

FINAL REPORT



CANADIAN CONFERENCE ON

Counter-Terrorism and Public Health

October 29 – November 1, 2003

The Westin Harbour Castle ■ Toronto, Ontario



**Health
Canada**

**Santé
Canada**



**Canadian Public
Health Association**

**Association canadienne
de santé publique**

Sponsored by the Centre for Emergency Preparedness and Response, Health Canada
and the Canadian Public Health Association

The **Canadian Conference on Counter-Terrorism and Public Health** was co-sponsored by the Canadian Public Health Association (CPHA) and the Centre for Emergency Preparedness and Response (CEPR), Population and Public Health Branch (PPHB), Health Canada.

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Canadian Public Health Association
400-1565 Carling Avenue, Ottawa, ON K1Z 8R1

☎ 613.725.3769 ☎ 613.725.9826 📧 info@cpha.ca Web: www.cpha.ca

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Executive Summary

The Canadian Conference on Counter-Terrorism and Public Health was held in Toronto from October 29 to November 1, 2003. The conference was sponsored by the Canadian Public Health Association (CPHA) and the Centre for Emergency Preparedness and Response (CEPR) of the Population and Public Health Branch, Health Canada. The conference organizers began with an understanding that the protection of the health of Canadians during times of emergency is a shared responsibility, requiring the co-operation and efforts of the public health community *writ large*. Terrorist emergencies in particular have the potential to impact Canadians at the international, national, provincial/territorial, and municipal levels. Therefore, the conference program was designed to offer a cross-jurisdictional, open forum on issues related to chemical, biological, radio-nuclear and explosive (CBRNE) agents and events. Experts from across Canada and internationally were brought together to discuss the latest information, research and experiences with respect to potential health impacts and public health responses to terrorist events, with an eye to informing future research and program directions for emergency preparedness and response.

The program helped to identify current practices and needs through four streams of public health activities as they relate to health emergencies and potential CBRNE events: 1) prevention, 2) preparedness, 3) response, and 4) recovery and continuity, including psychosocial dimensions. The program further assisted in the development of potential solutions in clinical and public health, biologics, social health, and laboratory and public safety to help manage, reduce, or mitigate Canadians' exposure to risk and losses due to terrorist events.

This event represented the first Canadian venue to showcase such a wide spectrum of public health and safety sciences engaged in counter-terrorism. Over 400 health care and emergency professionals were in attendance, and have communicated with CPHA and CEPR – on site, by e-mail and through post-conference evaluations – their great interest in and satisfaction with the program and presentations. This report offers highlights from all plenary and concurrent sessions.

At the conclusion of the conference, Dr. Ron St. John, Conference Co-Chair and Director General, Centre for Emergency Preparedness and Response, Health Canada, reiterated the conference themes:

- **Review of any or all hazards:** The lessons learned from preparedness experience with natural disasters have a direct application to the counter-terrorism field;
- **Integration and coordination within and across the health sector:** Because no one discipline can deal with CBRN issues, the conference planners sought out and brought together a wide variety of workers, researchers and policy-makers;
- **Health sector positioned firmly in the middle of the CBRNE spectrum:** The key role played by public health for preparedness and response to terrorism was clearly visible to all participants; and
- **Knowledge and experience were shared:** This involved both the latest terrorist threats and counter-terrorist initiatives, and revisiting an old nemesis like smallpox, as well as seeing how far 'lessons learned' to date are taking Canada and global partners.

St. John emphasized the need – expressed frequently throughout the conference – for stable, dual-purpose investments in public health infrastructure, saying that the tools used for response to bioterrorism are the same tools used for a communicable disease outbreak. “We need to invest in these tools, for our ultimate goal is a seamless, coordinated emergency preparedness and response capability across the country.”

Gerry Dafoe, Conference Co-Chair and CEO of CPHA, told attendees that their “collective commitment to public health will help meet the very big challenges we face to counter terrorist threats, and maintain and improve the health of Canadians.”

Résumé

La Conférence canadienne sur la santé publique et la lutte contre le terrorisme s'est tenue à Toronto du 29 octobre au 1^{er} novembre 2003. Elle était commanditée par l'Association canadienne de santé publique (ACSP) et le Centre de mesures et d'interventions d'urgence (CMIU) de la Direction générale de la santé de la population et de la santé publique de Santé Canada. Les organisateurs ont commencé par préciser que la protection de la santé des Canadiens durant les urgences est une responsabilité partagée qui exige la coopération et les efforts de la collectivité de la santé publique au sens large. Les urgences de nature terroriste, surtout, ont le potentiel de toucher les Canadiens sur tous les plans : international, national, provincial/territorial et municipal. C'est pourquoi la conférence se voulait une tribune intergouvernementale ouverte, portant sur les enjeux liés aux agents et aux événements chimiques, biologiques, radiologiques, nucléaires et à l'explosif (CBRNE). On a donc rassemblé des spécialistes de tout le Canada et de l'étranger pour discuter des dernières informations, études et expériences sur les effets sanitaires éventuels d'incidents terroristes et sur les réactions des responsables de la santé publique, en vue d'étayer la recherche future et d'orienter les programmes de mesures et d'interventions d'urgence.

La conférence a permis de cerner les pratiques et les besoins actuels en se concentrant sur quatre volets de la santé publique liés aux interventions sanitaires d'urgence et aux éventuels incidents CBRNE : 1) la prévention, 2) l'état de préparation, 3) l'intervention et 4) le rétablissement et la continuité (y compris la dimension psychosociale). Le programme de la conférence a également favorisé l'élaboration de solutions possibles dans les domaines de la santé clinique et publique, des produits biologiques, de la santé sociale, de la sécurité des laboratoires et de la sécurité publique, ceci pour faciliter la gestion, la réduction ou l'atténuation de la vulnérabilité des Canadiens aux risques et aux pertes engendrés par des incidents terroristes.

La conférence était la première au Canada à présenter un aussi vaste éventail de sciences de la santé publique et de la sécurité engagées dans la lutte contre le terrorisme. Plus de 400 professionnels des soins de santé et des urgences y ont assisté et ont exprimé à l'ACSP et au CMIU – sur place, par courriel et en remplissant les questionnaires d'évaluation après la conférence – leur vif intérêt et leur satisfaction à l'égard du programme et des présentations. Le rapport de la conférence donne les faits saillants de toutes les séances plénières et simultanées.

Pour clore l'événement, le Dr Ron St. John, coprésident de la conférence et directeur général du CMIU de Santé Canada, en a repris les grands thèmes :

- **L'examen de tous les dangers** : l'examen de notre état de préparation lorsque nous sommes confrontés à des catastrophes naturelles permet de tirer des leçons qui peuvent être directement appliquées à la lutte contre le terrorisme;
- **L'intégration et la coordination à l'échelle du secteur de la santé** : comme aucune discipline ne peut à elle seule composer avec des enjeux de type CBRNE, les planificateurs de la conférence ont cherché et rassemblé un vaste éventail d'intervenants, de chercheurs et de décideurs;
- **Le positionnement du secteur de la santé en plein milieu du spectre des activités CBRNE** : le rôle clé joué par la santé publique dans notre état de préparation et nos interventions en cas d'incident terroriste était évident pour tous les participants;
- **Le partage des connaissances et de l'expérience** : nous nous sommes penchés sur les dernières menaces terroristes et initiatives de lutte contre le terrorisme, mais nous avons aussi revisité un vieil ennemi – la variole – et appris jusqu'où les leçons de l'expérience ont mené le Canada et ses partenaires internationaux.

Le Dr St. John a souligné le besoin – souvent exprimé durant la conférence – de faire des investissements stables et à double usage dans les infrastructures en santé publique. Les outils employés en réponse au bioterrorisme sont les mêmes, a-t-il dit, que ceux que nous utilisons en cas d'écllosion d'une maladie transmissible. « Nous devons investir dans ces outils, car notre but ultime est de disposer, dans tout le pays, d'une capacité de préparation et d'intervention coordonnée et sans coupure. »

Gerry Dafoe, coprésident de la conférence et chef de la direction de l'ACSP, a indiqué aux participants que leur « engagement collectif envers la santé publique aidera à relever le très grand défi auquel nous sommes confrontés pour contrer les menaces terroristes et pour maintenir et améliorer la santé des Canadiens. »

Acronyms

APF	Agricultural Policy Framework, Agriculture and Agri-Food Canada
ARC	American Red Cross
BRAT	biological response action team
BSE	bovine spongiform encephalopathy
BW	biological weapon
CAAM	Comité aviseur antiterrorisme de Montréal
CBRNE	chemical, biological, radio-nuclear, explosive
CCM	crisis and consequence management
CCRA	Canada Customs and Revenue Agency
CDC	Centers for Disease Control and Prevention, USA
CEPR	Centre for Emergency Preparedness and Response, Health Canada
CFMS	Canadian Forces Medical Services
CIDA	Canadian International Development Agency
CPHA	Canadian Public Health Association
CRC	Canadian Red Cross
CSE	Communications Security Establishment
CSIS	Canadian Security Intelligence Service
DFAA	Disaster Financial Assistance Arrangement
EMS	emergency medical services
ER	emergency room
ERCC	Emergency Response Coordination Committee, Toronto
FBI	Federal Bureau of Investigation, US
FDA	Food and Drug Administration, USA
FEMA	Federal Emergency Management Agency, US
FIORP	Food-borne Illness Outbreak Response Protocol
FLQ	<i>Front de Libération du Québec</i>
F/P/T	Federal/Provincial/Territorial
FSQ	food safety and quality
HAZMAT	hazardous materials
ICS	Incident Command System
ISO	International Organization for Standardization
IMS	Incident Management System
MOH	Medical Officer of Health
MVA	Modified Vaccinia Ankara
Naylor Report	National Advisory Committee on SARS and Public Health, chaired by Dr. David Naylor
NCTP	National Counter-Terrorism Plan
NGOs	non-governmental organizations
NSA	National Security Agency, US
PPHB	Population and Public Health Branch (PPHB), Health Canada
SARS	severe acute respiratory syndrome
SAVI	SARS-accelerated vaccine initiative
SGC	Solicitor General Canada
TB	tuberculosis
UC	unified command
US	United States
WMD	weapons of mass destruction
WHO	World Health Organization
WWII	World War II
Y2K	year 2000
9/11	terrorist events of September 11, 2001
24/7	24 hours a day and 7 days a week

Introduction

The Canadian Conference on Counter-Terrorism and Public Health was held in Toronto from October 29 to November 1, 2003. The conference was sponsored by the Canadian Public Health Association (CPHA) and the Centre for Emergency Preparedness and Response (CEPR) of the Population and Public Health Branch, Health Canada.

Conference Goal

To offer the latest information related to the public health sector and terrorism, in a context that promotes the exchange, discussion and enhanced understanding of practices, policies, guidelines and protocols in clinical and public health, biological and social health, and laboratory and public safety as they relate to acts of terrorism.

The conference organizers began their work with the understanding that the protection of the health of Canadians during times of emergency is a shared responsibility, requiring the co-operation and efforts of the public health *writ large*. Moreover, terrorist emergencies in particular have the potential to impact Canadians at the international, national, provincial/territorial, and municipal levels. Therefore, the conference program was designed to offer a cross-jurisdictional, open forum on issues related to chemical, biological, radio-nuclear and explosive (CBRNE) agents and events. Experts from across Canada and internationally were brought together to discuss the latest information, research and experiences with respect to potential health impacts and public health responses to terrorist events, with an eye to informing future research and program directions for emergency preparedness and response.

Conference Objectives

- Offer a cross-jurisdictional, open forum on information and actions related to the public health sector and terrorism for first responders, public health workers, and political and policy decision-makers.
- Enhance understanding of CBRNE agents to develop solutions in clinical and public health, biologics, social health, and laboratory and public safety to minimize exposure to risk and losses due to terrorist events.
- Explore four public health activities: 1) prevention, 2) preparedness, 3) response, and 4) recovery and continuity with respect to health emergencies and CBRNE terrorist events.
- Build and strengthen working relationships and 'best practices' among federal, provincial/territorial and local health departments, first responders, public health workers, voluntary health agencies, governments and professional organizations.

The program helped to identify current practices and needs through four streams of public health activities as they relate to health emergencies and potential CBRNE events: 1) prevention, 2) preparedness, 3) response, and 4) recovery and continuity, including psychosocial dimensions. The program further assisted in the development of potential solutions in clinical and public health, biologics, social health, and

laboratory and public safety to help manage, reduce, or mitigate Canadians' exposure to risk and losses due to terrorist events.

This event represented the first Canadian venue to showcase the wide spectrum of public health and safety sciences engaged in counter-terrorism. Over 400 health care and emergency professionals were in attendance, and have communicated with CPHA and CEPR – on site, by e-mail and through post-conference evaluations – their great interest in and satisfaction with the program and presentations. This report offers highlights from all plenary and concurrent sessions.

Welcome and Opening Remarks



Conference Co-Chair and CPHA CEO, Gerry Dafoe, welcomed delegates to the conference, which he described as a "truly groundbreaking event." While the threat to Canada may be low, Canadians must be prepared for a level of coordinated response commensurate with the overall threat,

given that the consequences of terrorism occurring in Canada could be disastrous. Through the presentation and exchange of the latest information and experiences in counter-terrorism and emergency management, the Conference Scientific and Steering Committees hope to contribute to Canada's preparedness and response capacity with regard to a terrorist event.



Dr. Ron St. John, Conference Co-Chair and CEPR Director General at Health Canada, added his welcome to conference participants, noting the variety of organizations from different jurisdictions gathered to discuss how to prepare and respond to terrorist events. The program

emphasizes an inter-disciplinary approach to counter-terrorist efforts, with a nationally coordinated plan. While the focus of the conference remains public health, many dimensions are addressed in the management of such crises, as no single agency or group can respond sufficiently to such events.

"My hope is that all of you gain new knowledge and ideas, and put them into practice to create a seamless emergency preparedness and response plan across the country."

- Dr. Ron St. John

Plenary I:

Panel Discussion on Joint Investigation – Addressing the Needs of Health Professionals and Police Investigators



Dr. Marc-André Beaulieu, Chief, National Office of Health Emergency Response Team, Population and Public Health Branch, Health Canada, presented Health Canada's framework for response to a bio-terrorism event. He noted that similar processes were being

undertaken across other government departments and jurisdictions. The framework of an investigative response to a bio-terrorism event includes three key elements: identification of the threat by intelligence services and police agencies, detection of the event through surveillance, and investigation of the source of disease. Beaulieu focussed on three aspects of the response: surveillance, outbreak investigation, and information sharing.

Systems already exist at the national level for specific surveillance scenarios, such as those involving respiratory diseases, enteric diseases, vaccine-associated adverse events, and antibiotic resistance cases in hospital settings. Additional systems are being considered or are in the early stages of implementation, including the tele-triage system, in which data are collected from nurses' reports on patients' symptoms, as well as emergency room surveillance and reporting. Another means to track and monitor outbreaks is the syndromic surveillance system, which looks at a variety of symptoms and laboratory results reported from a variety of sources (e.g., 9-1-1 calls) that do not point to a specific disease.

There are a number of sources of outbreak information, including public health officials, laboratories, and hospitals. Many outbreak investigations are concurrent, with epidemiology investigations, trace-back-to-source activities, laboratory investigations, public health control measures, and communication to health professionals and the public occurring simultaneously. Once an outbreak is confirmed, an investigation requires identification and counting of cases; orientation of data by time, place, and person; and implementation of control and prevention methods as quickly as possible. National coordination of the public health actions is required to deal with outbreaks.

Another critical element – efficient and timely communications – is essential between the health sector and the police and security sectors during an event. Communication lines are usually well established within sectors, but once additional and different expertise is needed, it becomes more difficult to share information across professions. Clearly, information released to the media must be controlled to prevent an investigation becoming compromised. However, even current health regulations can seriously compromise access to information for

effective surveillance activities. For instance, only a limited degree of mandatory reporting is required of physicians (i.e., specific list of reportable communicable diseases). A physician is not obliged to release information to law enforcement personnel about a patient's exposure to a biological event. The physician may, however, inform the Medical Officer of Health (MOH), who has greater decision-making authority. Barriers to information sharing also exist due to the confidentiality of health data. The question of ownership of biological material taken from a patient must be addressed. A clear need exists for pre-established agreements on the release and exchange of sensitive information and laboratory testing arrangements.



