap measure in a failing health system, while GPs are concerned the plan may add more pressure to practices.

Extended-care paramedics will be chosen from the ranks of the NSW Ambulance Service and undergo eight weeks of training. Program trials are due to start next month and will involve 12 ambulance officers from western Sydney, where attendance at emergency departments rose more than 9% last year.

Ambulance services are facing challenges which included an ageing population, the rise of chronic disease, unpredictable delays at hospital emergency

departments and increased demand due to the reduced availability of after-hours GPs, the draft document said.

Dr Tony Joseph, chairman of the NSW faculty of the Australasian College for Emergency Medicine, said the new system could put pressure on paramedics to keep patients at home or refer them to non-acute care instead taking them to hospital.

"If you delay someone going to hospital who needs to go, when they do eventually get admitted they are often sicker, they stay longer in hospital and there will be increased cost to the community," Dr Joseph said. "If we are going to do it right, do it the first time."

Dr Joseph said the program appeared to be another "stop-gap measure for a failing health system". The chief executive of the Nepean Division of General Practice, Michael Edwards, said the plan would "extend an already over-extended workload" for GPs.

Currently, there are no plans for a similar programme in New Zealand. #

New St John Emergency Planning Advisors Appointed

Lucy Adams and Tim Chiswell have joined St John as Emergency Planning Advisors covering the North and South Islands respectively and bring new dimensions to those roles. While Tim and Lucy will be primarily working in their assigned areas, they, along with Bruce Parkes, will provide a St John team approach wherever it is needed in country.

Lucy brings a background in emergency nursing and occupational health and safety. She has worked in a num-



ber of hospitals in Australia and New Zealand and as a nurse on Caribbean cruise liners. Lucy's last appointment was as the Wellness and Safety Advisor to the Counties Manukau Police District and Auckland Metro Crime and Operations Service.

Lucy has a Masters in Health Science from the University of Auckland and is an accredited Occupational Health and Safety Auditor. In 2005 she was nomi-

nated for the Australasian Council of Women and Policing – Excellence in Policing Awards as the Most Outstanding Female Administrator.

In her first week Lucy got out and clocked up a thousand kilometres of travel as she met some of those she will work with. She is keen to both learn and bring her skills to the challenges currently facing health emergency planners. One of her first assignments will be assisting with the development of the health aspects of Exercise Ruaukoko – the volcanic eruption designed to take the wind out of the city of sails.

Tim brings ten years of experience working in the humanitarian and emergency management sector, both internationally and domestically. Most recently he has been employed as International Programmes Manager for Caritas Aotearoa New Zealand. He has been involved with tsunami relief in Sri Lanka and Indonesia; relief and recovery in response to the 2005 Pakistan/Indian earthquake; relief support in Darfur; response to Cyclones Heta and Waka; the rehabilitation of health facilities in Timor L'este; and the development of community based trauma counselling in Papua New Guinea following the Bougainville crisis.

Tim has also worked for extended periods in Tanzania, Cambodia, Rwanda and Chechnya and conducted programme assessments in Central America and Asia.

Tim has an honours degree in mechanical engineering from Canterbury University and a Masters of Science in Man-

agement and Implementation of Development Projects from the University of Manchester. He is a RedR and Sphere Project trainer. Tim was the assistant project manager during the redevelopment of Christchurch Women's Hospital.

Tim has been the chair of NGO Disaster Relief Forum and Caritas Internationalis Co-operation Committee. The former working on improving the performance of NZ based humanitarian organisations, while the latter increasing coordination



between the 162 members of the Caritas confederation.

Exercise Pandora - the South Island's annual earthquake event – has been Tim's first challenge and opportunity to get out and meet fellow emergency management practitioners.

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A Doctor wanted to go off and play golf, so he approached his assistant Paddy. "I am going golfing tomorrow Paddy and I want you to take care of the clinic and all of our patients," "Yes sir!" answers Paddy.

