

When Things Went Bump In The Middle Of The Day

Robert Patton

About midday on a quiet Thursday in early summer, a great pressure wave of air, accompanied by a massive exploding sound, shook and destroyed a large part of the town of Ryongchon, in North Korea. In just a few seconds more than 160 people died, a crater 15 metres deep was left in the ground and a three storey 300 bed hospital about two kilometres from the explosion site was damaged beyond repair. Chinese seismographs and those further afield recorded a Richter 3.5 earth movement. A train loaded with ammonia nitrate had exploded, probably caused by a spark from overhead electric wires.

In the immediate aftermath of destruction the lead agency role was taken by the national office of the North Korean Red Cross. Later, to coordinate the response of international agencies offering assistance, this was passed to the Flood Disaster Rehabilitation Committee within the Ministry of Foreign Affairs. As the need for immediate response activities tailed off, international humanitarian agencies were allocated various rehabilitation activities. The Adventist Development and Relief Agency (ADRA) were appointed to rebuild the County Hospital and I was asked to travel to North Korea to be an adviser to the design team for the new hospital.

There is a phrase that I often hear; "...it's the way we do things around here," so I needed to discover the way things are done in North Korean hospitals and hospital systems. There, the Ministry of Public Health (MoPH) usually designs, builds and commissions hospitals. Their standard plan for a hospital has not greatly altered for a number of decades so all hospitals built in North Korea are basically identical. This development was seen as a prime opportunity to reassess that design, make improvements and build a hospital that could be a model for future hospitals in North Korea. What a challenge!!!

I spent the first four days I was in the country at a district hospital at Pyongyang, the capital city, discovering how a North Korean hospital functions. This was extremely valuable (I am indebted to the MoPH for facilitating this) as I struggled at times to get my head around certain aspects of the hospital building and systems while coming to terms with the reality of North Korea. For example, the four-storey hospital building has no lifts. The number of buildings in North Korea that have lifts can be counted on one hand. There are a number of reasons for this, the main ones being that the electricity supply is unreliable, therefore the lifts often will not work and there is no local equipment or knowledge available to install, service and maintain them.

The hospital Emergency Department is only open after hours, weekends and holidays. At all other times the Outpatients Department (OPD) handles emergency cases coming to the hospital. Having the OPD on the first, rather than the ground floor, provides an automatic

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Hospital inpatient building



Hospital outpatient building

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triage or filtering system (Something New Zealand hospitals might want to consider? Ed.).

As I moved from department to department observing and interviewing staff the one overwhelming thing I noted was the extreme lack of equipment and supplies. The main causes are the limited resources available in the country compounded by sanctions placed on the country by the United States and other countries.



A "well shielded" radiologist (left) and his developing unit (right)



In the radiology department they proudly showed me a new x-ray machine and film-developing unit that had been donated and installed by an international aid organisation one month earlier. It was certainly very nice providing a much-needed diagnostic tool and the most up-to-date piece of equipment I saw. However, I was disappointed that the aid organisation had installed new equipment and not taken into account the introduction of hazards to the local operators. The radiographer stood three metres from the x-ray machine to operate it with only a lightweight protection vest and the film-developing machine had been installed in a small, unventilated room that reeked of developing chemicals. I believe it is totally irresponsible of any organisation to introduce new equipment without first assessing and mitigating what are well-known hazards.

Separate to the main hospital buildings was the pharmacy building. I headed off with interest to have a look around this building. It was actually a pharmacy "factory" for the manufacture of indigenous and allopathic medicines. Many of the medicines prescribed at the hospital are traditional medicines produced locally at each hospital. The factory also produces intravenous fluids. Water is distilled, then solutions of dextrose and normal saline precisely mixed and poured into glass bottles. These are sealed, placed into an autoclave and sterilised. I asked about quality control and was told that one bottle from each sterilised batch was tested for a "fever-producing protein". I enquired further about this test and was told the bottle is sent to the laboratory for testing and it takes about four hours for the result to be returned. No other information was forthcoming. A week later, as we were discussing in detail the design for the I.V. production area, I discovered how this "test" is done. A rabbit is injected with some of the I.V. fluid and they wait to see if it develops a fever - an effective, simple and cost effective procedure.