John Bureau of the RCMP's Explosive Disposal and Technology Section, Technical and Protective Operations Facility, discussed terrorist incident investigations from a police perspective. He presented summaries of several investigations in Canada that uncovered criminal activity

with terrorist intent, focussing on the manufacture of toxic agents, dispersal mechanisms, evidence of breach of security of law enforcement agencies, and the possession of explosive devices.

From the outset, health and law enforcement investigators have differing priorities. Health officials are required to protect the public, prevent the spread of disease, and protect public health workers. The investigative requirements of the police include conducting victim interviews, recovering evidence, protecting informants, and maintaining an investigative advantage by not releasing information too early. A number of triggers would initiate a joint investigation undertaken by public health and law enforcement authorities, including:

- specimens or patients exhibiting symptoms that have been identified as related to potential bio-terrorism-related organisms;
- large numbers of patients presenting with similar disease symptoms;
- a disease outbreak with an unusual geographical or occupational distribution;
- multiple patients exhibiting common activity history; and
- unusual or unexplained death or illness among livestock.

An essential role is played by effective communications among the designated key players in all sectors in successful joint investigations. To that end, conferences such as this one represent a critical opportunity for members of different professional groups to meet, learn, and develop mutual trust.



Robert Wadden, Assistant Crown Attorney, Ontario Ministry of the Attorney General, presented the perspective of the prosecutor, who enters the investigation once it becomes a criminal prosecution. When conducting an investigation or

coordinating the efforts of first responders, a law enforcement officer has two distinct roles. The first is the prevention of crime and further disease spread. The second role is the physical act of gathering and preserving evidence so it can be used successfully in prosecution. These roles are played concurrently during an event and will change in priority as circumstances change.

Feelings of urgency can be engendered in a crisis and interfere with the conduct of investigators. For instance, individuals may feel compelled to overstep their authority, or conversely may be prevented from acting as aggressively as is warranted because of misguided efforts by a third party to protect the rights of the accused.

Law enforcement personnel must know and have ready access to channels for sharing information. An essential point of contact is the presiding MOH, who has broad powers in both the collection of information and in ordering the physical examination of individuals suspected of harbouring certain diseases. Certain regulatory powers are also in place to allow police to gather information in specific circumstances.

It is important for police officers to know whether they are gathering information on a victim or a suspect. Common understanding is that the acts of search or seizure require a search warrant, whether the information pertains to records, physical objects, or biological materials. However, information can be obtained legally without a warrant. If the particular circumstances are deemed urgent and critical (i.e., exigent), protective (of persons from imminent bodily harm or death), or preventive (of imminent loss or destruction of evidence), then police may search or seize without a warrant. A considerable challenge for law enforcement is defining the end of exigent circumstances, allowing for a return to due process. Careful documentation of circumstances and influencing factors by police officers will assist in the determination of when exigent circumstances have occurred.

"Anti-terrorism laws grant broad powers in the early stages of an investigation, but only time will tell if they are adequate."

- Assistant Crown Attorney Robert Wadden

Limitations exist on the use of shared information. Seizure for one purpose does not mean police can use what was obtained for another purpose. For instance, re-seizure with a warrant may be necessary to obtain information that may have already been received during exigent circumstances. Law enforcement follows process as much as possible and makes every attempt to gather evidence using normal channels; in other words, law enforcement is compelled to act in good faith.

Discussion

A potential scenario was presented in which the victim of a bio-terrorist event is also the perpetrator. For example, a person inoculates himself with smallpox with the intent of spreading the disease in hospital. Presumably, an astute physician will alert the MOH. But what happens next, a

delegate asked. Beaulieu replied that a physician can hold the patient, if the physician feels the individual will do harm to himself or others. Physicians can ask orderlies to restrain the patient and ask uniformed officers to assist. Wadden concurred, saying that the patient should be isolated and all necessary force used to prevent the spread of disease.

A delegate noted that most MOHs have a good professional relationship with the local police force. However, as physicians must protect confidentiality, releasing names to police can only be done with a clearly defined just cause. Wadden suggested that an MOH would be a good judge of the severity of a situation with respect to releasing information and cooperating fully.

Plenary II:

The Government of Canada and the Fight Against Terrorism

The Honourable Wayne Easter, Solicitor General



As **Solicitor General and Minister Responsible for Public Safety and National Security, The Honourable Wayne Easter** noted that he is very much aware of the central role played by good partnerships among all sectors – government, industry, agencies and organizations – in keeping Canada

safe. This conference represents the opportunity to build partnerships and collaboration in these efforts. While no specific threat of attack currently exists, Easter and his Cabinet colleagues have a responsibility as elected officials to maintain public safety and prepare for the worst, while hoping for the best. To that end, all governments and indeed all sectors must focus on building trust and working collaboratively, rather than 'protecting turf'.

Since the mid-1990s, the Solicitor General Canada (SGC) and partners in national security, including experts at Health Canada, have been working to prepare Canada for the possibility of biological or radiological terrorist attack. The Federal Government realized that to focus on embassy protection, hostage rescue, and airplane hijacking alone "would only be fighting yesterday's battle". Specifically since 9/11, the Government has taken the following steps to support prevention, preparedness and response capacities:

- introduction of anti-terrorism legislation;
- tougher immigration and border controls; and
- establishment in 2001 of a five-year anti-terrorism plan supported as follows:
 - ◆ \$1.6 billion to equip and deploy more intelligence and frontline investigative personnel; to improve coordination among law enforcement, intelligence and national security agencies; and to boost marine security;
 - ◆ \$1 billion to improve screening of entrance into Canada;

- ◆ \$2.2 billion on air security, including new agency and undercover police officers on aircraft;
- ◆ \$1.2 billion enhanced border security; and
- ◆ \$1.6 billion to improve critical infrastructure, protection and emergency preparedness, and expand military anti-terrorism capacity.

The national counter-terrorism plan, now under review, was first introduced in 1989. The plan examines potential linkages among government departments through crisis- and consequence-management plans to increase federal coordination, and also ties together provincial and territorial counter-terrorism arrangements. The thrusts of this plan are clarity and responsiveness.

Canada's largest trading partner is the United States (US); post-9/11, Canada is now seen through a security filter by that partner. Given the close economic ties, "we are working hard to ensure the Americans understand our policies and their robust and comprehensive qualities," Easter said. SGC has also established a federal, provincial and territorial counter-terrorism working group to look at areas of mutual interest. These efforts demonstrate to Canadians that all levels of government are working together to protect them.

Discussion

A delegate noted that allocated dollars had not yet reached some frontline responders, who are strapped for resources. Easter responded that the challenge is to meet the needs of the many and varied first responders across the country. At this time, funds are being targeted to training and equipment, but probably not enough have been allocated to the health care sector. With respect to potential prevention tactics, as raised by one delegate – i.e., the redirecting of Canadian aid to forestall the development of the 'terrorist mindset' among the most desperate or disenfranchised – Easter replied that the last budget increased funding for the Canadian International Development Agency (CIDA) by \$3 billion to address social and economic issues in the developing world. He further noted that giving people decent hope for the future and lessening the danger to the international community is a global responsibility, and that "we all must do more."

Prevention Session #1:

Understanding Terrorism – What is Needed to Prevent It

Don Avery, Professor, Department of History, University of Western Ontario, characterized terrorism as one of the major issues of the 21st century and the most serious threat facing Canada's security officials. Concerns in Canada and throughout the world have gained momentum since 9/11 and the anthrax letter events in the US. Avery described the enemy as both more identifiable and more threatening, with an enhanced ability to access and use weapons of mass destruction (WMD). Some potential scenarios included the deployment of 'dirty bombs', access to and use of radio

isotopes (60,000 of which are available in Canada), suicide terrorists transformed into 'walking pathogen bombs', and the real threat posed by potential terrorist strikes on the agriculture industry (i.e., agri-terrorism).

In World War II (WWII), Canada assisted the Allies in the development of biological weapons, and continued to harness expertise during the Cold War. By the late 1960s, plans were laid out for 'designer' pathogens and combination agent packages with vaccine and antibiotic resistance. Large aerosol clouds between 20 and 30 miles wide, covering thousands of miles and moving undetected over cities and towns, were also envisioned. These state-sponsored activities supposedly ended with the 1972 *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, when 146 nations renounced the use, possession and research and development of these weapons. Despite signing on, the Soviet Union continued to work with these weapons.

In the late 1960s and early 1970s, the first modern terrorists emerged, including religious terrorists, liberationists such as Canada's *Front de Libération du Québec* (FLQ), 'apoplectic' sects, and white supremacists, among others. Common to all of these is the use of violence in order to spread fear and acquire intense media attention to obtain their goals. Such terrorists have no remorse over their actions. Canada's relative sense of complacency about the terrorist threat was shattered with the Tokyo subway sarin attack by the cult Aum Shinrikyo in 1995. The cult's goal was to inflict mass casualties, but they were not technologically adept enough to meet their objectives.

"Recall what the IRA said after they carried out the attempted murder of the British Cabinet at The Grand Hotel in Brighton on Oct 12th, 1984: 'Today we were unlucky, but remember we have only to be lucky once; you will have to be lucky always.'"

- Don Avery

Since 9/11, Canada and its allies have responded to the increased possibility of bio-terrorist attack, but Avery noted that there are limitations on effective preparedness and the ability to predict an event. It is extremely difficult to penetrate terrorist organizations to learn about planning, and the results of terrorist activity may only show up in a doctor's office or hospital well after the fact. Canada and the US have been engaged in a series of joint exercises to respond more effectively to a mass-destruction attack, and both countries appear pleased with the results of their first responders. These exercises and others have generated new lessons learned and critical issues. There is a need to:

- ensure that research scientists work closely with public health to expedite new methods of coping with bio-agents and improve response strategy and protocols (e.g., new knowledge on instant aerosolized effect of anthrax, revised concept of a lethal anthrax dose, new awareness of antibiotic effectiveness);
- recognize and mitigate differences between public health and law enforcement officials (including dealing with hoaxes);

- ensure hospitals' surge capacity to handle patients; and
- address psychological dimensions to counter distrust, fear, and insecurity.

Gwynne Dyer, journalist and author, told delegates that 2,750 people died as a result of terrorist actions against the World Trade Center in 2001, with 90% of the intended victims escaping the towers to safety. In all, only 350 civilians (Westerners) have been killed since 9/11 due to terrorist attack, most of those in a nightclub in Bali, Indonesia. As a result of the wars in Afghanistan and Iraq, "we have killed 20,000-25,000 Muslims," Dyer said and commented that the US has taken a disproportionate response to the events of 9/11.

Terrorism is not an ideology, but a technique for behaviour modification. A terrorist always acts for a political purpose. When nation-states undertake 'terrorist acts' – as Bomber Command did during WWII, Dyer added – these are seen to be legitimate techniques to kill. While 'state terror' is very effective, non-state terrorism is less effective, there being fewer resources available to non-state terrorists.

Dyer questioned the West's belief that events like 9/11 will be the pattern of the future and that action is necessary to counter this inevitable threat. Since 9/11, "we have had two wars (Afghanistan and Iraq), the US *PATRIOT Act*, Canada's Bill C-36, the US *Anti-terrorism, Crime and Security Act*, and thousands under arrest" with no subsequent attacks or deaths in America. Al-Qaeda is a weak organization with loose affiliates, and no state or national base. "Their 9/11 goal was not to force the US to surrender, but to illicit a disproportionate response, which would alienate America's allies in the Middle East and accelerate the revolutionary process to bring al-Qaeda and its partners to power in Arab countries: Saudi Arabia, Egypt, Syria, Algeria and non-Arab parts of the world as well," Dyer said.

Overall, terrorist groups have little success. They seek to drive a state into repressive measures by their actions, which will then turn the population against the government, and "they almost always lose." In the face of terrorist events, formerly liberal governments will turn repressive and crush the perceived enemy with ruthless measures. Many more lives were lost in WWII. Terrorist threats today remain small and should not provoke an over-reaction.

"Preparing for disasters is appropriate, but the less we actually do about terrorism the better."

- Gwynne Dyer

Preparedness Session #1: Is There a Threat? Towards Risk Assessment

Chief Superintendent Dan Killam, Director General, National Security, Criminal Intelligence Directorate, RCMP, explained that when examining threats, three areas are reviewed: motivation, capability and intent. "Threat assessment is a planned and directed effort to assess the credibility of the

threat on both intelligence and technical grounds," Killam said. The RCMP has five threat levels, ranging from 'no threat' at the lowest level, to 'imminent threat' at the highest. As this system differs from the one employed by the US, the RCMP must gauge US levels on its own scale to determine what action if any to take and what resources are required. The higher the threat, the more resources are targeted to the problem.

New realities have evolved from the events of 9/11 and are informing the RCMP's counter-terrorism efforts. These realities include:

- the fact that terrorists will continue to seek out ways to attack our societies;
- ease of access to chemical and biological weapons in order to inflict harm, panic and disorder;
- ease and expertise with which the 9/11 terrorists acted;
- ensuing economic and social disruptions;
- fabrication and manipulation of identity and other documentation; and
- the fact that future attacks will 'push the envelope further', so it is paramount to act swiftly and decisively to thwart such acts.

Regarding the prevention of terrorism, the RCMP has realized its inadequacies in informant training to penetrate terrorist organizations and acquire information in advance of incidents. The service is now making great strides in this area and on other fronts. It is pursuing new technology and operability, new databases to share information, increased partnerships with the private sector, and consideration of undertaking R&D on explosives and other weapons.

"We will get better at preventing terrorist attacks in Canada and abroad if we get all government services involved at the front end through a coordinated response that will ensure an effective response."

- Chief Superintendent Dan Killam

The RCMP takes an integrated and best practices approach in its policing activities. It actively engages in joint partnerships, joint forces operations, secondments and exchanges of personnel with the Canadian Security Intelligence Service (CSIS), the Communications Security Establishment (CSE) that is similar to the National Security Agency (NSA) of the US, Citizen and Immigration Canada (CIC), and Canada Customs and Revenue Agency (CCRA). "All these agencies work in partnership with us, so we have a complete package when we try to assess threats and engage the right actions," Killam said.

A cooperative effort is central to success, given emerging critical issues such as CBRNE agents, critical infrastructure threats, and potential targets of opportunity (i.e., 'soft targets', such as the October 2003 nightclub bombing in Bali).

Cheryl Bourassa, Director, Disaster and Emergency Health Planning, Calgary Regional Health Authority, discussed some of the characteristics of terrorism, reminding delegates that there is no universal definition. A terrorist in one

country may be a hero in another. She explained that there are generally two types of terrorists:

- domestic: for example, Alberta farmer, Wiebo Ludwig, who threatened the oil industry; and
- international: for example, perpetrators of the 1985 Air India bombing in which planning was done in Canada but directed towards another government.

Terrorist acts are usually indiscriminate, and without the conventions of war no country is exempt from attack. Terrorists act without moral constraint, intending to gain attention for their cause, demonstrate their power, or recruit new members. They highlight a government's lack of power by raising the fears and anxiety of the population. The overall message of terrorism is moral chaos, in which a government has lost control and can no longer protect its citizens. Freedom, such as exists in Canada, provides an opportunity for terrorists, allowing them to move freely between borders. In recent times, Canada has faced a number of critical health and economic challenges (e.g., SARS, BSE). Delegates were asked to reflect on these events and consider the outcomes if they had been deliberate attempts to affect the economy. Even the fear of such events "can drive our system to its knees, affect people's health, and damage relationships and tolerance," Bourassa said.

"We may face accidental releases as well as terrorist attacks, so we need to be health-risk motivated, not incident-cause motivated."
- Cheryl Bourassa

A risk management approach acknowledges that not all risks can be eliminated and is key to disaster mitigation. It sharpens understanding of what needs to be done and the resources required. The existence of vulnerability does not necessarily mean a threat exists. Some threats are more likely than others, and should be reviewed regularly to ensure counter measures are in place. A risk management approach will ask, what can go wrong? And, how likely is it? Health risk assessments will be part of this process. A good understanding of, and access to, robust health sector capacity at home is essential; as well as effective assessments, priority setting and planning to be undertaken with international partners.

"We need to work with other countries, understand what they're doing, and plan together," Bourassa noted. "This is one of the rare times where health planning and national security do intersect in terms of risk assessment planning and response."