The doctor goes off to golf and returns the following day and asks: So, Paddy, how was your day? Paddy told him that he took care of three patients. "The first one had a headache so I gave him Panadol." "Bravo Mate and the second one?" asks the doctor. "The second one had stomach burning and I gave

him Mylanta". "Excellent. You're good at this and what about the third one?" asks the doctor.

"Well, said Paddy, "I was sitting here and suddenly the door opens and a woman enters. Like a woman possessed, she undresses herself, taking off absolutely everything and lies down on the table and shouts: 'HELP ME! For five years I haven't seen a man!'"

"Good God "says the doctor, "What did you do?" "I put drops in her eyes!" said Paddy

Queensland in grip of influenza wave

While we are all worrying about H5N1 Queensland is experiencing its worst influenza epidemic in six years. Premier Peter Beattie said that drug companies had been contacted to rush supplies of Tamiflu to chemists who said they were unable to get supplies.

"We know that people are trying to get access to it and we don't want people to feel desperate in these circumstances - we want them to know we are moving to fix it," Mr Beattie told reporters. He said was writing to Prime Minister John Howard asking that the national reserves of the Tamiflu be also made available for aged care facilities. In the meantime, the state government was making available its reserves of 40,000 courses

Queensland chief health officer Jeannette Young warned people who were sick not to go to the Royal Queensland Show, which is notorious for spreading flu in the community at this time of year. So much so that show organisers are seriously considering a date change next year to avoid gate-takings being slashed by seasonal illness. The 131 year old show was cancelled in 1919 during the flu pandemic when the grounds were used as an emergency hospital. The Exhibitors' Dining Hall was used as a ward, with other wards established in military huts.

Dr Young said that small bottles of ethanol-based hand cleansing gel and hygienic hand wipes would be handed out this year to show goers who are also being urged to take care to wash their hands.

So far, there have been 2,128 cases of influenza notified to Queensland Health, more than three times the 663 notifica-



The Queensland Royal Show (known as EKKA) attracts some 600,000 visitors. Being winter, some visitors take the opportunity to dress up a little

tions in the same period last year. Two people have died, a four-year-old boy and a 37-year-old man, although Dr Young said his case was yet to be investigated by the coroner. This followed the death of four toddlers in Western Australia from the same virus. Flu has been ruled out in the case of another two deaths of people in their 30s in a hospital north of Brisbane.

Dr Young said it would be several months before Queensland Health had full data on this year's epidemic. "It sounds awful to say but the deaths are in very low numbers," she said. "So it really depends on individual circumstances as to whether or not more flu in the community results in more deaths. She said all but category one elective surgery in south-east Queensland public hospitals had been suspended for the time being.

And the Queensland Nurses Union weighed in saying patient safety was being compromised as public hospital emergency departments and their staff were pushed beyond their limits with an

influx of cold, influenza and novovirus patients.

"The comments came as 39 Gold Coast children were struck down with suspected type A influenza during a Canberra school trip. The children, from Mary Mount College on the Gold Coast, had been on a school excursion to Jindabyne in NSW and became ill during an overnight stay in Canberra. They were part of a group of more than 150 children aged 12 to 14, and 15 staff from Marymount Primary School in Burleigh Waters on the Gold Coast.

Five of eight children tested positive to influenza A in initial testing conducted at the hospital. Concerned parents flooded hospitals and clinics and calls to the Queensland Health hotline jumped two-thirds.

Meanwhile, retired Australian National University professor Graeme Laver called for anti-influenza medication Tamiflu to be made available over the counter. Professor Laver said having to wait for a doctor's appointment or to be seen in a hospital emergency department and then have a prescription filled, especially in rural communities, might render the drug useless.

"The sooner Tamiflu is given after symptoms appear, the better," he said.