"Homebrew" IV Fluid ready for sterilisation

I investigated the patient flow within the hospital and found that a sick patient first reports to the reception area just inside the main entrance (which is up at least 10 steps) and is then directed to the OPD, which is up another flight of stairs. From there they are likely to be referred to the laboratory for blood tests and radiology for x-rays. These departments are down a flight of stairs on the ground floor. After this they return upstairs to the OPD. If they are to be admitted they return downstairs, go along a corridor, out a door, down half a dozen stairs, across an open courtyard, up entrance steps, then up at least one flight of stairs to the admitting ward. This journey may be in the middle of winter when temperatures drop to around minus 10 degrees Celsius. Tracing the expected route of a patient and sharing the information with local hospital planners was an interesting exercise.

This was an extremely challenging assignment in an environment that was totally foreign to me. I was met at the airport by my liaison officer, who then accompanied me everywhere I went over the next two weeks - I finally bade him farewell at the airport as I caught a flight to Beijing. Photographs could only be taken with the permission of my liaison officer. Once taken, the digital photos were then viewed and approved.

Interaction with local people was restricted to those I met officially and shopping limited to a few stores. Food supplies for foreigners are limited with little range of products and only restaurants designated for foreigners can be visited. Plans for travel outside Pyongyang had to be submitted for approval the week before.

All of my work was conducted via an interpreter who had little or no medical knowledge. One interesting conversation we

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had is as follows:

"What is the cool store in the kitchen used for?" "...vegetables and meat and faeces and" ...

"Whoa, hold on a minute, did you say faeces?" "Yes"

"Why are they in with the food? Why would you want to keep them anyway? Whose are they?"

"They come from the central store and they are used to eat..."

After much questioning I discovered that what the interpreter had actually said was "fishes" but he had pronounced the 'e' so that he was actually saying "fishees" which, with the accent, sounded awfully like faeces. Boy, was I glad to find that it was "fishees" and not "faeces" in with the food!

Although the environment is very different, the same principles for hospital design apply; they are just implemented in a different way. Working through the assessment of the local hospital I was reminded that change can bring hazards and that these need to be addressed in the planning stages. I was also reminded that sometimes simple and inexpensive solutions can be effective. It is good, sometimes, to look and experience a familiar place in a different environment to broaden our thinking and understanding.

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be generated, along with the higher quantities of other types of solid waste.

Facilities management will become a focal point for information and action. Besides dealing with the mechanical and fire protection systems, it will also need to work with the supply department to take care of all of the following duties: and probably more:

- ✦ Obtain backup water from prearranged contracts with suppliers, such as milk suppliers, local grocery stores and bottled water companies;
- ✦ Obtain additional bagged ice as appropriate and necessary;
- ✦ Obtain additional rubbish bags and bins as appropriate;
- ✦ Obtain additional red bags as appropriate;
- ✦ Obtain additional waterless hand cleaner as appropriate;
- ✦ Plan how to distribute additional water and supplies where and when needed; and
- ✦ Help the engineering department obtain repair parts as necessary.

Back to normal

Recovering from water failure may be more difficult than recovering from many other types of utility failures, because every valve, sink, toilet and ice machine must be dealt with.

It will probably be necessary to flush the water lines before opening the main valves to the buildings, if that is possible. As with other systems, valves and outlets should be installed during renovations and planned shutdowns to allow system flushing and connection of alternate sources.

Air must be allowed to escape from the highest points while water is slowly added to the system's risers, and it will be necessary to guard against flooding the sinks at those air- and contaminant-escape points. If possible, floors should be isolated and restored one floor at a time, beginning with the lowest floor.

Again, every device must be dealt with individually, and the process is likely to be iterative. It may be necessary to obtain and install an extra supply of flush valve kits, because flush valves might have been damaged from being stuck open or from contaminants being flushed through the water system. It may also be necessary to change all water filters in the hospital, such as those at ice machines and laboratory equipment within a few days.

Hospitals may plan to continue using bottled drinking water for 24 hours after water service restoration. This allows the system enough time to completely flush itself of any contaminants generated by line repairs made by the water utility.

Finally, making note of lessons learned is an invaluable aid to improving the environment of care. Hospitals should critique the entire situation and plan to adjust any procedures as appropriate.

Planning required

The best way a health care facility can handle a shutdown is to plan for its eventuality. Check that your facilities team have done so.