Patrice Guyard, Coordinator, Emergency Preparedness, Quebec Department of Health and Social Services, described the General Directorate of Public Security and Prevention, of the Ministry of Public Security, that was appointed by the Quebec government in 1992 to coordinate the use of government resources in case of disasters. Subsequently, a National Plan of Civil Security was developed, to allow for the delivery of 19 missions, drawing on the

services of 28 ministries or organizations, and generating more than 400 joint and other activities. These missions are similar to those outlined by the US Federal Emergency Management Agency (FEMA) and include: the provision of mass evacuation, essential goods and services supply, transportation, communications, police, municipality support, energy, food, financial aspects, reconstruction, health, and other deliverables.

To carry out the operational aspects of the plan, the Health and Social Services Network is mandated to preserve life, health and well-being, under what's called the "socio-sanitary mission". The Network works on three cascading levels of service: the local level through hospitals, CLSCs (health centres), community organizations, etc.; the regional level through regional councils for health and social services; and the provincial level through the Ministry.

The socio-sanitary mission works within four complementary and expandable sectors: 1) physical health, referring to pre-hospital and in-hospital care and access; 2) psychosocial intervention, referring to services for victims, family and responders; 3) public health, referring to environmental health, epidemic control and notification; and 4) services continuity, referring to ensured access to hospital services, etc. A fifth sector – communications – makes certain that all four components are strategically networked. The Strategic Framework for Health Emergency Management used in Quebec informs both pre-event and after-event activities, and was developed by the Council of Health Emergency Management Directors.

"In 2000, we had a sarin gas hoax in Montreal, for which we had secured sarin antidote. This hoax case allowed us to bring the reserve of antidote to Quebec City a year later for the Summit."
- Patrice Guyard

With this background, Guyard reviewed Quebec's experience with the Summit of the Americas held in Quebec City in 2001. The event drew 4,000 delegates, 150 dignitaries, and approximately 12,000 protesters. The Summit was initially designated as a municipal-level activity, but given the high number of international attendees and the protocol component of the event, it was expanded to include regional, provincial and federal resources. To begin, the planning committee – including police, fire, health and others – requested a complete revision of emergency planning of all hospitals designated for health response during the Summit, and installation of a new credential system for staff access to hospitals and other facilities within the Summit area. All planning for health had to incorporate the needs of the foreign dignitaries, as well as the protesters.

A perimeter was established that allowed planners to focus on a precise geographic area. "Every time a car passed through the perimeter, it was fully examined," Guyard noted. To address physical health needs, planners pre-positioned first aid stations in conjunction with the Red Cross Society,

designated 19 ambulances, established medical clinics in hotels where dignitaries stayed, and reinforced doctors and nurses in the six designated hospitals within the perimeter. They also established a special health facility in designated emergency rooms for police. On the public health front, planners pre-positioned antidote for sarin gas in some hospitals, and reinforced the level of surveillance of infectious diseases. To address potential psychosocial needs, special teams of trained workers (1,500 individuals) were mobilized to service victims, relatives and responders, as needed. The planning appeared to be extremely effective given the low number of hospital events that ensued: 229 people visited one of the six emergency rooms; of these, only 2 were admitted to hospital and they were released a few days later.

Response Session #1:

Mission Possible – Organizing and Managing a Coordinated and Integrated Response

According to **Wayne Dauphinee, Director of Emergency Preparedness, Ministry of Health Planning in British Columbia (BC)**, we should all be passionate about responding to CBRNE threats. “The threat is real,” he said. “Whether it’s foreign or domestic, the threat is here.” Recent US Federal Bureau of Investigation (FBI) reports indicate that agents have been attempting to enter government facilities in the US and Canada, and describe cases of tampering with electrical transmission systems. Dangerous materials ‘liberated’ from the former Soviet Union provide many possibilities, particularly in the hands of state sponsors of terrorism such as Iran, Libya, North Korea, Sudan and Syria.

Those in the emergency preparedness community have to take all threats – natural disasters and terrorist events – seriously. For example, they must ask themselves if the outbreaks of severe acute respiratory syndrome (SARS) or West Nile virus could have been introduced intentionally. Recent events such as the devastating BC forest fires of summer 2003 highlight the concerns of emergency planners and responders for “the great, unknown elements” that may be coupled with so-called natural disasters. As well, biological and chemical agents are coming under increasing scrutiny. A clandestine lab in BC producing methamphetamines or ecstasy could be a front for the production of chemical weapons. Management and strategic planning are necessary to understand and plan for subsequent effects on public health should a terrorist act occur, and emergency medical services (EMS) and acute care facilities are key to these planning efforts.

“We need to be suspicious and alert, due to 9/11. What we are doing in this conference will help us prepare and plan.”

- Wayne Dauphinee

Canada has invested money and purchased some equipment, but has done so without a strategic counter-terrorism plan, which will compromise the success of these efforts to date.

Dauphinee likened an absence of planning to “an orchestra playing without a conductor” and called the strategic plan “the sheet music of the orchestra.” The emergency risk management process should be the backbone of any response strategy. The process called Hazard Assessment Elements identifies and profiles a hazard, and assesses the vulnerability of a community to the hazard impacts. This process is especially relevant to “main threat” cities with the highest risk rating – Montreal, Toronto, and Vancouver. However, the same tools can be used across Canada to develop a common language within every emergency situation. A Disaster Threshold will address the impact on a community by determining whether an event is a crisis, a disaster, an emergency, or situation-normal. This tool allows for planning, exercises, and revision, so that its effectiveness can be continually improved.

In extreme events such as 9/11 or natural disasters such as an earthquake, the location, economic status, and the health of the population become very important to the community’s ability to cope. A hazard will be defined by the severity of the event, the vulnerability of the community, and the extent of its coping resources. The local level is the first to be impacted by an extreme event, and will be the first to respond. Too often, equipment is available but with little knowledge and training offered for those tasked with using it. SARS provided a good wake-up call for those working on Canada’s response capacity, confirming that the status quo is insufficient. However, Dauphinee also noted that “we are never fully prepared for a major attack.”

John Lindsay, Disaster Management Specialist, Manitoba Health, called on Canadian decision-makers to form a pan-Canadian, established procedure for emergency response, echoing the remarks made above by Wayne Dauphinee. To that end, the emergency management framework is a key resource for pre-event planning through risk management. “Currently in Canada, we respond through an events-oriented approach,” Lindsay remarked, citing emergencies such as SARS, Year 2000 (Y2K), and bovine spongiform encephalopathy (BSE) in which new, ad-hoc systems are devised on the fly. In contrast, an established procedure would encompass public health, physical and mental health, psychosocial intervention, and the maintenance of essential activities. It takes time and money to plan for and build in resiliency to the health sector so that communities can better resist harm and return to normal.

“Our goal is to establish pan-Canadian systems to ensure programs and policies link local, regional, provincial, and federal levels within health and other sectors.”

- John Lindsay

The key elements of a successful process are: risk management, continuity of health service, evaluation, cooperation, professionalism, communication, volunteers, resource management, and Incident Management Systems (IMS). Risk management provides a framework for determining

appropriate risk treatment options, and focusses on continuity of health service delivery. For example, it would have forced a re-examination of the decision to close a number of hospital emergency rooms during SARS, and would ensure a plan existed to address events such as nurses' strikes. Evaluation and improvement are ongoing monitoring processes, and cooperation is a key element. An appropriate range of professional expertise must be combined with information and best practices to form the basis for disaster management systems, decisions, and actions. Volunteerism and convergence are also key to the plan. There is a need to work on the quality and quantity of volunteers, and acknowledge the expertise of non-governmental organizations (NGOs) such as the Red Cross and Salvation Army.

Examining the risk or hazard in one area will not necessarily generate preparedness for other risks or hazards. However, policies and plans for a wide range of occurrences – wildfires, floods, and tropical storms – can be implemented and maintained without transferring risk to other communities or postponing risk to future generations. Emergency management programs require the ongoing commitment of human, financial and physical resources. Responses should be based on a standardized incident management system approach that incorporates command, operations, planning, logistics, and administration functions. The success of every emergency response is found in how well all agencies involved have been prepared.

Discussion

A delegate proposed two problem areas for IMS with respect to bioterrorism. First, an attack could be on a scale large enough to necessitate several incident command posts, operating simultaneously. Second, the plethora of decision-making bodies would impact their ability to work together. Dauphinee responded that IMS is not cobbled together haphazardly. In BC, the emergency centre coordinates the central response. All levels have to understand their roles and respect the expertise of others in order for the structure to work efficiently and effectively during a crisis, and not revert to political intervention.

Asked about the impact of SARS on the IMS structure, Dauphinee said that in British Columbia, IMS brought people together for an issues management team during the SARS crisis. This had the added bonus of allowing everything to be ramped up for the oncoming flu season.

The presenters also noted that the Incident Command System (ICS) is becoming the backbone of emergency management theory. IMS is an evolution of the ICS. Originating in the US, ICS ensures an effective, consistent, unified management of emergency responses, but is modular enough to adapt to various situations and jurisdictions. BC has mandated ICS at the provincial level. Developing from a battle plan to fight wildfires, it has been refined for emergency response. The command structure of ICS (planning logistics, finance/administration, operations, command staff, and

safety/liaison) is required for any emergency response. For example, at the site level, firefighters will need others to handle logistics, finances, public information, and safety concerns. In BC, the system is tiered to 25% targeted to design, 25% to training and 50% to planning.

Recovery and Continuity Session #1:

Regulated Process Recovery in Public Health Disasters

Dr. Robert Peterson, Director General of the Therapeutic Products Directorate, Health Products and Food Branch, Health Canada, reminded delegates that Canada's *Food and Drug Act* was developed 50 years ago and requires careful review to bring it into today's context of risk and threat with respect to medicinal products for the treatment and prophylaxis of disease caused by biological agents. The Act requires evidence of efficacy in humans, and the challenge is how to supply that evidence in the absence of standard clinical trials. In the US, the Food and Drug Administration (FDA) moved rapidly to pass legislation to allow use of data from animals. The legislation has a number of specifications, including the use of more than one species and working with a disease model applicable to humans. In the case of microbes, *in vitro* data are acceptable. The European Medicines Evaluation Agency has produced a guidance document on the clinical use of medicinal products with respect to biological agents, in which each member state makes its own provisions. Australia has amended its Emergencies Act, and now allows entry and stockpiling of large quantities of drugs.

Two other regimes in Canada – the *Emergencies Act* and emergency interim orders – deal with events, although they address different issues and different areas of jurisdiction. The *Emergencies Act* is clear, broad legislation and a tool of last resort, never invoked to date. Despite its breadth, the Act should not be interpreted as an ultimate 'catch-all' for emergencies. For example, the presence of terrorist-related anthrax cases in the US will not automatically trigger the declaration of an emergency in Canada if no evidence of such cases can be found here. Emergency interim orders are more modest, targeting powers within existing legislation to deal with urgent situations as they arise. Interim orders permit immediate action to address a significant risk to health, safety, or the environment.

The Health Products and Food Branch of Health Canada imposes a variety of restrictions to ensure the safety, efficacy, and quality of new products. A current example of where these regulations become restrictive, with potentially serious consequences, is the use of ciprofloxacin for preventing anthrax infection. This drug is readily available and widely prescribed for other purposes, but because it is not licensed for anthrax prevention, it cannot be stockpiled against a potential terrorist attack. Peterson reiterated that the key issue for the

department is to provide continued access to safe and appropriate health products for Canadians. To ensure an effective state of preparedness, all necessary agents and others that are deemed useful must be stockpiled. A regulatory amendment is being examined to encompass a broader context than simply acts of terrorism, such as new strains of existing micro-organisms and new uses for existing drugs.

Dr. Jeffrey Poston, Executive Director, Canadian Pharmacists Association, described the role of pharmacists in assisting with counter-terrorism plans as relatively new, although they have been involved with pandemic influenza planning. He focussed on issues related to the suspension of regulations governing drugs during a crisis. The supply chain of pharmaceuticals is regulated to some degree, with regulations pertaining to drug approval, distribution, and dispensing on provincial, territorial, and federal levels. The supply chain could probably function for some time in the event of an emergency, Poston said, despite the fact that many companies operate on a 'just-in-time' basis.

"Canada is currently on the threshold of electronic prescribing, which may prove helpful in times of emergency. But if technology is disrupted, there must be an alternative plan ready to put into action."
- Dr. Jeffrey Poston

Regulations regarding drugs need amendment to allow for emergency supply and distribution. One area of concern is the use of narcotics. In the event of a large number of injuries, a substantial supply of painkillers would be needed and, in this case, distribution could involve security risks. Regulations must also permit the appointment of persons other than qualified health care providers to dispense medications in the event that large numbers of health care providers are affected by an infectious disease outbreak and are unable to carry out their usual duties. Distribution during an emergency situation is a critical issue, and pharmacies can serve as useful distribution points for drugs due to their ubiquitous presence in communities. However, the logistics of the entire supply chain – from manufacturer, to wholesaler, to doctor or pharmacist, and finally to the patient – must be considered. While experience demonstrates that community health care professionals can maintain effective distribution of drugs for a sustained period of time, regulations should aid this process as much as possible.

The pharmacist also acts as a sentinel, since approximately eight million Canadians visit a pharmacy every week. For instance, pharmacists provided one of the early alerts in the Walkerton water event, Poston reported. Community pharmacists also play a key role as messengers in terms of allaying public fears and providing reliable information in times of public health crises.

Sally Rutherford, Director General, Integrated Policy Systems, Agriculture and Agri-Food Canada, explained the Department's development of a food safety policy initiative to help the agriculture industry move towards a 'standards' system similar to the International Organization for

Standardization (ISO) structure. The primary agriculture industry is trying to catch up to the food processing industry with a verifiable system. The original impetus for this came from supply chain and liability issues identified by processors with respect to acts of terrorism and disease outbreaks.

The outbreak of bovine spongiform encephalopathy (BSE) in Europe in the 1990s highlighted the need to develop a system to facilitate tracing and identification of possible problems, regardless of whether contamination was intentional or accidental. The more recent foot and mouth disease outbreak in Europe and elsewhere had a huge impact on the animal industry in Canada, emphasizing the need for a system with critical control points to trace disease outbreaks. The 1998 Ice Storm in Ontario and Quebec also had an impact on the way people think about food, leading to consideration of preparedness plans for methods to manage the supply chain from farmer to consumer.

Rutherford presented a brief overview of the Agricultural Policy Framework (APF) that aims to protect human health by reducing exposure to food-borne hazards, increase consumer confidence, and improve market access to maximize opportunities for industry. Programming for food safety and quality (FSQ) requires a new approach to governance, given the large number of organizations in all levels of government involved. Improvements are needed in integration and coordination of the food safety system, which must filter down to the local level to be effective. Food safety rules must cover everything right down to individual farmers' markets.

While having a plan at the government level is important for emergency preparedness and recovery, strong connections at the ground level are essential for implementation. Three key challenges were identified for the future:

- governments must move forward in an integrated manner;
- implementation of industry-led initiatives and government regulations must be accelerated; and
- lessons learned from the BSE and SARS outbreaks must be applied to regulatory processes.

Presentation: **The Food-borne Illness Outbreak Response Protocol**

Anne-Marie St-Laurent is Associate Director, Interagency Program, Bureau of Food Regulatory, International and Interagency Affairs, Food Directorate, Health Products and Food Branch, Health Canada. She outlined key aspects of the Food-borne Illness Outbreak Response Protocol (FIORP).

Due to increasing globalization of food and other products, food-borne illnesses – whether initiated accidentally or deliberately – are widespread and have an impact on the health system and industry. A national FIORP is being developed to deal with multi-jurisdictional outbreaks. The

protocol recognizes that where an outbreak is contained, local organizations may apply their existing protocols; but if federal assistance is requested, the national protocol will be invoked. Other protocols exist for specific perils, such as radiation-contaminated food and water following a nuclear emergency.

Responsibilities for FIORP are shared by federal, provincial, and territorial agencies. Collaboration and coordination among all partners are key to managing an effective response to events and to preventing future outbreaks. Other key elements of the revised FIORP include protocols that refer specifically to instances of terrorist or other criminal activity, and involve law enforcement, guidelines for public communications, and maintenance of an emergency response contact list. Health Canada is currently working with the provinces and territories to identify primary contacts.