But a federal Health Department spokeswoman said there was no reason to believe making Tamiflu available over the counter would prevent deaths. She said the National Drugs and Poisons Schedule Committee rejected a proposal in 2005 for Tamiflu to be sold without prescription because it was concerned flu strains could develop a resistance to the drug. #

Help Available

Looking for someone to help with your CIMS training or facilitate workshops? Devereux-Blum Training and Development could be an answer. They have worked extensively in the emergency management sector, with District Health Boards, most government organisations, private businesses and community groups.

They have been busy delivering Co-ordinated Incident

Management (CIMS) training to staff in several DHBs, including the facilitation of a workshop for NGO's. During Exercise Cruickshank they filled evaluator roles and facilitated one of the Recovery workshops.

Developing plans/procedures and delivering a wide range of other training/ services is part of the services they provide.

For further information visit:

www.emergencymanagement.co.nz

Scientists Target Vaccines Against Future Strains of H5N1

Preparing vaccines and therapeutics that target a future mutant strain of H5N1 influenza virus sounds like science fiction, but it may be possible, according to a team of scientists at the National Institute of Allergy and Infectious Diseases (NIAID), a component of the National Institutes of Health (NIH), and a collaborator at Emory University School of Medicine. Success hinges on anticipating and predicting the crucial mutations that would help the virus spread easily from person to person.

Led by Gary Nabel, director of the NIAID's Dale and Betty Bumpers Vaccine Research Center (VRC), the team reported in the August 10, 2007 issue of the journal "Science" that they have developed a strategy to generate vaccines and therapeutic antibodies that could target predicted H5N1 mutants before these viruses evolve naturally. This advance was made possible by creating mutations in the region of the H5N1 hemagglutinin (HA) protein that directs the virus to bird or human cells and eliciting antibodies to it.

"What Dr. Nabel and his colleagues have discovered will help to prepare for a future threat," says NIH Director Elias Zerhouni. "While nobody knows if and when H5N1 will jump from birds to humans, they have come up with a way to anticipate how that jump might occur and ways to respond to it."

"Now we can begin, pre-emptively, to consider the design of potential new vaccines and therapeutic antibodies to treat people who may someday be infected with future emerging avian influenza virus mutants," says NIAID Director Anthony Fauci. "This research could possibly help to contain a pandemic early on."

Making a vaccine against an existing strain of H5N1 or any other type of influenza virus is relatively routine. Typically, samples of existing influenza virus strains are isolated and then grown inside eggs or in cell cultures. The virus

is then collected, inactivated, purified and added to the other components of the vaccine.

A flu shot prompts a person's immune system to detect pieces of the inactivated virus present in the vaccine and make neutralizing antibodies against them. Later, if that same person is naturally exposed to a flu virus, these same antibodies should help fight the infection. Influenza viruses constantly mutate, however, and vaccines are most effective against the highly specific strains that they are made from. This makes it difficult to predict how effective a vaccine made today will be against a virus that emerges tomorrow.

Dr. Nabel and his colleagues started their project by focusing narrowly on mutations that render H5N1 viruses better able to recognize and enter human cells. Bird-adapted H5N1 binds bird cell surface receptors. But these receptors differ slightly from the receptors on human cells, which in part explains why bird-adapted H5N1 can infect but not spread easily between humans.

Bird-adapted H5N1 binds bird cell surface receptors. But these receptors differ slightly from the receptors on human cells, which in part explains why bird-adapted H5N1 can infect but not spread easily between humans.

About a year ago, the research team began asking what mutations help the virus shift its adaptability. They compared the structural proteins on the surface of bird-adapted H5N1 influenza virus with those on the surface of the human-adapted strain that caused the 1918 pandemic. They focused specifically on genetic changes to one portion of the H5 protein -- a portion called the receptor binding domain. They showed

that as few as two mutations to this receptor binding domain could enhance the ability of H5N1 to recognize human cells.

Additional mutations would likely need to accumulate for H5N1 to spread more easily from person to person, says Dr. Nabel. The few mutations he and his colleagues identified are likely just a subset of those, he emphasizes.