The Psychological Effects of Quarantine

Quarantine is a strategy commonly proposed when planning to limit the spread of an infectious disease. During the 2003 SARS outbreak some 15,000 persons were quarantined in Toronto and considerable time was spent discussing the specifics of quarantine and how to promote adherence to infection control measures. Those placed in quarantine lose their freedom yet little analysis has been conducted on the effect of quarantine on the well-being of those quarantined.

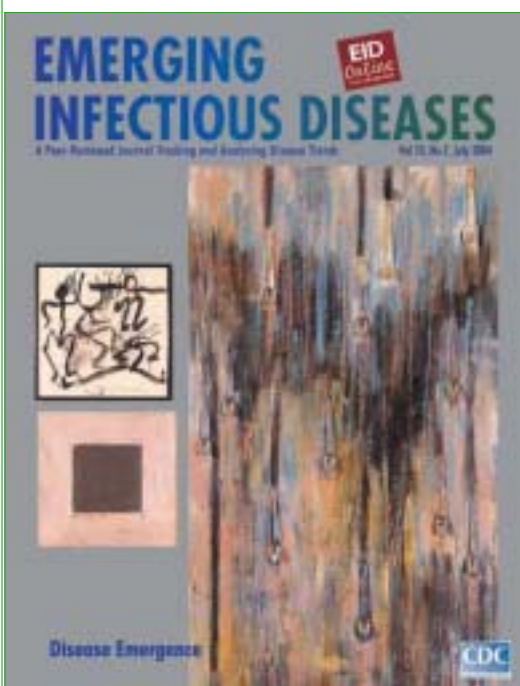
Laura Hawryluck, Wayne L. Gold, Susan Robinson, Stephen Pogorski, Sandro Galea, and Rima Styra set out to capture a range of experiences of those quarantined persons to better understand their needs and concerns. Their study is reported in the **July issue of Emerging Infectious Diseases**. This knowledge is critical if modern quarantine is to be an effective disease-containment strategy.

Although quarantine has periodically been used for centuries with some success to contain and control the spread of infectious diseases such as cholera and the plague, the history of invoking quarantine measures is tarnished by threats, generalized fear, lack of understanding, discrimination, economic hardships, and rebellion.

For the greater public good, quarantine separates persons who have been potentially exposed to an infectious agent (and thus at risk for disease) from the general community. For some persons quarantine can create heavy psychological, emotional, and financial problems. To be effective, quarantine demands not only that at-risk persons be isolated, but also that they follow appropriate infection control measures within their place of quarantine. Reporting on SARS quarantine has focused on ways in which quarantine was implemented and compliance was achieved. Adverse effects on quarantined persons and the ways in which those quarantined can best be supported have not been evaluated. Moreover, little is known about adherence to infection-control measures by persons in quarantine.

Knowledge and understanding of the experiences of quarantined persons are critical to maximize infectious disease containment and minimize the negative effects on those quarantined, their families, and social networks. The objectives of the Toronto study were to assess the level of knowledge about quarantine and infection control measures of persons who were placed in quarantine, to explore ways by which these persons received information, to evaluate the level of adherence to public health recommendations, and to understand the psychological effect on quarantined persons during the SARS outbreaks.

During the first and second SARS outbreaks in Toronto, >15,000 persons with an epidemiologic exposure to SARS were instructed to remain in voluntary quarantine. Quarantined persons were instructed not to leave their homes or have visitors. They were told to wash their hands frequently, to wear masks when in the same room as other household members, not to share personal items (e.g., towels, drinking cups, or cutlery), and to sleep in separate rooms. In addition, they were instructed to measure their temperature twice daily. If any symptoms of SARS developed, they were to call Toronto Public Health or Telehealth Ontario for instructions.



All persons who were placed in quarantine in Toronto were eligible for participation in the study and the survey was publicised through media releases, including locally televised interviews with the principal investigators. Information on the study and invitations to participate were posted in local healthcare institutions, libraries, and supermarkets. The Web-based survey composed of 152 multiple choice and short-answer questions, was to be completed after participants ended their period of quarantine and took approximately 20 minutes to complete. Questions explored included knowledge and understanding of the reasons for quarantine; knowledge of and adherence to infection control directives; and the source of this knowledge.

Open-ended questions provided respondents with the opportunity to relate the aspects of quarantine that were most difficult for them and allowed them to provide additional comments on their unique experiences.