The next step is to establish a Federal/Provincial/Territorial (F/P/T) working group to make final revisions based on input from the provinces and territories. The aim is to produce a document that is a workable protocol – one that will deliver a rapid and coordinated response to food-borne illness outbreaks and contribute to national emergency preparedness.

Luncheon:

Greetings from The Honourable Anne McLellan, Minister of Health



The Honourable Anne McLellan, Minister of Health, extended her greetings to conference delegates and discussed the degree of collaboration needed to deal with the challenges of public health in the context of terrorist threats. She reviewed the recent experience gained through the SARS crisis, which helped to identify gaps in the public health sector.

McLellan specifically acknowledged the work done by the National Advisory Committee on SARS and Public Health under the leadership of Dr. David Naylor. She highlighted the Committee's "paving the way forward" and its clear articulation of the need "to deal with the challenges of public health, to get public health right for the future within this federation," which will call for a singularly high degree of collaboration among all jurisdictions. She commended the Committee's recommendation for a "seamless, pan-Canadian public health system" and noted that it complements the work already underway by the F/P/T Network on Emergency Preparedness and Response to create a coordinated emergency response capacity across all jurisdictions.

The post-9/11 period is "an unwelcome addition to our landscape – a challenge we did not invite but cannot ignore." Given that terrorists observe no boundaries and do not respect life, the conference program provides delegates and presenters alike with an important opportunity to deepen their

understanding of "planning for the unpredictable and recovering from the unimaginable." McLellan noted that she would be keen to hear from delegates during the conference on issues such as surveillance, patient management, protocols for triage, improving the capacity to handle new outbreaks, and how an all-hazards approach enhances response.

"To all the provincial and territorial representatives here today, on behalf of the Federal Government, you have my 100% commitment to work with you to ensure, to the greatest extent possible within my power, that collaboration exists to protect the safety and health of all Canadians regardless of where they live."

- The Honourable Anne McLellan

In closing, McLellan noted that terrorism cannot be allowed to have the last word. "We must work in new ways: across disciplines, across jurisdictions and across borders... to reduce terrorism's force and enhance our security," she said. "We have a choice – we can worry or we can prepare.... Let's work together to develop solutions. You have my commitment and the commitment of the Government of Canada in those efforts."

Prevention Session #2:

Preventive Tools 1

Dr. Donald A. Henderson, Johns Hopkins University Distinguished Service Professor and Founding Director of the Center for Civilian Biodefense Strategies,

reminded delegates that smallpox was eradicated not so long ago, in 1980. In 1967, when the World Health Organization (WHO) mounted its eradication campaign, 15 million people were contracting smallpox annually and 2 million were dying. By 1980, the world believed it was safe from this deadly disease, and smallpox vaccinations stopped, as did vaccine manufacturing. But with the events of 9/11, smallpox has been raised to the top of the terrorist threat list in the US, and vaccines are again being developed.

In reviewing the pre-9/11 period, Henderson recalled that the smallpox vaccinia (live virus) strain used in the US was cultivated by the Board of Health in New York City in the early 20th century, and is referred to as the "New York City Board of Health strain". It was produced by Connaught Laboratories in Canada and other labs for use globally. Henderson discussed other strains that now exist around the world, with half of the labs working with their own strains, whose origins remain unknown. Most live vaccines contain more virus than is needed, and in handling, much of the virus dies off. The vaccine in its current form is freeze-dried and can be diluted five to ten times and still remain protective.

It has been confirmed that the Soviet Union undertook a program in 1980 to weaponize smallpox, and they are still not willing to talk about their program. Most staff of that program left the former Soviet Union to reside and work elsewhere. Their emigration means that smallpox can be produced in, and/or

made available to, a number of countries. “We believe there are programs of some sort in other countries, but why smallpox hasn’t been used yet, we don’t know,” Henderson said.

Immediately after 9/11, US-based intelligence sources anticipated an imminent potential biological terrorist attack with smallpox and anthrax. At that time, only 80 million doses of smallpox vaccine were available, with considerable doubt as to how much of that quantity remained effective. In 2003, 209 million doses are available, and all of these can be diluted up to five times. Work is being done on two other vaccines:

- Modified Vaccinia Ankara (MVA) vaccine – a weakened form of the current smallpox vaccines, which should allow the safe inoculation of ‘at risk’ people with weakened immune systems. MVA is a non-replicating strain, and with two doses appears effective for protection. However, 100 times more virus is required in its processing, and as a result, it is costly to produce.
- Japanese attenuated strain – grown in rabbit kidney cells, but this vaccine has some genetic defect related to the immune system. It has been given to 50,000 Japanese school children, but protection is not ensured.

At this time, it remains a real – albeit small – risk that smallpox will be used for terrorist aims. “Indeed, smallpox is not even as serious a threat now as it posed 12 months ago in the US.” Vaccine is now available, and it can be administered quickly if needed. The approach being adopted by governments around the world is to vaccinate first responders, health care workers, and other essential personnel, but determining who makes the last personnel category is challenging. In the US, smallpox vaccination has been administered to 480,000 military personnel and 38,000 civilians, with adverse events occurring in only two cases.

At this time, Henderson urged Western nations to attend to the global need for smallpox vaccine throughout the developed and developing world. “We will never be rid of the need for the vaccine,” he said, given the political and social context in which the risk of smallpox is likely to remain. However, the public health community is better prepared to deal with an epidemic than it was two years ago.

Dr. Luis Barreto, Vice President Public Affairs and Director of Corporate Public Health Policy, International Public Health Affairs, Aventis Pasteur Limited, spoke about the Canadian experience with the smallpox vaccine through the Connaught Laboratories. Connaught played a critical role in the WHO’s successful efforts to eradicate smallpox. Now 23 years after that accomplishment, Aventis Pasteur has been working again with Health Canada to manufacture and deliver smallpox vaccine.

The first lot of smallpox vaccine was released in December 1917, with Connaught supplying 600,000 doses to the Canadian military by the end of World War I. From 1921 to 1932, work on vaccines benefited tremendously from the great progress in science and process improvements. From

1930 to 1940, researchers determined the vaccine’s elementary bodies, which led to the development of a dried vaccine during the period 1958 through 1962; the subsequent freeze-dried vaccine was available for distribution to remote parts of the world.

However, in 1962, the public health community was stunned by a case of smallpox in a Canadian child returning home with his missionary parents from Brazil. While this case turned out to be relatively mild, “our vulnerability was exposed, and the need to stockpile vaccine to be able to respond quickly became evident,” Barreto said. From 1962 through 1966, manufacturing standards were intensified, and Connaught Laboratories worked closely with WHO to ensure that process improvements met all standards and that those standards could be maintained globally. By 1980, with the official eradication of smallpox, many thought the seed virus should be destroyed. But not everyone agreed, and stock was maintained in case the need to produce licensed products returned. Since 9/11, Health Canada has been preparing for future contingencies as part of its counter-terrorism plans. Fifteen million doses of smallpox vaccine are being prepared through a coordinated, public/private partnership with planning and funding, which are essential factors for a successful vaccine program.

Aventis Pasteur Ltd. has been engaged in the global polio eradication initiative, much as Connaught had done with the smallpox campaign. The establishment of smallpox centres of eradication, and the transfer of technology to global locations that the smallpox eradication campaign afforded, have greatly contributed to the success of polio eradication.

Dr. Frank Souter with the Allied Vaccine Development Project of the Canadian Forces Medical Group explained the mission of the Canadian Forces Medical Services (CFMS) – to provide the health care support necessary to sustain a multi-purpose, deployable, combat-capable force across the full spectrum of military scenarios. CFMS looks at protective measures for both peacekeeping and war-fighting scenarios, from the perspective of preventive medicine. The focus is on military members, Souter noted, and the impacts they will encounter greatly affect how products are developed and used. The Department of National Defence (DND) is actively engaged in advance development and acquisition of biological warfare medical countermeasures.

The CFMS is a “small organization with a large basket of responsibilities”. With about 83,000 Canadian Forces in uniform, the relatively small medical organization is dispersed all over the country, and around the world. When planning for biological weapons threats, the decisions to be taken centre on where, how, and when personnel and equipment are deployed.

Vaccines are a difficult issue, Souter explained. Pre-9/11, there was little interest within industry to bring biological weapon (BW) protective and preventive products to market.

Moreover, CFMS buys or develops products only for military use, representing an even smaller potential market, which translated into very expensive products. With the 2003 announcement by US President George W. Bush of a \$5.8 billion (US) BioShield and weapons of mass destruction (WMD) medical counter-measures initiative, “the landscape changed for Canada.”

The CFMS' Vaccine Development Project is a response to a 1997 invitation by the American Department of Defense to participate in their program. Already in 1997, a similar project had been approved in Canada to develop and acquire safe and effective licensed BW counter-measures, not limited to vaccines. Canada is not limited to working with the US and United Kingdom (UK) allies only, and CFMS has maximum flexibility to take advantage of private sector initiatives as well. However, vaccines are expensive to develop, running up to \$500-800 million per vaccine (by industry estimates), which is an onerous cost for Canada to take on alone. Most R&D in BW counter-measures occurs outside of Canada, in the US and the UK, with whom CFMS can leverage initiatives at a reasonable cost. “We can get intellectual property access and use that to develop vaccines for defence purposes. We have to be trusted partners [because] interoperability is key. We work with other troops, and must be able to treat foreign allied troops, operating with us, with similar medical products to what they use,” Souter explained.

In order to find initiatives that suit Canada's needs, CFMS will liaise directly with the US Department of Health and Human Services, and survey Canadian and other industries. However, medical products are exceedingly complex. Enormous challenges exist for CFMS in working through the Defence Services Program for development and procurement of medical and health-related products, given that the program is accustomed to building, procuring and launching military hardware. Other challenges include navigating the complexities involved in bringing products to the licensing process, and meeting the requirements of sometimes tri-national regulatory bodies such as Health Canada, the US FDA, and others. The major benefit to the Canadian public with respect to CFMS' efforts is that “the military efforts now undertaken offer some measure of security to public authorities and lower the risk to all of us.”

Discussion

Discussion focussed on the current state of vaccine development for anthrax. A second generation anthrax vaccine is an extremely high priority, Henderson noted, given that it is very difficult to clean up a facility after anthrax dispersal. It is hoped that the first lots of vaccine will be available in about six to eight months, but phase three testing will take some time before the licensing can occur.

A delegate asked about potential airborne dispersal of smallpox, such as on an airplane. Henderson replied that a fair amount of data indicate that smallpox can stay suspended and viable for more than 24 hours. The Soviet Union did undertake

aerosol experiments with smallpox. “We are concerned it would be used as an aerosol, with lots of ways to disperse it, but that would require huge doses. We don't see a likelihood of dispersing it by food or water, however,” said Henderson.

Preparedness Session #2:

Planning for the Unpredictable

Robert Lesser, Deputy Director General, Counter-Terrorism Unit, Solicitor General Canada, briefly outlined the National Counter-Terrorism Plan (NCTP) and current best practices at the strategic national level. The plan is based on a threat-environment assessment, and that threat is sizeable, Lesser noted. The NCTP involves 26 federal departments, the 13 provinces and territories, with SGC taking the lead. The plan's aim is to lay out Canada's response framework to meet the very real challenges of working across departments, jurisdictions and sectors to share information, coordinate, communicate, and ensure capacity.

SGC is the point for threats occurring within Canada, and the Minister of Foreign Affairs takes the lead for threats to Canadians abroad. Throughout these scenarios, the Minister of Health would speak to specific health issues raised by threats and/or acts committed. The NCTP recognizes the paramount role played by first responders, and their need for potentially multi-jurisdictional advice and direction that would extend well beyond their current daily practices. As any terrorist incident will require a multi-jurisdictional and multi-agency response, the challenge will be to “get the right people doing the right things at the right time,” Lesser said.

The NCTP establishes, among many other elements:

- a communications framework for both internal government and public communication functions;
- an adaptable framework for full and partial engagement of resources;
- streamlined processes to allow for quick and effective response;
- notification processes for alerts and incident resolution activities by which departments and agencies are informed of national security threats;
- robust intelligence-gathering capacity; and
- advance planning groups to work up plans for post-incident response and recovery.

The Federal Government considers communications to be central to its strategy, noting the particular challenge of balancing the public's need and right to know with pre-event preparations for response and post-event investigations.

Bernard Dubois, Director of Territorial Operations and Emergency Preparedness, Quebec Ministry of Public Security, reviewed the actions taken by the Quebec government since 9/11 to meet potential terrorist threats. He began by noting the Province's extensive experience in crisis and disaster management over the last two decades,

citing incidents such as the 1988 St-Basile-Le-Grand PCB fire, 1996 Saguenay Floods, and the 1998 Ice Storm. Under Quebec's civil protection system, the Minister of Public Security is in charge of all police, civil and fire protection services; coroner, deontology and laboratory services; and emergency measures. The mandate of the ministry is to: 1) assist municipalities in emergency preparedness; and 2) coordinate all government actions during an emergency response. Quebec's focus on municipal jurisdictions corresponds to the province's demographics: 80% of Quebec's 7 million inhabitants live in the St. Lawrence lowlands, with 3.5 million individuals in Montreal, occupying 1% of Quebec's territory.

"In Quebec, we have three key words in our mission: anticipate, alert, and inform. We check 50 news/information-related websites daily. We send e-mails at 8am daily to 150 partners, containing different monitoring and alert information, such as real-time information on water flows and levels, high-tide and winds along the St. Lawrence River, and hydro-nuclear alerts."

- Bernard Dubois

Efforts to ensure essential infrastructure and civil protection involve 30 departments and agencies in Quebec, working collaboratively under a national security plan. The plan includes a 24/7 "watch centre" and CBRN response plans for Montreal, Quebec City and Gatineau, which can be deployed anywhere in the province. To improve planning and response, the ministry has brought in professionals from a variety of disciplines, such as biologists, chemists, engineers and geologists. Transportation safety has improved, especially regarding the movement of dangerous materials. A security committee has been established for the Port of Montreal to track and monitor the one million containers that pass through the port. At Canada/US border stations, cameras and new technology have been installed, and traffic control has been improved with dedicated lanes for truck traffic and better road signs. One of the key provincial partners, Hydro Quebec, has made major upgrades at its nuclear facility to strengthen screening procedures for workers and visitors, increase guard and police surveillance, and integrate its threat and alert system with the police and security services.

With respect to police services, concrete actions have been taken to better share information and harmonize procedures and protocols for dealing with suspicious packages (e.g., 500 false alerts immediately following 9/11), to screen newcomers to Quebec, and to improve the security of identity documentation. Specific to health and safety issues, Quebec has increased its stockpile of antidotes to anthrax and sarin gas, and has improved its decontamination facilities. Fifteen hundred professionals have been identified who can provide counselling on psychosocial issues in the event of an emergency.

When an event such as 9/11 triggers Quebec's security measures, communications become essential. For instance, during the 2003 Iraq War, a system of toll-free, 24/7

telephone lines was established to provide ready access to the public for relevant information. Many Quebecers accessed this service during the conflict, concerned about their personal safety – especially newcomers to Quebec. Quebec has also taken an active role in the Northeast US-Canada mutual aid pacts, which emphasize cross-border support, prioritizing medical issues, and sharing resources. The Ministry is also working pro-actively to strengthen the Province's legislative provisions and to improve police training plans and exercises.

Michel Doré, President of Stratégies multi-risques, presented on the City of Ottawa's preparations for emergency management for a variety of hazards. Given some of the attributes of Ottawa – 4th largest city in Canada, national capital with foreign representations, shares the region with the 3rd largest city in Quebec (Gatineau), seismic zone running through downtown – planning for emergencies has been a part of Ottawa's experience for some time.

A major challenge for Ottawa's administration is to efficiently manage and streamline the Federal and Provincial mechanisms that impact its more than 800,000 inhabitants. With the amalgamation of Ottawa and its environs two years ago, all former emergency plans are being re-engineered. City Council established a priority in 2001 for a renewed emergency management program supported by a \$7.1 million budget over five years. The program is led by a steering committee chaired by the City Manager and involving all General Managers, who link with elected officials. A working group has been designated that pulls together all major stakeholders in emergency management, urban planning, municipal corporate services, as well as first responders – a composition that represents a significant improvement over the pre-9/11 era – providing a monthly report to elected officials on the state of readiness. The MOH and hospital representatives bridge gaps between the city administration and hospital community.