Moreover, they found that these mutations change how the immune system recognizes the virus. Mouse antibodies that target H5N1 were up to tenfold less potent against the mutants. Dr. Nabel and his colleagues used their knowledge of receptor specificity to create vaccines and isolate new antibodies that might be used therapeutically against human-adapted mutants.

They vaccinated mice with the material from viruses they altered to contain the mutant receptors, and they discovered one broadly reactive antibody that could neutralize both the bird- and human-adapted forms of an H5N1 virus.

According to Dr. Nabel, their findings should contribute to better surveillance of naturally occurring avian flu outbreaks by making it easier to recognize dangerous mutants and identify vaccine candidates that might provide greater efficacy against such a virus before it emerges.

"Our findings build on elegant studies of the influenza HA protein by structural biologists," notes Dr. Nabel. "Insight into the structure of the avian flu virus has enabled us to target a critical region of HA that directs its specificity. Such a structure-based vaccine design may allow us to respond to this future threat in advance of an actual outbreak." #

HEMNZ Bulletin

The HEMNZ Bulletin is published monthly by the St John Emergency Management Unit for all those interested in emergency management in health care settings

Articles and comment on emergency management issues are welcomed

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Check out our Web site at
www.hemnz.org.nz

Up coming Events

New Zealand Border Security & Civil Defence Conference

29—31 August 2007
Stamford Plaza Hotel, Auckland
Cost from \$2095 + GST
More information from
www.iir.com.au

Planning for a Volcano Crisis

5—7 September 2007
Mercure Hotel, Auckland
Cost \$600 + GST
More information from
www.naturalhazards.net.nz/courses

Managing Weather and Flood Hazards

20—21 September 2007
Christchurch
More information from
www.naturalhazards.net.nz/courses

The NZ Health Sector: Performance, Productivity and Evolution;

20 - 21 September 2007
NZIHM and RACMA Conference
Rydges Hotel, Rotorua
Cost \$750 incl GST
More information from
www.nzihm.org.nz

Editor's soapbox

Earthquakes and severe weather events all over the globe provide a timely reminder to us all that our hazardscape spreads far wider than influenza and other biological events that have consumed our attention in the recent past.

Our next two major exercises: Pandora and Ruaumoko, provide earthquake and volcanic scenarios to test our capacity to continue healthcare to a population dislocated by such events.

The "Pisco earthquake" in Peru confirms that it is not the dead and injured that will be our biggest challenge. While our building regulations ensure sturdier buildings than the adobe houses in Pisco, it will be the thousands displaced from their homes without food, water or shelter who will be our biggest challenge. Mostly, they will require primary care - not high tech surgery. Once again we need to tease out the boundary between welfare and healthcare.

One plus for our planning has been the metamorphose of CBACs from a pandemic only initiative, to a process for dealing with the primary health needs of a population after all emergency incidents. Re-energizing the CBAC working party has been a high priority in the Ministry of Health's work plan. The goal is to finish off outstanding pandemic work and to widen the concept to accommodate a response to whatever event we have to deal with. All your hard work ahead of Cruikshank has not been wasted.

Bruce Parkes



Hurricane Dean - Katrina on Steroids

When Hurricane Dean struck Mexico's Yucatán peninsula on August 21st it was the third-strongest Atlantic storm on record, with winds of up to 165 miles (270km) an hour. So was the effect so much less than with Katrina? Fortunately its landfall was in a sparsely populated area, although hundreds of Mayan village houses were said to have been destroyed and towns have not been built below sea and river levels. The holiday resort of Cancún, hit badly by a hurricane two years ago, was evacuated but spared.

The storm prompted a shut-down of Mexico's gulf oilfields and flooded several towns before weakening. Dean did its worst damage in Jamaica and the eastern Caribbean, killing 20 people, flooding houses and wiping out banana crops.

Caribbean governments, realizing that they have to prepare to recover from such events have this year, for the first time, taken out hurricane insurance.

For those of us living far away, the biggest impact was the drop in spot oil prices when the Mexican Gulf oil wells were spared. #



Shots of the damage in Jamaica