The survey is useful, despite being limited by the small number who took part. It was only completed by 129 of the more than 15,000 eligible persons who were placed in quarantine and it is unlikely that any of the many who reportedly spent their quarantine in shopping malls took part. Sixty-eight percent of those who did respond were healthcare workers, 64%

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were 26–45 years of age, 58% were married, 72% had a college level of education or higher, and 48% had a combined household income of \geq \$75,000 (Canadian dollars [CAD]). While the survey population was small and skewed, the heavy weighting to healthcare workers offers some useful insights in to how our staff might react.

The 129 respondents described 143 periods of quarantine with the median duration of quarantine being 10 days. 90% of respondents were placed into quarantine only once; 66% of respondents were on home quarantine, while 34% were on work quarantine. Half of respondents knew someone who was hospitalized with SARS of whom 77% were colleagues; 10% knew someone who had died of SARS).

Strikingly, 27% were notified of their need to go into quarantine from the media; 58% from their workplace; 7% from their healthcare provider; and 9% from public health officials. Most understood that they were quarantined to prevent them from transmitting infection to others, with only 1 in 10 believing they were quarantined to protect themselves from infection. 15% did not believe they should have been placed into quarantine at all.

Understanding of the reason for quarantine was influenced by the source of notification. Those who were notified by the media or their workplace were more likely to understand the reason for quarantine than those who were notified by their healthcare provider or public health unit. Healthcare workers were also more likely to understand the reason for quarantine compared with non-healthcare workers. Understanding was not influenced by combined household income and level of education.

Information on Infection Control Measures

Persons received information regarding the infection control measures to be adhered to during their quarantine from the following sources: the media (54%), public health authorities (52%), occupational health department (33%), healthcare providers (29%), word-of-mouth (23%), hospital Web sites (21%), and other Web sites (40%).

Those who did not think they had been well-informed were angry that information on infection control measures and quarantine was inconsistent and incomplete, frustrated that employers (healthcare institutions) and public health officials were difficult to contact, disappointed that they did not receive the support they expected, and anxious about the lack of information on the modes of transmission and prognosis of SARS

During the outbreaks, nearly 30% of respondents thought that they had received inadequate information about SARS. On information regarding home infection control measures, 20% were not told with whom they could have contact; 29% did not receive specific instructions on when to change their masks; and 40%–50% did not receive instructions on the use and disinfection of personal items, including toothbrushes and cutlery; 77% were not given instructions regarding use and disinfection of the telephone. Healthcare worker status did not influence whether respondents thought they had received adequate information regarding any of the listed home infection control measures, except that regarding the frequency of mask changing.

Adherence to Infection Control Measures

Eighty-five percent of quarantined persons wore a mask in the presence of household members; 58% remained inside their residence for the duration of their quarantine. Thirty-three percent of those quarantined did not monitor their temperatures as recommended: 26% self-monitored their temperatures less frequently than recommended, and 7% did not measure their temperatures at all. No differences between healthcare workers and non-healthcare workers were found with respect to adherence to recommended infection control measures.

Psychological Impact of Quarantine

Neither age, level of education, healthcare worker status, living with other adult household members, nor having children was correlated with PTSD and depressive symptoms. The duration of quarantine was significantly related to in-

The survey was heavily weighted towards health workers—who should have been better informed than the general public.

.....
One in four were notified through the media of their need to go into quarantine

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Unmet informational needs from Public health /employers:

a. Difficulty in access:

"Called Public Health for 2 days. Got through 3 times; waited on hold for hours, then got hung up on." (respondent # 131)

b. Failed expectations:

"I was expecting someone from Public Health to check up on me but never got a call except on my last day of quarantine." (respondent #126);

"Nobody told me anything. I was not contacted by health officials at all." (respondent# 99);

"My employer should have been more forthcoming." (respondent #7);

"I was not called by the hospital I worked at. I saw the quarantine on the news and spent a whole day trying to get through to my unit." (respondent #40)

c. Lack of support:

"I was looking for more support from the health care professionals. They left me in the dark to deal with this." (respondent #22)

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creased PTSD symptoms. Overall, acquaintance with or exposure to someone who died of SARS was not correlated with PTSD or depressive symptoms.