The program is defined by four parameters: converging goals, principles, management and operational objectives.

- Goals: to provide an emergency management program that integrates effective emergency response with an all-hazards approach and an optimal set of contributions from federal, provincial and municipal sources.
- Principles: to ensure the rational use of money, commitment to multi-department initiatives, and leveraging of initiatives to expand on other projects.
- Management: design of an alert mobilization system on a 24/7 basis, within first hour of disaster, to include functional public communications system.
- Operations: through multi-agency collaboration, the aim is to treat 20,000 exposed individuals within 24 hours, shelter 10% of the population, re-establish life lines within 48 hours, and provide confinement and control of fire.

Thirty-four projects have been designed or are underway to move the five-year plan forward. They include vulnerability analyses to determine capacities to respond, business

continuity plans, evacuation plans, public education and awareness initiatives, identification of personal protection standards and required equipment, cross training between departments, and enhanced personal identification systems.

Response Session #2:

The Coincidence of Impact and Evidence – Control and Security Issues in Terrorist Events

Sergeant Don Bindon, Manager of Emergency Operations Program, RCMP 'E' Division, explained the unified command (UC) structure, as an offshoot of the incident command system (ICS), that allows for the assured and organized incorporation of all vested interests in emergency situations. UC grew out of the experiences gained fighting large-scale, cross-jurisdictional and rapidly moving forest fires in California and Idaho, in which the need to counter a poorly organized command structure became paramount. Different organizations have different reporting systems; so while they may have similar agendas, they may well have different outcomes, Bindon explained.

"During large events, people often found themselves making decisions outside their area of expertise."

- Sgt. Don Bindon

Under UC, similar authority levels work together. The command staff includes public information officers, safety officers, liaison officers and others, affiliated with a variety of organizations under four main sections of command: operations, planning, logistics (including medical units), and finance. UC saves time, which is a critical factor in emergencies. "If I'm told I'm the information officer, I know exactly what to do, how to organize my work and where I fit in," Bindon explained.

There is no "incident commander" under UC. If police, fire, and ambulance staff are at the same event, each discipline has a unified commander with a 'say' in all decisions. The various disciplines must select an overall operations chief from among themselves. Under UC, the operations chief will change according to what is needed. For example, in a fire where people have been injured, the first priority is saving lives. Therefore, the senior ambulance commander would be designated operations chief, with the police and fire departments taking direction from him, until the nature of what is needed changes.

"Effectiveness is contingent upon the quality of personal relationships developed between the consequence managers and other team members. Knowing each other means there is a basis of trust."

- Sgt. Don Bindon

Crisis and consequence management (CCM) refers to discovering and preventing crisis events. The players include law enforcement officers, the intelligence community, and at times, armed forces personnel. Because this model is based on the premise that a crisis will eventually occur, the

designated consequence manager is the top of the chain of command. The earlier the consequence manager is informed of a potential crisis, the sooner he/she can gather and prepare background information. This is a challenging position as often the consequence manager will be "chasing ghosts" and deciphering huge amounts of intelligence data. "We now understand that these consequence managers are not part of crisis management," Bindon explained, "but they do need to be key players early on in the event." Unlike police, for instance, who operate at the behest and on behalf of the victim, the job of consequence managers is to catch criminals before they harm people. They will give up evidence in order to save lives and protect the environment. Generally, however, consequence managers operate behind a thick screen of confidentiality, with the understanding that very little of the information they have will ever be disseminated to the public, or perhaps even to other managers.

Dr. David Hutton, Policy Analyst, Strategic Initiatives/Mental Health Branch, Manitoba Health,

reminded delegates that first responders in an emergency are often unaffiliated volunteers, such as family members, neighbours or bystanders. Professional crisis workers often view volunteers as crowds that need to be controlled, causing potential safety concerns. Viewed from a strategic and systematic point of view, the public should be seen as equal partners in an event, to be positioned as part of the solution. After 9/11, the American Red Cross raised \$643 million US and utilized 43,000 volunteers to serve 14 million meals. The Salvation Army utilized more than 15,000 volunteers. Of those who volunteered to help at the World Trade Center during 9/11, about 1,800 suffered post-incident respiratory problems and elevated stress levels.

Volunteers fall into a number of categories – the returnees, the anxious, the exploiters, the helpers, and the survivors. Some, such as medical workers, off-duty police, and community volunteers, already possess useful expertise. People respond because they need ways to redefine their sense of power over events. Ninety-seven percent of Americans polled after 9/11 said it was the "most tragic event in their lifetime." Ninety-four percent said they acted in some way – by helping on site, making a donation, or taking part in a memorial ceremony.

Terrorist attacks create a strong urge in individuals and communities to help. It is up to crisis management personnel to provide real opportunities for them to do so. Policymakers, politicians, and emergency personnel need to reach a consensus about the role of volunteers, and regard the community and the public as partners, not just as beneficiaries. Orientation sessions will greatly assist volunteers in understanding and following emergency procedures. Education and training are needed, not only to allow volunteers to effectively demonstrate their individual competence during a crisis, but also to alleviate their anxiety about the event and its health and safety impacts. Moreover, training will help to contain the often heightened

sense of vulnerability many feel after such an event. Volunteers need personal support, including, as an example, participating in exit interviews through which they can ask for and be directed to counselling and other resources.

Discussion

A participant remarked that Hutton's comments on volunteers were "absolutely correct" but that a big problem for hospitals is getting a traditional "take charge" agency to work effectively with volunteers. Hutton replied that it is essential to obtain a commitment from key stakeholders, and to know and understand how to work with large groups of volunteers. Bindon added that "it would be a failure if you end up sending large groups of people home."

Commenting that the SARS outbreak taught her that hospitals and public health departments are separate systems responding to different levels of government, a delegate asked about the best way to handle infectious diseases. Bindon noted the importance of having a plan in place before any event to identify all vested interests as part of UC. Scenarios for temporary emergency events can be developed in advance, detailing the incident command structure, which helps the technical specialists get on with their work.

Recovery and Continuity Session #2:

Public Health Workers – Legal and Ethical Issues in Response to Recovery

Professor Elaine Gibson, Associate Director, Health Law Institute, Dalhousie University, noted how terrorist events put intense demands on public health professionals. Preparing the workforce to respond effectively requires development of many competencies, including the capacity to handle legal and ethical issues. Key values are at stake in times of crisis: liberty, autonomy, and privacy. Protection of the public is another key value, which is squarely stacked against the values of liberty, autonomy, and privacy in public health legislation. An ethics framework will assist health care workers in the management of privacy and ethical issues. Such a framework should begin with the premise that the law and ethics are not mutually exclusive and should promote the value of doing no harm.

Public health powers in Canada are divided among federal, provincial, and territorial levels of government. Federal responsibilities include marine hospitals; quarantine issues; and general peace, order, and good government. Public hospitals, property, and civil rights fall under provincial jurisdiction. Much of the public health sector has devolved to provincial and territorial control, with the Federal Government's hands increasingly tied. Federal statutes include the *Emergencies Act*, covering public welfare emergencies and acts of intimidation towards Canada (e.g., epidemics and bio-terrorism), the

Quarantine Act, and proposed health protection legislation, for which the consultation process is now underway. On the provincial and territorial level, the *Emergencies Act*, the *Public Health Act* and acts relevant to health information fall under their jurisdiction. Common law includes a duty to keep information confidential – exceptions to full confidentiality must "carve out" only the precise information required to be revealed. When laws cover the same ground, federal law takes precedence over provincial law, and legislation takes precedence over common law. There is also an "uber-law", namely the Canadian Charter of Rights and Freedoms.

Gibson explored a number of issues with respect to health care workers and the law in times of crisis:

- **Duty to Report:** reporting of known or suspected cases of specified communicable diseases (including carriers, in Ontario); some provinces include dangerous, virulent, or exotic diseases; scope of information to be reported varies among provinces and territories and is very specific; degree by which law is binding varies between jurisdictions.
- **Quarantine and Isolation:** quarantine following exposure to or during an incubation period for a communicable disease; isolation of someone with an active infection; legislation allows for mandatory treatment and mandatory reporting of infected individuals with designated communicable diseases.
- **Mandatory Examination:** Federal and provincial law allows for an officer to examine an individual without consent.
- **Detention:** a primary power under the *Quarantine Act*; applies to travellers to and from Canada; at provincial level refers to detention in hospital or other facility, with use of force if necessary; used to contain individuals who have refused examination, treatment, or advice of health care workers.
- **Conscription of Health Care Workers to Provide Services:** applies primarily to emergency legislation.
- **Policing Duties:** Before acting, health care workers must ensure that a law authorizing any order or request they receive supports that action, by consulting with a union representative, professional association, or legal counsel.
- **Treatment:** with some differences in provinces, the onus is on the individual to seek treatment, although the individual does not have to accept treatment; a clear entitlement of common law is to refuse treatment, even if death may result.

In the case of a health crisis, more deference would be given in law to public health than to the rights of the individual. In terms of legislation, the pendulum swings alternately from the protection of individuals to the strong support of public health initiatives.

Dr. Anthony Moulton is Director of the Public Health Law Program at the Centers for Disease Control and Prevention (CDC). He discussed CDC's goal of ensuring that the American public health system is prepared for public health emergency situations such as acts of terrorism, industrial accidents, and natural disasters. CDC has identified several areas of public health practice that require

strengthening: planning and assessment, surveillance and epidemiology capacity, public health laboratory capacity, communications and information technology, risk communication, and workforce development.

Moulton works primarily with local and state health departments, providing legal advice, developing products and courses, and focussing particularly on training for public health care workers. The overall strategy is to develop a common approach across states and to seek agreement on needed competencies, while remaining alert to local differences. Moulton observed that many of the legal issues and debates that Canada faces are similar to those in the US. As infectious disease outbreaks do not respect political boundaries, countries must work together to improve coordination of efforts. For instance, during SARS, CDC's disease control and prevention experts exchanged information and lessons learned continuously with their Canadian counterparts.

After 9/11 in the US, a national coalition met to discuss a breadth of public health issues. The coalition chose to prioritize the development of a set of core competencies that would be common to all public health workers, with the addition of specific roles for each type of worker. The notion of core competencies is now the touchstone of CDC's plans for training. Existing capacity can be leveraged to develop training delivery, including through the Public Health Training Network, state and local health departments, and schools of public health.

Establishment of a code of ethics leads to improved practice and health outcomes, greater trust during emergencies, an opportunity to involve and inform the public, professional recognition, and reduced litigation. In the US, ethical decision-making in times of crisis is a primary focus, with an emphasis on supplying applied education and practical tools for frontline public health workers. Over the past few years, centres of public health preparedness have been established to create new capacity. Training centres for health resources and services administrators have also been created, along with a number of bioterrorism training centres for health care professionals. Health law training products are under development to clearly define the legal position of public health workers during an emergency response. For instance, in forensic epidemiology two key responders will be involved in a suspect event – a public health worker and a police officer. These responders must clearly understand their own and each other's roles and responsibilities, given the interdisciplinary nature of counter-terrorism.

Discussion

A delegate asked if there is a risk that an ethical approach could be lost if too many laws were created to deal with crises. Gibson replied that in Canada, provinces and territories are bringing in legislation that tends toward stronger privacy protection. The result is privacy on one track and public health on another track, leading to attempts to create legislation with sweeping measures in order to get access to private

information. Caution is needed, she advised, or an over-reaction or imbalance will be created on the private versus the public front.

Another delegate noted that provincial legislation varies widely both in scope and time of updating, thus hampering the ability to achieve common ground. Gibson responded that the Report of the National Advisory Committee on SARS and Public Health recommends more coordination of legislation throughout jurisdictions. She added that Health Canada is reviewing this and is considering responsibility for ensuring that legislation evolves into a more homogenous regime. She also suggested that the Uniform Law Conference of Canada could be tasked with helping to examine health legislation.

When asked to comment on how the US viewed Canada's competency in dealing with recent outbreaks such as SARS and BSE, Moulton offered his praise, categorizing Canada's handling of the SARS crisis as "stunning."

Prevention Session #3: The Local Planning Process for Bioterror

Dr. Bonnie Henry, Associate Medical Officer of Health, Toronto Public Health, focussed on the planning and preparedness measures taken by the City of Toronto since 9/11. Toronto is home to one third of Canada's population or roughly 7 million inhabitants, with a number of residents from multi-cultural/ethnic backgrounds (52% of population). The city has 25 hospitals, 19 acute-care facilities, 100 schools, and a high number of high-rise dwellings.

With respect to emergency response experience, Henry spoke about the 1985 subway crash, a number of airplane-related accidents, and natural disasters. During a recent transformer fire in one hospital, over 5,000 people were evacuated, and this activity was successfully executed without an official emergency declaration. The greatest recent challenge to Toronto in the pre-SARS period was the anthrax threat. In a short timeframe, over 2,000 suspicious packages were reported, presenting 337 credible threats.

Toronto has a joint office of emergency management through which protocols for biological agent response and heavy urban search and rescue planning are now under development. The Toronto District Health Council's Emergency Response Coordination Committee (ERCC) produced a report [entitled "Recommendations for Improved Emergency Response Coordination in Toronto's Health Sector" (www.tdhc.org)], which is a work in progress. The report represents a preliminary grassroots exploration of what needs to be done to improve the local ability to respond to large-scale emergencies, including CBRN events.

Recommendations are provided through three models for improved coordination of emergency response in the health sector:

- Incident Management Model: using IMS, a recognized and widely used emergency response methodology based on unified command.
- Communications Model: proposed that Toronto Emergency Medical Services be the sole conduit of two-way information between the incident command (whether at the site, municipal, regional or provincial level) and the health sector.
- CBRN Response Model: proposed that a two-tier model of CBRN response be implemented in acute-care hospitals in Toronto, with all hospitals maintaining a baseline level of response, and some hospitals having advanced CBRN response capability.

To date, planners have requested financial support for a CBRN response team, but have failed to obtain support beyond one year of funding. Second-year funding from the Federal Government has also been denied at this time. The CBRN response team includes representatives from police, fire and public health, and undertook six joint training sessions in the first year. With the advent of SARS, further training has been delayed.

"There's only one thing more difficult than planning for an emergency, and that would be having to explain why you didn't."
- Dr. Bonnie Henry

The response team designated working groups to conduct a capacity assessment and develop CBRN response protocols around equipment, medications, training and other requirements. They have identified some specific gaps in preparedness. For instance, the team discovered that while hospitals report to the province, they are looking to the municipality for more emergency response direction. The CBRN response team is now liaising with them in this area. With respect to communication, Henry noted that a radio system is being installed to allow simultaneous contact with all hospitals at once. An ongoing challenge is how to find an efficient mechanism to communicate with the more than 8,000 community physicians in Toronto, given that up to one third do not have access to e-mail or fax. The team is also hoping to ensure compatible equipment in hospital emergency rooms across the city, and to be able to offer more joint training.

Dr. Paul Le Guerrier is Médecin-conseil with the Régie régionale de la Santé et des Services sociaux in Montreal. Le Guerrier explained that Montreal shares some issues with Toronto in that it is a large city (1.8 million individuals) on an island with 20 hospitals, 29 community health centres, and a jurisdiction split among City Hall, fire department and the regional health board, with no collaborative structure. Following the March 1998 incident in which a suspected sarin-containing package and threat were received, the city of Montreal established the *Comité avisieur antiterrorisme de Montréal* (CAAM, Montreal Advisory Committee on Terrorism) to integrate police, fire, emergency preparedness, EMS, the health department, the Provincial Government, and others. Prior to 9/11, CAAM met for four to six hours once or twice a month.

The greatest challenge at that time was to develop true working partnerships in order to effectively plan. The key issues involved: 1) zone and site management in which unified command was initially resisted; 2) decontamination; 3) phases of an emergency response system; 4) equipment required across first responder groups; and 5) post-exposure prophylaxis. It was difficult to get all of the stakeholders organized, especially when it was thought the risk of a terrorist attack was negligible.

"Unfortunately in October 2001, Oxfam did a mail campaign, sending out letters containing carrot seeds in envelopes that said 'Shake this envelope, and it will change your life'. Police got lots of calls!"
- Dr. Paul Le Guerrier

After 9/11, Montreal experienced a wave of suspected anthrax cases during which 80 calls were received in a single day. At present, four levels of attack warning have been designated – vigil, alert, intervention and demobilization – each level triggering specific actions in response. A unified command structure now exists, along with guidelines for chemical handling. As well, several joint exercises have taken place.

The municipality still requires a better understanding of the defined roles and responsibilities of the provincial and federal governments, and those wide jurisdictional plans need to be implemented at the municipal level. The SARS crisis in Toronto helped to ramp up emergency planning in Montreal with the formation of a core group of health care professionals and regional hospitals, along with an infectious emergency committee. But LeGuerrier stressed the need to understand how much time it takes to pull all the necessary components together – the right plan, the right people working together to build trust, mutual respect of organizational missions, and a unified command structure.

Cheryl Bourassa, Director, Disaster and Emergency Health Planning, Calgary Regional Health Authority, reported on Calgary's complex regional health planning structure for the G8 Summit held in June 2002. The topics to be covered in the Summit – strengthening global economic growth, reduction of global poverty, focus on education and protecting global environment – were considered sensitive with regard to terrorist groups. The Summit affected multiple communities, in different jurisdictions, having roughly 7,500 delegates, 4,000 security, and 3,000 to 4,000 armed forces. The planners also had to anticipate an unknown number of demonstrators. In order to meet this challenge, the G8 Health Services Steering Committee – made up of the Calgary Health Region, the Provincial Laboratory and the Headwaters Health Authority – requested funding for the planning and preparedness phases and dedicated resources, and designated responsibilities that crossed over many jurisdictions.

Health Canada outlined a health-based mandate for the G8 Summit, as the development of an emergency medical contingency plan for VIPs and their families that would be in force *without* disrupting normal public services. Initial

recommendations included the establishment of a project sponsor, full-time project manager with administrative support, a planning structure, access to financial services support, and good communications with the Region's health managers and staff. At the outset, some of the stakeholders felt they were not sufficiently consulted about the Summit and its requirements. Yet in the end, Bourassa reported, the project was straightforward with a successful outcome. This was due, in part, to the close working relationship among the Steering Committee, the RCMP and the police.

Planning priorities included: the security and health of the public and international visitors, maintenance of essential services, respect for democratic rights of all, and the desire to showcase the region. The Summit's Public Health Working Group introduced a syndrome surveillance program in four hospitals along with increased food and water inspection and temporary shelters. The CBRN Working Group installed decontamination units, purchased personal protective equipment, developed clinical CBRN treatment protocols and staff training, and stockpiled pharmaceutical supplies. The Clinical Services and Trauma Working Group liaised closely with ambulance services to designate and outfit containment areas. In collaboration with RCMP and police, the Security Working Group established an on-site command centre at Foothills Hospital with increased security staff. The Summit Communication Plan was designed to reassure the public and staff, and to emphasize that the summit was simply "business as usual" for those responsible for health and security; that is, to 'expect the best, and plan for the worst'.

Lynn Gibbs-Scharf is CDC's Health Scientist with the Division of State and Local Readiness in the Office of Terrorism Preparedness and Emergency Response. She reviewed the CDC's cooperative agreement program for public health preparedness. The program is designed to improve the capacity of local and state jurisdictions to respond to bio-terrorism, outbreaks of infectious disease and other public health threats and emergencies. In 2002, the US government dispensed \$918 million to state and local jurisdictions, with an additional \$890 million this year, of which 75% is targeted to be used at the local level. Funding will be ongoing and will address: 1) strategic direction, coordination and assessment; 2) epidemiology and surveillance capacity; 3) biologic lab capacity; 4) health alert networking and information technology; 5) risk communication and information dissemination; and 6) education and planning. In 2003, the program added chemical lab capacity.

To meet critical capacity, the essential capabilities and critical benchmarks must be completed within the budget year. The Public Health Preparedness and Response Capacity Inventory – a voluntary self-assessment tool located online at www.phppo.cdc.gov/od/inventory – is most commonly used to achieve these objectives. Software is available on the website to aid in the analysis of collected information. A variety of tools are now in use, with more robust evaluation requirements for evidence and third-party review, and less self-assessment. The

new tools seek to integrate performance goals and indicators with cooperative agreement guidance, to move towards a standardized framework based on performance goals – that is, taking a score-card approach.

Another new initiative is to develop public health-based preparedness and performance measures to create a basis for evaluations of state and local preparedness efforts. An all-hazards approach is needed with flexibility to address jurisdiction variability and the paucity of science-based evidence for public health preparedness criteria. The overall goals are to achieve an all-hazards response system with detection, diagnosis and reporting, with sufficient resources to investigate and contain, and implement an effective and coordinated recovery.

Discussion

Henry was asked if public health was seen as the link from the municipal emergency response organization to the hospital and the broader health care sector. She responded that public health and EMS were seen as links to the health sector. The Toronto District Health Council pulls all the groups together, with public health remaining the key link. Public health has also recently obtained positions at the City's emergency planning group.

Preparedness Session #3: Lessons Learned and Impact on Resources – Doing it Right

Dr. Sheela Basrur, Medical Officer of Health, City of Toronto, reviewed some lessons learned from the SARS experience, the largest health event in recent history in Canada. There were 480 SARS cases country-wide, with half of those cases occurring in Toronto, and 44 deaths, again mostly in Toronto. Forty-six percent of the cases occurred in health care workers, including three deaths. Basrur noted that the outbreak had a "tremendous impact, knocking out one hospital after another."

All of the outbreak control plans put in place prior to SARS had targeted a pandemic influenza outbreak. However, the City faced a novel virus, with no diagnostic tests, treatment, or vaccine available at the outset. Physicians and public health workers had to rely on non-technological means for diagnosis and be "very creative" in how control measures were implemented. The 'lucky' factor for Toronto in the SARS outbreak was that the virus was most contagious only in those with severe illness, and not easily spread by those with mild or sub-clinical presentations. The transmission factor was one of the reasons why significant community spread did not occur. The other lucky factor was that SARS hit in Toronto with its relatively sound health infrastructure already in place. The City received many offers of assistance from other centres, but was limited by not having developed enough shared-services agreements. These agreements had to be created 'on the fly' concerning credentials from other provinces, unions, etc.

Public health's role centred on disease surveillance and reporting. "We had inadequate technology that made this a nightmare," Basrur recalled. Public health investigated suspect cases, placed individuals into quarantine, and issued isolation orders. The health risk assessment requirement was particularly challenging at the outset, given the bombardment of calls from the public for information and the dearth of information that was available. "We didn't have good evidence on, for instance, safety in the subway. We didn't know, and had to make our best judgement. We learned as we went," Basrur explained.

From this experience, the vital role of public communication became clear. Public health had a major communications responsibility when managing community relations and myriad related issues beyond the virus itself.

There was a tremendous amount of work involved in finding SARS cases. Decisions about whether a hospital or school stayed open or not, were challenging given that often it was unclear whether a particular individual in those institutions had SARS or not. "We had 23,000 people contact us saying they had SARS. Only 27 orders under the Health Protection Act were given, and about 13,000 went into quarantine voluntarily," Basrur said. Good will and trust were essential to this work.

"We opened up a hot line on the local level, not provincial. We got 300,000 calls, 50,000 calls in one day. Some angry calls had been waiting for a long time. There were 1,200 media calls from local, national, and international sources, with Toronto SARS stories going around the world."

- Dr. Sheela Basrur

SARS had a widespread community impact with the cancellation of health and community services; closure of or restriction to hospitals, long-term care and social service facilities; economic hardships; compromised tourism industry; losses for Chinese-Canadian-owned businesses; adding up to approximately a \$2.5 billion economic impact. Moreover, SARS had a profound effect on individual health care workers: shunned or feared by family and neighbours; working in quarantine, not knowing if they would become ill; and wearing masks and gear on the job and travelling to and from work. The acute event lasted a long time. The prolonged experience led to fear, grief, stress, exhaustion, illness and post-traumatic stress disorder among staff and paramedics.

Some specific lessons learned from SARS in Toronto include:

- archaic information systems (e.g., paper files, coloured pasted notes, no cross-jurisdictional access) need updating;
- need active exchange of surveillance information, a better flow of information;
- human resources are in short supply in public health and we need resources to mobilize; and
- emergency preparedness requires dedicated attention and funding between events to ensure we have interoperability of plans across boundaries.

Surviving the SARS outbreak engendered the feeling of having contributed to a common cause, bringing out the best in people, organizations and the City itself.

Dr. Brian Gushulak, Director General of Medical Services, Citizenship and Immigration Canada (CIC),

reviewed the workings of the Canadian Immigration Medical Examination process, which applies to individuals who do not have a permanent right to be in Canada. The basis of the examination is to identify two types of individuals wanting to come to Canada: those who pose a public health risk because of infectious disease, and those who are actually a burden on the existing health delivery system. To determine these outcomes, CIC conducts a health history and physical examination: a urinalysis for those 5 years and older, chest X-ray for those 11 years and older, and tests for syphilis and HIV for those 15 years and older. These examinations and tests are conducted through a network of local physicians familiar with government systems.

Canada receives annually 66,000 family-class immigrants, approximately 140,000 business-class immigrants and 25,000 refugees. From a health perspective, there are several risks involved in immigration. For instance, the countries of origins for many of these immigrants can harbour non-traditional disease patterns and outbreaks. As well, given that immigrants once in Canada are dispersed across the country, and serviced by non-uniform health services from a given province or territory, any potential health challenges will not be shared equally across jurisdictions.

CIC does obtain baseline health information about the countries or regions of origin for incoming immigrants and refugees, with an understanding of the normal incidence and disease prevalence rates for these populations. However, in an emergency evacuation situation, there are often limited data or access to information from the countries or regions of origin, with language and cultural issues becoming formidable obstacles to information. Moreover, people new to Canada may not have defined destinations on arrival, Gushulak noted. There is a great impact on CIC services if individuals require management on arrival, thus requiring the department to set up holding centres to stage entry and conduct medical examinations. A rapid evolution in the political situation of a country or region can affect operational processes. For instance, in Kosovo in 1999, humanitarian evacuations moved individuals from regional to international destinations very quickly. Approximately 72,000 people moved to 48 countries within 14 days.

Some major lessons learned by Medical Services in acute situations include:

- appreciate each situation as unique: the health status and the nature of diseases vary by population at risk;
- deliver medically pre-scanned people to Canada to reduce the logistics in Canada;
- focus on the mission itself to protect delivery of the program, and not on conducting research or introducing new technology; and

- ensure that human resources are available during a critical situation to manage and plan for needed changes on the fly.

Dr. Stephen Corber, Manager, Disease Prevention and Control, Pan American Health Organization (PAHO), reviewed the World Health Organization's (WHO) recent initiatives and experience with SARS. With the surge in global travel and breakdown in public health capacity, there is an increase in the spread of disease worldwide. In Canada alone, there are 12 million international travellers each year. In the past, in the event of illness as a result of travel, the process was relatively slow. "A doctor would report the disease to the local health department after a lab report, then the Province, then the Federal Government, then maybe WHO would hear about it several weeks later." Now, WHO has surveillance officers throughout the globe, reporting immediately, and the Internet has become another source of quick reporting.

WHO has learned that it needs strong partnerships to ensure effective coordination, rapid communication, and mobilization to contain outbreaks. To that end, it has developed an Internet-based database of resources to access in an emergency, standard operating procedures for response teams, stockpiles of investigation and response supplies, and field assessment and investigation protocols to be used in outbreaks. Two hundred outbreaks are reported every day to WHO, with only about 20 requiring review. WHO is specifically concerned about:

- whether a reported outbreak can spread beyond national borders;
- if a serious health impact or high rate of illness/death exists;
- if there is potential for interference with trade or travel;
- how well the affected country can respond; and
- cases of accidental release of agents.

Corber then discussed the SARS outbreak. On February 26, 2003, an index case was admitted to a Hanoi hospital with acute respiratory illness. Staff called for a WHO consultant to look at the individual, and he recommended lab specimens be taken and the patient be isolated. He then notified WHO. On March 5, the individual was evacuated to Hong Kong via Singapore Airlines. Hanoi reported that on that day, 7 health care workers had fallen ill. On March 12, Hong Kong reported 20 health care workers had fallen ill. That same day, WHO issued a global health alert. In the end, 30 countries reported imported SARS cases, 9,000 cases reported in all with only the original locations – Canada, Hong Kong, Singapore, China, Viet Nam, Taiwan – having extended local transmission. In a global sense, the mechanisms worked to contain the international spread.

Several factors contribute to success in outbreak crises such as SARS. They include:

- a clear response plan with surge capacity;
- partnerships established in advance with clear roles, agreed-upon priorities, and opportunities for practice;
- continual communication;
- investment in resources to control the outbreak where it starts, with trained infectious disease resources ready; and

- transparency of operations, as "we have to know what's going on," Corber concluded.

For Canada, the lessons learned from SARS might include the need to understand how the WHO works and how decisions are made, and the need to ensure the country's credibility when delivering information. It is difficult for WHO to be effective in dealing with a country with three levels of government because of the obstacles to accessing good information in a timely manner. Canada needs to establish clearer roles and lines of government authority.

Response Session #3: Responder Protection and Safety

Eric Bone, Manager, Disaster Preparedness, BC Ambulance Service, outlined a broad definition of safety as comprising a public health concern, mental health issue, infectious disease issue, and environmental health concern. Bureaucracy can interfere with safety, which is particularly evident in the current lack of clarity among jurisdictions (e.g., municipal and provincial) when enforcing safety guidelines.

One of the approaches to responder safety now under development is the "consolidated planning process." The goals are to eliminate role ambiguity and to ensure early medical intervention for victims. Ambiguity is a safety issue. When responders use different guidelines and standards, problems are inevitably created. Responders need to be trained to identify risk. Training should take place at the street level, so that emergency responders can recognize danger immediately and retreat to a safe location. Bone enumerated a list of standards developed by the National Fire Protection Association (NFPA) for various situations, procedures, and emergency equipment. It is often not clear which jurisdiction is in charge of administering the various standards.

Two questions must be asked when developing or procuring personal safety equipment: What is safe for rescuers? What works for patient care? The most effective safety equipment often has the simplest design and is the easiest to use. Many different levels of safety equipment exist, and not every situation requires what might be called a "level A" category of equipment. There are few clear equipment standards among jurisdictions for incidents of biological terrorism. For instance, different countries have varying classifications for safety equipment: what is considered "level A" gear in Australia is classified as "level B" in Canada. All countries need to develop common equipment standards.

Dr. Karen Wanger, Emergency Physician and Regional Medical Coordinator, BC Ambulance Service, emphasized that responder safety is a daily issue for emergency workers, whether involving a multi-vehicle traffic accident or some larger threat. She agreed with Bone that 'we can learn from others', and emphasized the obligation to do so. Some lessons

are too dangerous and too expensive not to learn from, and it is a myth to believe that “canaries [or sentinel cases] are inevitable.” Wanger lamented the current passive attitude toward first responder safety, and explained that it is due in part to inadequate budgets.

Dispatch personnel and first responders need training to assist them in approaching emergencies, and they need special training to recognize symptomatic “patterns” within and among incidents and emergency calls. For instance, responders need to quickly see a significant pattern, such as everyone vomiting at the scene of an incident. If 9-1-1 operators are trained in pattern recognition, they can save lives by sending the appropriate first responders to the scene. Dispatch personnel must also be well informed about the conditions of an incident, so that the right response can be developed. For example, dispatch can advise first responders on geography or wind directions, so that personnel are equipped with adequate tools and knowledge. Sending the right set of first responders with the right information is an important part of ensuring safety.

“By preventing ‘canaries’, which are not necessary, and by increasing interoperability among agencies, safety for first responders will be increased.”

- Dr. Karen Wanger

The biggest myth is the belief that mutual aid and interoperability exist among agencies. Traditionally, mistrust exists between paramedics and emergency physicians and can be countered only through joint work and exercises. Agencies must work together, but first they need to trust each other. “Two components make up trust: physical issues and turf.” Also, all personnel should be outfitted with the same gear, to encourage compatibility among agencies. Developing standardized operating procedures and guidelines can lead to better cooperation among agencies.

The makeup of the Incident Command System (ICS) must be clear to everyone involved. Public safety draws on responder agencies and safety experts, mental health agencies, toxicologists, and radiation experts who all must be able to communicate with IC. All those expected to have input at an incident should receive pre-training with public safety agencies.