All respondents described a sense of isolation. The mandated lack of social and, especially, the lack of any physical contact with family members were identified as particularly difficult. Confinement within the home or between work and home, not being able to see friends, not being able to shop for basic necessities of everyday life, and not being able to purchase thermometers and prescribed medications enhanced their feeling of distance from the outside world. Infection control measures imposed not only the physical discomfort of having to wear a mask but also significantly contributed to the sense of isolation. In some, self-monitoring of temperature provoked considerable anxiety: "taking temperatures was mentally difficult" (respondent #27) and "taking my temperature made my heart feel like it was going to pound out of my chest each time" (respondent #62).

While most quarantined persons (60%) did not believe that they would contract SARS, 59% were worried that they would infect their family members. In contrast, only 28% were concerned that a quarantined family member would infect someone else in the home. Following quarantine, 51% of respondents had experiences that made them feel that people were reacting differently to them: avoiding them, 29%; not calling them, 7%; not inviting them to events, 8%; and not inviting their families to events, 7%.

Discussion

The survey results show that a substantial proportion of quarantined persons will be distressed. Although quarantined persons experienced symptoms suggestive of both PTSD and depression, the scales that were used to measure these symptoms are not sufficient to confirm these diagnoses. To confirm the diagnoses of PTSD and depression, structured diagnostic interviews are required and because the survey was anonymous, this was not possible.

Increased length of time spent in quarantine was associated with increased symptoms of PTSD. This study also notes the trend toward increasing symptoms of both PTSD and depression as the combined annual income of the respondent household fell from CAD >\$75,000 to CAD <\$40,000. Quarantined persons with a lower combined annual household income may require additional levels of support. Since the survey was Web-based and required that respondents have access to a computer, the survey was likely answered by a more affluent and educated subgroup of persons. As respondents with a lower combined annual household income experienced increased symptoms of PTSD and depression, and those with lower combined annual household incomes were not as likely to have access to a computer, the results of this survey may underestimate the prevalence of psychological distress in the overall group of quarantined persons.

Overall, most respondents did not report financial hardship as a result of quarantine. A finding most likely explained by the fact that >50% of the respondents reported a combined annual household income of CAD >\$75,000.

As many as 50% of respondents felt that they had not received adequate information on at least one aspect of home infection control, and not all of the respondents adhered to recommendations. Why some infection control measures were adhered to while others were not is unclear. A combination of lack of knowledge, an incomplete understanding of the rationale for these measures, and a lack of reinforcement from an overwhelmed public health system were likely contributors to this problem. Of particular interest, strictly adhering to infection control measures, including wearing masks more frequently than recommended was associated with increased levels of distress. Whether persons with higher baseline levels of distress were more likely to strictly adhere to infection-control measures or whether adherence to recommended infection-control strategies resulted in developing higher levels of distress cannot be clarified without interviewing the respondents. Regardless of the cause, this distress may have been lessened with enhanced education and continued reinforcement of the rationale for these measures and outreach efforts to optimize coping with the stressful event.

More unmet informational needs:

Nature of information:

Details re: infection control: "I have since learned that there are a lot of precautions that no one ever told me about." (respondent #81)

Inconsistencies: "Information was not always the same. Many inconsistencies." (respondent #66)

Timing: "Information was given too late, as I started 1 week after exposure. Unacceptable!" (respondent #27)

Specific issues:

Children: "Nobody can tell me exactly where my children would be arranged to go in case I got SARS myself. I was very panicked at that time and my husband was admitted that time because of the SARS." (respondent # 78)

Onset of symptoms: "What symptoms were considered serious and what to do when I experienced those symptoms." (respondent # 21); "I was mildly alarmed to realize that I didn't know what to do if I actually did develop symptoms of SARS." (respondent # 111)

Prognosis of SARS: "Most of the really important info is largely unknown" (respondent #53); "Prognosis for SARS, how many have recovered, what health problems recovered patients still have." (respondent #81)

Mode of transmission: "If airborne what were the chances of contracting the disease... MD unable to answer." (respondent #90)

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Let's Not Be Dry in the Dark: Managing Water Supply Failures

The state of our country's electrical infrastructure has been in the public mind this winter with suggestions of the top of the South Island and the area north of the Auckland peninsular being particularly vulnerable. Electricity black outs or brown outs seem to be a feature of technically advanced societies. Not only will the lights and computers go off, there will be other less publicized consequences. The electrical blackouts that occurred in a number of American cities last year also led to several less-publicized, but similarly severe, municipal water system failures.