Ugis Bickis of Phoenix OHC, Inc. is a Registered Occupational Hygienist teaching at the Royal Military College of Canada. Recent events with SARS indicate that the clinical community have failed to maintain their learning based on the history of disease in the 20th century. The clinical community have a limited understanding of disease prevention and/or personal protection, and have neglected to access existing knowledge and expertise in this area.

With respect to the reactive ‘overuse’ of protective equipment, personnel can develop a false sense of security if they rely too much on any and all equipment in crisis situations. Too often, personal protective equipment is selected on the

recommendation of the manufacturer or by its advertising, rather than the scientific filtration effectiveness. Another consequence of the inappropriate use of personal protective equipment can be an overestimation of contagiousness and risk. This can lead to over-protection, which will compromise the safety of the worker and patient. Effective personal protective equipment must allow the wearers to do their job – i.e., treat and respond to patient needs – while the equipment does its intended job of securing the responders.

“With the drive towards technology, we’ve forgotten the basics.”
- Ugis Bickis

A number of myths and mantras must be de-bunked, such as “droplets = aerosol” and “surgical masks are protective.” During the SARS crisis, some healthcare workers wore masks without proper filtration. The consequences of poor preventive techniques are infection, illness and death, as well as societal disruption, financial impacts and, in short, all factors that meet the goals of terrorism.

Discussion

A participant asked what steps can be taken to limit exposure during an outbreak such as SARS. Bickis said that SARS information should have been disseminated quickly to stop the infection. He noted that a federal statute requires employers to protect their employees from disease contamination and to provide appropriate equipment. “During SARS, those who were directing efforts should have had the knowledge and information to assess the type of respiratory protection needed by various health workers depending on the tasks they were undertaking on a daily basis,” said Bickis.

Another participant challenged Bickis’ assertion that masks give personnel a false sense of security. He asserted that by putting on a mask, individuals would follow procedures more carefully and be conscious of safety issues. In reply, Bickis recommended a book by psychologist Gerald Wilde entitled *Target Risk*, which documents that people take more risks when they feel more protected. A delegate disagreed with Bickis, pointing out that studies will soon be published about the behaviour of health care workers during SARS showing that, for the most part, they followed procedures carefully and wore N-95 masks. Some health care workers reported that while scrubbing their goggles, they might have splashed their eyes with potentially infectious particles. The participant asserted that much remains to be learned about personal protective equipment.

Another participant pointed out that health worker fatigue plays a role in equipment use. If tired workers are given the best equipment, they will not always wear it for an entire shift. “There needs to be an infrastructure in place that supports worker safety,” he said.

A participant from Newfoundland and Labrador who works as a paramedic complained that during SARS, little information was disseminated from reputable sources within Canada to workers on the frontline. He consulted the website of the

US-based CDC instead, as provincial and municipal information was not available. Bone acknowledged that public health departments often ignore frontline workers. Wanger acknowledged the participant's frustration, and noted that discussion is underway across the country about setting up a Canadian clearinghouse for information in crisis situations, so that Canadians will have credible, authoritative information readily accessible.

Recovery and Continuity Session #3:

Recovery Instruments – Have We Got It Right?

Diana Jardine, Director, Municipal Programs and Education, Ontario Ministry of Municipal Affairs and Housing, acknowledged that her department has been experiencing “a huge learning curve” during the last few years due to the 1998 Ice Storm, SARS, the recent power blackout, the Walkerton incident, as well as two floods and tornadoes. In fact, Ontario experienced 17 natural disasters between 1996 and 2002.

The Province administers relief through the Ontario Disaster Relief Assistance program, special grants, and ad hoc relief programs (as in the case of Walkerton). As the severity of disasters generally rises, so do the costs. The SARS outbreak in March 2003 marked the first time a health crisis was declared a provincial emergency. Not only were there deaths, but thousands of people became ill or were forced to stay off the job because of quarantine conditions. The outbreak continues to have far-reaching, long-term impacts on both the economic and health sectors. Tourism in Toronto dropped 27% from the previous year, with businesses estimating a loss in revenues of \$518 million.

The cost for emergency response in hospitals and other health care institutions, individual quarantines, as well as the cost of getting back to normal could add up to \$2 billion over two years. The SARS outbreak has had a major impact on public health in the rest of Canada and internationally as well, yet under the Federal Government's Disaster Financial Assistance Arrangement (DFAA), SARS does not fall under the definition of a natural disaster. No other financial assistance programs cover public health emergencies.

To shore up public confidence in the response capacity of Canada, the various governments must appear “seamless” and incorporate a broad interdisciplinary approach to providing disaster relief. The current case-by-case process of negotiating shared assistance is slow, lacks transparency, is not always constructive, and requires financial and other resources that would be better applied in recovery efforts.

Jardine called for a broader definition of what constitutes a natural disaster. Patterning on the model used in the US, Jardine recommended inclusion of disease, forest fire, acts of terror, floods, and power outage. Several elements should be

included in a new approach to coordinating and establishing disaster assistance:

- cost flexibility (including compensation for job loss);
- cooperation among jurisdictions (incorporating community, provincial and individual responsibilities);
- clear government leadership at the three levels;
- establishment of agreements in advance of the assistance process; and
- ready-to-go menu of assistance including tax relief, employment insurance, loans, grants and emergency relief.

Don Shropshire, National Director of Disaster Services, The Canadian Red Cross Society (CRC), cautioned that in the event of a disaster, the family unit and the individual must take responsibility for their own health and welfare, including taking out appropriate insurance and being prepared for risks. At the same time, governments clearly have a responsibility for the health and welfare of individuals who cannot respond for themselves.

CRC and other NGOs offer key resources in an emergency, albeit in an auxiliary role. With more than 450 offices in communities across Canada, CRC is able to respond quickly to emergencies and disasters. With regard to the recent forest fires in BC (summer 2003), CRC personnel carried out surveillance for the Army by interviewing 400 families who lost homes and belongings in the fire. More recently, in Badger, Newfoundland and Labrador, it shared aggregate data with the government to help pinpoint gaps in assistance to the flood victims (late winter 2003). The organization has also collected and distributed \$100 million in domestic relief.

Several areas need more services as part of the disaster relief provided by governments. Information must be better managed, and governments should seriously consider using a multi-agency and multi-disciplinary approach more often, given its success in Badger. Noting that CRC is still actively aiding people affected by the floods in Manitoba (1997) and is helping Edmonton families seven years after a devastating tornado, Shropshire called on governments to provide more long-term, sustained support to affected communities. Acknowledging that there is a “fatigue factor” inherent in disaster relief work, he also noted that people take a longer time to recover from disasters than we initially give them.

“The government is too slow in paying out the assistance it does give.”
- Don Shropshire

The Federal *Privacy Act*, taking effect January 1, 2004, could have an impact on the ability of governments and NGOs to share information during a disaster. Government help is needed to ascertain what kind of information can be shared and who can authorize its dissemination. Noting that 20% of businesses fail after a major disaster, Shropshire said that assistance programs must acknowledge the indirect as well as direct economic impact of a disaster. Farmers are also short-changed by current assistance programs, as are the working poor who cannot afford to rebuild homes lost in a disaster.

Governments must take on the leadership role and expand the scope of the DFAA and employment insurance payments. The Federal Government should offer greater resources for rural populations and the working poor, and adopt a multi-sectoral approach through partnerships, drawing in corporate support for the work that needs to be done. Finally, governments need to educate people about their personal responsibility to mitigate and prepare for disasters.

Janet Bax, Director General of Programs, Office of Critical Infrastructure Protection and Emergency Preparedness (OCIEPEP), commented that she had just come back from assessing the disaster relief work at the site of the BC fires, and found it difficult to make a distinction among the four stages of relief work (i.e., preparedness, response, recovery, mitigation). In a disaster, people seeking assistance do not distinguish among the various levels of government.

While no single relief instrument can cover everything, and no disaster is like another, the Federal Government's DFAA is more flexible than it might seem. The DFAA has served "relatively well" for the last 30 years. If it is not as nimble as necessary, that is the responsibility of the provincial governments, as the system is constructed so that the Federal Government repays the provinces/territories for costs and disbursements incurred. The Federal Government does not directly fund or repay individuals, which is again the purview of the province/territory involved. One exception, however, is in relation to the BC fires where the Federal Government handed out a \$100 million advance payment for relief.

So far, the DFAA is the only government program dispensing disaster relief. It covers only certain natural disasters, which do not include infectious diseases and health issues such as SARS. There is momentum within government to look at creating new financial frameworks to cover animal disease, health disease, and terrorist-caused disasters, but Bax asserted that the new programs would never be as "generous" as the DFAA.

It is promising that the incidents experienced by Canadians this year have strengthened the relationship between the federal and the provincial/territorial governments. By harnessing this good will, governments should be able to come up with better plans and financial arrangements that will serve everyone.

Discussion

In the discussion that followed, a participant said he thought the government was incapable of immediately getting emergency teams into the field during a large-scale disaster. Bax replied that the Federal Government has the capacity to send out assessors of technical damage, but would not be able to provide the means to do a wider damage assessment in that timeframe. Jardine said that Ontario has a team of assessors, although no one from either the CRC or the Federal Government is part of it. The team is capable of working only on smaller scale disasters.

Plenary III:

Bioterror and Public Health – How We Got Here



Dr. Donald A. Henderson is Johns Hopkins University Distinguished Service Professor, and Founding Director of the Center for Civilian Biodefense Strategies, in the US.

Henderson reviewed the recent history of terrorism within the context of public health, with special reference to smallpox. Until 1995, bioterrorist threats were mostly ignored, given the difficulties in growing and disseminating the organisms. As well, he noted, there was and continues to be a moral barrier against the manufacture and/or use of such agents, which people are not willing to transgress.

Several events have influenced the thinking of decision-makers with respect to bioterrorism. They include:

- from 1940 to 1944, the Japanese Army undertook active programs in China (Unit 731) to start major disease epidemics;
- the Soviet Union may have used bio-weapons at the great battle of Stalingrad; and
- the *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction* was ratified in 1972, with countries pledging to destroy bio-weapons and stop research; however, there was no provision for verification.

Three critical events occurring around 1995 changed the US approach to bioweapons and raised concern over their potential use:

- a claim by an Iraqi deserter that his country had a sophisticated program to put bio-weapons on missiles;
- the deadly sarin gas act in Tokyo in 1995, by the same group which released anthrax in Tokyo on repeated occasions, fortunately without deadly consequences; and
- discovery that the Soviet Union had a major biological weapons program that had begun in 1972, involving 60,000 people in 50 different laboratories.

"I don't think there are two or three cities in the US that could have achieved as good a result as what Toronto achieved during SARS."

- Dr. D.A. Henderson

In the last century before smallpox eradication, 300 million people died from smallpox; in comparison, 100 million died due to armed conflict. The great achievement of smallpox eradication occurred in 1980. Vaccinations had begun to stop in 1972, well before eradication, because the risks were small enough. Therefore, roughly 45% of the US population has never been vaccinated against smallpox. Moreover, one vaccination is not sufficient for the duration of time that has passed, meaning that 75 to 80% of the population is susceptible to the smallpox virus.

In 1970, a smallpox outbreak occurred in Germany; 100,000 people were vaccinated in the town where the outbreak occurred. Seventeen further cases occurred in the special hospital designated for smallpox care. One person walked into the hospital, opened a door and asked for directions. He was told he was in the wrong building, left the building and came down with smallpox. He was not greatly exposed, but the original patient in the facility had been coughing, and aerosol particles were suspended in the air, where they can remain viable for 24 hours or more.

Known stocks of smallpox virus exist in two labs, one in Atlanta and the other in Russia, under authority of the WHO. Major outbreaks occurred in Iran and Syria in 1972, and the virus was isolated. Henderson said that it is not known whether the virus is still housed in labs in those countries. Moreover, Russian and other scientists now have expertise with weaponizing the virus, and it is not costly for countries to acquire such 'talent'. On the Internet, fully detailed accounts for producing weaponized smallpox virus have been posted. Moreover, anthrax is readily available.

Vaccines are still in storage, with 15 million doses now in the US, and about 85 million doses worldwide, of which less than half are probably good, Henderson reported. The current high priority is to make more vaccines in case of an outbreak. In the last 12 months, 209 million doses have been produced and are seen as a reserve for the world in case an outbreak occurs.

The likelihood that smallpox will be used as a weapon is small, yet the results should it happen could be catastrophic. There will be complications. Those with immune deficiency disorders (e.g., HIV) are more susceptible. Aerosol dispersion is the easiest way to spread the virus – like sprayers at perfume counters – but the virus does not spread rapidly. It requires people already sick with the disease to spread it to others at home or in hospital. Surveillance and containment procedures are straightforward: isolate the individual; vaccinate all people in the room; and if someone gets a temperature, put him/her in a holding centre.

Isolation and vaccinations with at least 70% coverage of the population are the most effective measures. Mass vaccinations are not particularly effective as those efforts reach mostly children, but not the parents. The prospect of the destruction of known smallpox stocks is now totally unlikely. Governments feel they must keep the virus to develop new vaccines. Because we cannot know all the places where it might be located, we must presume that smallpox will be with us for a long time. Given that reality, there is a critical need for vigilance and public health emergency preparedness.

Special Recognition Event: Aventis Pasteur and Canadian Public Health Association Recognition of Achievement for Contributions to Global Smallpox Eradication

From 1966 through 1979, Drs. Paul Fenje, [the late] Robert J. Wilson and Donald A. Henderson worked closely together to ensure the international availability of dried smallpox vaccine of the highest possible quality and quantities and in the most effective package for use during the WHO's global smallpox eradication program.

Mark Lievonen, President of Aventis Pasteur Limited, presented special recognition awards for achievement in smallpox eradication to Henderson, Fenje and Wilson. He noted that since its founding in 1913, Connaught Laboratories – now Aventis Pasteur's Connaught Campus – has been a key partner in the global control of many diseases, particularly diabetes, diphtheria, pertussis, polio and smallpox. **Dr. Paul Fenje** accepted his award, saying it represented the "greatest event in my professional career". He decried the lack of sufficient international collaboration today to counter the very evident correlation between epidemics and social/economic decline. Fenje said the scientific community must "push for a consciousness by which health will become not just a political slogan, but a birthright for every human being and community in this shrinking world." **Ray Wilson** accepted the award on behalf of his late father, **Dr. Robert J. Wilson**, who died in 1989, and spoke of his father's work at Connaught Laboratories to oversee provisions for large quantities of vaccine for WHO's intensive campaign to eradicate smallpox. Wilson Sr. worked closely with Fenje, and their camaraderie was a great gift in his life. Wilson added, "My father would have been proud to be here. He was honoured to have worked with such distinguished scientists and was pleased to dedicate his professional life to Connaught Laboratories." **Dr. Donald A. Henderson** directed the global smallpox eradication program for the WHO. He thanked Aventis Pasteur and its Connaught Campus Laboratories for the key role they played throughout the smallpox initiative, and continue to play in global health initiatives such as polio eradication. Henderson also acknowledged Dr. Luis Barreto, Vice President Public Affairs and Director of Corporate Public Health Policy, International Public Health Affairs, Aventis Pasteur Limited, for his tireless work on vaccines.

Prevention Session #4: Preventing Public Fear and Panic

Ronald Crelinsten, Professor, Criminology, University of Ottawa, explained that terrorism can be viewed as a form of communication targeting multiple audiences with different goals. Usually terrorists strike as wide a target as possible, and are quite willing to take away the human rights of others in order to enhance their own security. Not all those exposed

to terrorism's effects experience fear and panic, some are jubilant if they see their interests are being advanced. Counter-terrorist actions can involve traditional policing and law, or the military for 'low intensity' conflicts. The disease model of counter-terrorism is less well known; it treats the terrorist act as a disease that can be cured. Following a terrorist act, public pressure or panic will often ensue, with individuals and groups turning to governments and demanding relief and solutions. At times, during counter-terrorist responses, the first responder organizations will supplant the needs of victims with their own needs, and victims are shunted aside until control is established.

"CBRN is an uncertain threat, but a certain vulnerability."

- Ronald Crelinsten

Before an attack, it is important to promote public trust and confidence; enhancing knowledge and public education efforts about the extent of threats is also key. A balance between the public's awareness of threats and their sense of security must be achieved. The governments' best efforts can be directed towards strengthening the public sector and distributing knowledge across the country, using the media to promote these efforts.