Blackouts can be the result of localised storms; electrical power grid unreliability, like the 98 Auckland power outage; large weather patterns, like Cyclone Bola; or any number of other emergencies, including terrorism.

Whatever the reason, despite contingency planning by Emergency Lifeline Groups, pumping stations and/or water treatment systems may not have the generator backup required to overcome a power outage. Consequently, hospitals must be prepared to manage water failures. As the once standard cushion of hospital on-site water reservoirs seem to have become casualties of cost paring during new hospital construction, hospitals are now much more vulnerable.

David L. Stymiest addresses the issue in the March issue of Health Facilities Management. While his environment is a little different to that found in New Zealand hospitals, his suggestions provide a useful checklist for Facility Managers.

When the water stops

There are a number of initial measures facilities managers should take at the onset of a water system failure.

After water pressure drops, toilet and urinal flush valves may hang open, essentially draining the water system as fast as it is replenished. Posting "Do not flush" notices may suffice until flush valves can be turned off. If turning them off will suffice, contingency plans for water-failure should identify all flush valve locations or riser valves. Drinking water for patients, staff and visitors will also become a high-visibility issue after a failure. Policies should be established for triaging the available resources between patients, staff and visitors.

A water failure will force a major review of sanitation measures. Planning to use waterless hand cleaners may help alleviate the situation in some areas, but water will still be required for the bathing needs of patients, for equipment and for cleaning spills. Infection Control and OSH units have a key role in the planning and policy preparation stage.

Infrastructure equipment

Because emergency management includes recovery (getting back to normal) as well as response (activities during the emergency), water failure plans will need to address both activities.

Below are some types of mechanical, plumbing and fire protection equipment that should be considered when developing an emergency response plan for a domestic water failure. These pieces of equipment also require attention during any planned shutdowns of the water system:

- ✦ Domestic water booster pumps;
- ✦ Domestic hot water pressure booster and recirculation pumps;
- ✦ Fire protection sprinkler systems--avoid dry-running the fire pump, and discuss with your local fire service and risk management department;
- ✦ Leaking backflow preventers;
- ✦ Cooling towers;
- ✦ Boiler systems;
- ✦ Steam boiler deaerator systems;
- ✦ Closed-loop makeup water feeds; and Closed-loop pumps.



New York during the blackout of August 2003. Those buildings with backup generators stand out

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Planning for alternatives

A wide spread water failure will trigger an immediate run on bottled water supplies. Where hospitals plan on using bottled water as a backup to augment their supply, they should verify with their intended suppliers how much prior notice is needed. In some cases, the required notice may be up to 24 hours or more.

Hospitals may choose to install external connections to their internal water system to allow a feed from trucked water. These connections should be in accessible locations, where large water pump trucks running 24/7 can be parked and refuelled in place. The hospital's water demand must be met with these pump trucks, so a clear understanding of the initial demand and the reduced emergency demand will be necessary. For added flexibility, hospitals might consider having on-site storage tanks for the pumped water,

Sanitary sewer alternatives

One of the initial measures to take after a water failure is shutting down toilet operations. This, of course, requires alternative arrangements. Some hospitals put small red bags under the patient toilet seats to capture waste. A policy would be necessary to control, collect and replace these bags on a schedule. Other hospitals may instead, or as well, provide "potty chairs" or severely limit toilet accessibility.

Some hospitals may make portaloos available in selected locations for use by hospital employees and visitors, while others may designate specific restrooms to be used and then red bag those toilets. When portaloos are planned, consider where they will be most needed. Examples include private areas near waiting rooms and entrances. In all cases, clear and rapid communication is essential. Having temporary signs pre-made for immediate posting to direct staff and visitors to the portable toilets can help.

These measures can of course also be used in the event of a sewer-only failure. Then, it may be necessary to disconnect water services from affected buildings until sewer service has been returned to prevent the sewer system from flooding inside the buildings.

Other affected services

In addition to facility wide services, specific departments or sections of the facility will also have unique service requirements during a water shutdown.

Laboratories will need to put equipment failure contingency plans in place. These plans may already exist for individual pieces of equipment, but the challenge is to deal with a large number of coinciding equipment failures. In many cases, the fact that this equipment is on emergency power will be immaterial.

Some labs may choose to have containers of distilled water on hand to use for tests and for cleaning up spills. Contingency plans should be in place to have testing done by other laboratories, should they not also be affected. The plans will have to include the arrangements with the other laboratories; couriers and notifications to the emergency department, the operating rooms and patient care units; and total time frames to test and receive reports from the alternate laboratory.

Radiology will also be affected. Hospitals may plan to cancel elective or routine catheterization and imaging procedures, and perform only emergency cases. Radiology departments will need to designate the smallest number of film processors required to perform emergency procedures. Hospitals with digital systems may choose to use only those systems during a water failure.

Surgery will also be affected by a water failure. Cancelling elective surgery is an obvious first step. Those theatres that must be used will need enough waterless hand cleaner to deal with the water failure. Central sterilization departments will also be affected as they may need to immediately close steam and water valves to sterilization, washer and decontamination equipment. An immediate inventory of available sterilized items and instruments is required. CSD should also have arrangements with another facility to perform backup decontamination and sterilization. Those arrangements need to include couriers and notifications to other affected departments and services.

Dialysis units also represent a special water need that must be managed. Labour and delivery units, emergency departments and, to a somewhat lesser degree, other critical care units will need more backup containers of water than general patient care units for use in clean up.

Emergency departments may plan to divert hazardous chemical emergency cases or any other cases requiring extensive cleanup or decontamination of the patient, staff and facility. However, the cause of the water failure may make diversion plans impractical. In the event of a major environmental emergency, it will be impossible for every hospital to issue divert orders.

Catering services will need to turn off water valves to cleaning and rinsing equipment. They may plan to change menus and convert to paper or plastic for the duration of the water failure.

Household Services will need large water containers for the continued cleaning processes necessary to prevent the spread of infection, such as mopping patient rooms. Hospitals may plan to limit their mopping of common areas to absolute necessities, such as spills. Environmental services will also need to plan for the additional red bag waste that will

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

Articles and comment on emergency management issues are welcomed

Editor: Bruce Parkes
St John, Northern Region
bruce.parkes@stjohn.org.nz



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



Editor's soapbox

As this edition of the Bulletin goes to 'print' many of you will be attending the Recovery Symposium in Napier. The large number registered is a clear indication of the interest we now have in addressing this, the biggest and most overlooked of the "4Rs". I will be interested to see what changes are made to DHB and Hospital plans after the symposium.

Robert Patton's report from his mission to the Democratic People's Republic of Korea makes interesting reading. Two things stuck out for me. First, it is only a few years since all government buildings in this country were built to standard Ministry of Works plans. Second, while high tech sophisticated medical equipment and supplies might be best, one can do quite a lot with very basic stuff.

When putting together contingency plans seek the best but don't overlook our mastery of No 8 wire technology.

Bruce Parkes

Up coming Events

29 September -1 October 2004
New Zealand Institute of Health Management Conference: Showcasing New Zealand—innovation from isolation

Rotorua Conference Centre
More information from www.nzihm.org.nz

The Natural Hazards Centre Course Programme 2004

National Hazards Management Conference, Tauranga 10-11 August
Managing Extreme Weather and Flooding, Christchurch 26-27 August;
Planning for a Volcano Crisis, Wairakei 14-15 October
More information from www.naturalhazards.net.nz

4 – 6 November 2004
New Zealand Risk Management Society Conference

Te Papa, Wellington
More information from www.risksociety.org.nz

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This study has several limitations. The actual number of respondents is low compared to the total number of persons who were placed into quarantine and therefore may not be representative of the entire group of quarantined persons. However, lack of funding, confidentiality of public health records, and an overloaded public health response system limited sampling. Furthermore, a self-selection effect may have occurred with those persons who were experiencing the greatest or least levels of distress responding to the survey. In addition, respondents required access to a computer to respond, which suggests that they may be more educated and have higher socioeconomic status than the overall group who were quarantined. They also had to be English speaking.

The research team say the results of their survey allow for the generation of hypotheses that require further exploration. Their data show that quarantine can result in considerable psychological distress in the forms of PTSD and depressive symptoms and Public health officials, infectious diseases physicians, and psychiatrists and psychologists need to be aware of this issue. They need to work together to define the factors that influence the success of quarantine and infection control practices for both disease containment and community recovery and must be prepared to offer additional support to persons who are at increased risk for the adverse psychological and social consequences of quarantine.

Useful Web site

The New Hampshire Hospital Association website at www.nhha.org/tempattachments/EmergencyPreparedness.php has a number of links that provide useful planning information