Following an attack, Crelinsten noted, the essential factor is to resolve any uncertainty about the attack itself. The authorities must answer questions such as: did it actually happen? was it a terrorist event? will there be another? They must be ready to identify perpetrators, and counter any "blame game" that ensues. This is especially critical as, since 9/11, over 90% of CBRN 'attacks' were hoaxes.

Dr. Duncan Pedersen, Director of the Psychosocial Research Division at the Douglas Hospital Research Centre of McGill University, presented a case study conducted in Peru to assess the meaning of long-term impacts of terrorism. He noted that the study is probably the first in the field to examine the effects of political violence and hardship on the recovery process, as a psychological experience of terror.

Twelve years of extreme violence in Peru have resulted in the death or "disappearance" of about 60,000 people due to the actions of Shining Path guerrilla and government military personnel. The Peruvian region targeted by the study has seen one third of those deaths/disappearances. Civilian populations are the most affected, with nine out of ten casualties occurring among non-military individuals. One research objective was to assess, at the individual or community levels, the medium- or long-term psychosocial impact of bio-political violence and terror, and subsequent healing and coping strategies.

Qualitative results of the study show that sadness, depression, and fear due to trauma have continued to affect the lives of the victims beyond the actual events of rape, torture, and the witnessing of torture and violent deaths of family members. Severe disorders have arisen from this exposure to great

violence. However, Pedersen noted a striking feature among victims is the adapting mechanism they use when confronted with extreme violence – to resist their perpetrators or to flee, with flight being the choice of the vast majority. He also reported that those with no social support, such as no surviving family, experienced the most severe disorders, and that those with good social support remained free of significant long-term trauma.

Patrick McGee, President, McGee and Associates, noted how 'control' is critical to a risk and threat communications strategy in crises. In such a strategy, the control of public anxiety and fear is the key objective. This control can be obtained through two means:

- delegated control, in which one seeks control from outside, trusted allies (e.g., parents, superiors, public institutions); and
- personal control, in which an individual exercises his/her ability to get things under control.

"If we can exercise more understanding of how the public thinks, how control can be cued, it will lead to a more 'accepting' population that can recover more quickly."

- Patrick McGee

Empathy is an important starting point in efforts to maintain public calm and confidence. The public needs to see its officials display genuine concern over the impact of a crisis. "In a crisis, people in charge must display an acknowledgement and understanding of what's happening on the ground," McGee explained. Delegated control is an effort to marshal the data, trying to make a case for calmness. But if public officials can get people to accept personal control, and thus link personal control and delegated control, better results will ensue. There are a whole range of cues that trigger emotional control for individuals, and demonstrate one's respect for the victims, thus allowing for a sense of control to emerge. Expressing empathy allows people to calm down, whereas telling people to calm down can often have the opposite effect.

Sheila Watkins, Director General of Communications, Health Canada, explained that her staff come "face to face with public anxiety every day." For instance, the Department received 968 media calls after 9/11. The public needs to be reassured that public institutions are able to control adverse situations. Medical and scientific experts are highly respected by Canadians. To gain the public's trust, "the right person has to be giving the right message."

"Information and knowledge are the most powerful weapons against fear."

- Sheila Watkins

For instance during the SARS crisis, Health Canada went into crisis mode, with demands for rapid and accurate responses to the events as they unfolded. There was tremendous risk of an information vacuum, especially during the early period of

the crisis when little was known about the disease. The Department's goal was to provide as much information about SARS as quickly as possible, and to assure the public that the issue was being handled well. The challenge was to get a variety of groups and jurisdictions to work together and share information. Health Canada made experts available through its technical briefings to complement provincial partners and provide a national perspective on the issue. The Department also relied on other vehicles to meet Canadian needs: the SARS-dedicated website; a 24/7, 1-800 info line; and a web evaluation mechanism.

Canada has not yet needed to respond to a bio-terrorism attack, and we hope it never will. Should such an attack occur, it is certain that fear will be elevated, and response times will be compressed. But the learning from SARS is invaluable, including understanding the great value of partnerships. To that end, the Health Emergency Communications Network now links every health agency across Canada, building important relationships. Health Canada has also put in place the NGO Emergency Communications Network to better communicate with the NGO and voluntary sectors.

Preparedness Session #4: Psychological Impact – How to Prepare Potential Victims and Workers

Jane Mocellin, Senior Consultant with Disaster Management, Preparedness & Response in France, discussed the results of work done at WHO on the psychosocial aspects of disaster work. In incidents of chemical or biological agent release, studies of outcomes do not yet exist, given the small number of cases to date. However, Mocellin noted that analyses have been made of personal responses to threats to life and individual perceptions of a potential disaster or exposure to life-threatening elements.

The low predictability and low control of potential CBRN events create extremely stressful situations for populations, with the resulting psychological impacts of fear and challenge to an individual's internal stability. Assessing and responding to psychosocial aspects of a CBRN attack are therefore critical, as those on the scene will usually presume they have been contaminated, even if the evidence indicates otherwise. Moreover, given that public health services may be non-existent following such an attack, first responders must deal with perceptions of exposure and fear, especially during the early phase of an incident.

The literature on mental health in this context is virtually non-existent. However, some risk management steps are relevant to psychological issues: 1) identify the CBRN agent; 2) evaluate the hazard; and 3) introduce risk reduction strategies to limit fear. These activities are to be followed by specific steps for strengthening mental health during CBRN events: 4) quantify the residual risk and acceptability of risk (Is the risk fear-based or real?); and 5) monitor the risk

management program. These steps can be repeated as the situation changes. Other key activities are to identify fear-based responses; prevent panic using risk plans developed in advance; and, introduce risk reduction strategies, psychological support and assistance on site.

Training is a critical element for success. For example, in Israel during the two Gulf Wars, the population was not adequately trained in using masks and sealing windows, which resulted in tragedy and an overburdening of the health care system. Risk communications analyses of previous disasters have demonstrated how vital it is to organize a very strong media campaign to counteract fear, with messages targeting key groups such as mothers with young children. This strategy must be a key part of risk planning, Mocellin concluded.

Dr. Rocky Lopes is with Disaster Services Preparedness of the American Red Cross (ARC) and is responsible for community disaster education. Lopes stressed the need for ongoing education to prepare the public to understand what is going on and what they can do to reduce their risk and behave properly. The goal of such education initiatives is to promote long-term and sustained behaviour change to keep people safe.

In natural disasters, the public and responder communities generally know what they can do. There will be warnings, and often identification of where an event will happen. Traditional response services are provided after the event. However, with human-caused events such as terrorist acts, victims and responders will be dealing with a crime scene and the law enforcement community, along with traditional responders. Access to information will be limited, and information-sharing will be tightened to a need-to-know basis, Lopes explained. Post-9/11 in the US, the public impression is that the government is intentionally withholding information. In part, this is the result of fear at work. "For example, nobody knows what the Homeland Security colour codes mean. People don't stop going to work. Life goes on, because the warnings are unspecific. Information is withheld, for good reason, and people do not act because they don't know what to do."

"The best way to help people get prepared is to get them to think it's more likely it will happen to them where they are now."

- Dr. Rocky Lopes

The psychological act of 'denial' may be widespread during terrorist attacks. People may not believe an event can happen, or indeed has happened to them, or they may feel there is nothing they can do about such an event in any case. Their sense of risk becomes de-personalized. Denial has also been seen in those who refuse to prepare after a tornado warning, or in those who don't change the batteries in their smoke alarms.

Those who perceive risk take precautions. Effective preparedness happens through practice and consistency. People will 'shop around' for information, and will often choose the easiest things to do, rather than the right things to do.

Admittedly, it is difficult to achieve consistency on issues that are still emerging and evolving. But studies have shown that when multiple sources of information consistently give the same advice, most members of the public will take the right action.

Roderick J. Orner is a Consultant Clinical Psychologist with the Department of Psychological Services of the Lincolnshire Partnership Trust in the UK. Orner emphasized the need for, and challenges of, planning for situations of low predictability and low control. It is not difficult to know what to do initially: survivors want safety, security, and help for their primary needs. On the psychosocial level, however, it has been shown that a sizeable portion of an affected population will “manage well without us”. Early intervention by relief workers on this front may not be useful. A great deal of the initial psychological outcome will be affected by other events in victims’ lives. The essential questions to ask are what types of psychosocial intervention are appropriate, and at what stage?

For some frontline workers in disasters, studies have found that talking about what happened, during and immediately after the event – with colleagues and friends, rather than with mental health professionals – is helpful. However, if talking is delayed by a day or so, the beneficial impact is lost. But, frontline emergency workers such as police and fire responders, and second-line responders such as social and health care workers often do not talk about events, and instead engage in other activities. Trauma is carried in the body, and working it off can be done by running, or being active in other ways. Individuals will seek steps to re-assert control over their lives, reclaim routines, and re-establish structure. They may do this, as well, through rest and relaxation, especially given that major crises or critical incidents make people tired.

Many studies have pointed to singular factors that are important for planners and providers to consider in disaster preparedness:

- presume that survivors are resilient and competent and have a level of capacity to adjust; and
- recognize that distress, fear and panic are not disorders and should not be treated. They are signals from survivors that they need information or help, but not treatment *per se*.

Generally the disaster response community has overlooked the resilience of survivors, and has instead fostered dependencies, thus disempowering survivors. This appreciation is especially critical when dealing with survivors who are also responders. Individuals should be consulted about their views of what they need, and whether they really need support at all. The process of consultation is crucial. Support, if needed, should be offered in phased manner, addressing different needs at different times following major incidents. Assistance should be negotiated with survivors to complement existing personal strengths, and not undermine or disempower them. Building up the social infrastructure will also greatly assist in a positive outcome.

Response Session #4: High-risk Infectious Disease Response Plans – An All-hazards Approach

Dr. John Blatherwick, Chief Medical Health Officer, Vancouver Coastal Health Authority, noted two key elements of an effective emergency preparedness plan: 1) make plans simple to understand and execute; and 2) make lists of what must be done when an event occurs. At the local level, an emergency plan must relate to everyday functions and responsibilities. Workers need to have a list of instructions at hand that are familiar to them, because in an emergency situation, they will need to perform these tasks faster and with more impediments to their successful execution.

In BC, a draft plan for a Biological Response Action Team (BRAT Plan) was created and was considered basically sound. However, when the plan was executed during the anthrax incidents of 2001, it turned out to be overly complicated to carry out. As a result, a simplified strategy has been developed. The simplified plan states that the first call in the event of a “white powder incident” should be made to the RCMP or local police, to assess the threat. If the threat is deemed credible, then the hazardous materials safety team (HAZMAT) is called upon to contain the threat, and the provincial laboratory will be alerted to prepare for delivery of the package. The MOH will perform follow-up duties on people who were exposed to the threat. As few people as possible will be kept “in the loop.” This revised procedure worked well in dealing with white powder incidents. As a result, all regional health units in BC will adopt the revised BRAT Plan.

During the SARS incident in BC, coordination of event management was made easier due to the regional approach to health care already established in the province. At the working level, MOHs were prime contacts so that problems occurring throughout BC could be monitored and dealt with accordingly. Operational skills among health care workers were also of a high calibre, and greatly assisted in outbreak management. The outbreak in BC was small compared to other SARS-affected areas, with just four cases. This limited number of cases also contributed to the success of the overall response. However, MOHs consulted on hundreds of hospital admissions and gained valuable experience in distinguishing SARS from other ailments with similar symptoms.

Dr. David Patrick is Director of Epidemiology Services for the BC Centre for Disease Control. Patrick explained that high-risk infectious diseases take many forms and have diverse consequences. There are plans developed for some contingencies, for example the BC *Pandemic Influenza Preparedness Plan*, the provincial *Exposure to Biological Agents Response Plan*, and Health Canada’s *National Smallpox Contingency Plan*. The sheer scope of these plans makes them difficult to execute during an event. Although an underlying pattern to an outbreak exists, there is a need to

improvise on the ground throughout a crisis. Planning will encourage the brain to improvise over a recognized form or base pattern. However, no amount of pre-planning can replace drills, exercises, and actual experience.

The plans above have a number of common elements, Patrick explained. Each plan encompasses a phased approach, consisting of 1) pre-crisis planning, 2) inter-crisis management, and 3) post-crisis follow-up. Pre-crisis planning involves: epidemiological, clinical, and laboratory surveillance; stockpiling of drugs, vaccines, and antidotes; preparation for contingencies; training, drills and tabletop exercises; and research. All workers must understand the various roles and responsibilities, and be able to rely on clear lines of communication. Response activities include distribution and dispensing of drugs and vaccines; putting public health measures into place; organizing and managing first responders; administering acute care; and applying law enforcement. Post-crisis, responders need to observe and interpret the management of the event and apply lessons learned to the reshaping of the plan.

Patrick noted that there are two ways to deal with unexpected health crises. One is the scientific method, which employs the standard steps of observation, hypothesis formation, methodology for testing, generating results and conclusions, and process repeatability. The other method is emergency management, which involves an emergency response plan being carried out in a structured environment, different from *ad hoc* crisis management. Both methods should be employed to allow scientific discovery to unfold concurrently with emergency management.

Adoption of an ICS approach that applies to all hazards will allow planning for the unknown. The system requires logistics, planning, finance, and operations functions. Operations – comprising surveillance, clinical and infection control issues, and laboratory functions – is the most complex of the four functions, as was demonstrated by the SARS outbreak.

If the chosen weapon against a high-risk infectious disease turns out to be development of a vaccine, it can be a long process. Typically, it takes five years. Consider what would have happened if public health measures had not been enough to contain SARS, since there was nothing on hand to fight it at the time. The SARS Accelerated Vaccine Initiative (SAVI) embraces different disciplines of science – genomics, immunology, epidemiology, mathematical modeling, and others. An infrastructure has been created to coordinate the efforts of researchers. Currently in Canada, 35 SAVI research scientists are working in five provinces.

One of the challenges in management of a scientific learning environment in times of emergency is how to make the learning process as brief as possible. One solution is not to rely on a single institution or individual to provide answers. Virtual management through open systems where knowledge can be shared also shortens the time to produce results.

Another idea is to employ the principle of the SAVI program, where many vaccine development activities that would normally run sequentially, instead run concurrently to accelerate the process.

In summary, the emergency management structure and the scientific method are complementary approaches to navigating and managing the unknown, said Patrick. Members of the health sector should learn to employ both as they address future challenges. Public health workers should consider primary prevention in addition to the more commonly addressed secondary prevention. Both Patrick and Blatherwick closed with a list of key questions that still need answers:

- How detailed should an emergency response plan be?
- What is the best way to execute more frequent and effective drills?
- What is the best way to marshal science to address public health emergencies?
- What is the best way to tackle primary prevention of bio-terrorism?

Discussion

In the discussion that followed, a participant agreed with the level of planning detail presented and the value of the planning process. Her health unit needs a mechanism for training local municipalities and health care workers in the emergency management approach. Sharing of exercises and results, possibly on a website, would be beneficial. The BRAT Plan has been posted on the Internet, Blatherwick responded [http://www.pep.bc.ca/hazard_plans/CBRN_Consequence_Management_Plan_2002.pdf]. BC has chosen to develop a single provincial plan to prepare for pandemic influenza, with the result that the health system has the ability to coordinate its efforts during an emergency. The challenge is funding, since there has been so much cost-cutting in the health system. Most of BC's emergency health plan can be adapted to a generic form. Patrick noted that he would be interested in collaborating with colleagues in Ontario regarding their plans for dealing with a possible return of SARS.

An attendee commented that he supported the suggestion to make lists and do drills. He was concerned about planning surge capacity for laboratories, saying that integration of provincial and private labs was required. In response, it was noted that the Winnipeg laboratory is an excellent facility, but in the face of a pan-Canadian event, laboratories at the provincial and local levels will be involved. Not every jurisdiction has to have individual surge capacity and write its own emergency plan – coordination can occur at a broader level, under a formal structure rather than the current informal set-up.

Creating plans is the easy part, said one participant. The challenge is implementation, people must be trained and drilled. This cannot happen in employees' spare time, it must be a priority and be funded sufficiently. Blatherwick said that several surveillance positions were created within the US public health system following 9/11 to watch for potential

public health problems. In Canada, no extra surveillance has been added that he is aware of – in fact, the number of epidemiologists has decreased in recent years.

A participant said that open debate would help the emergency planning process in the long term. It is a mistake to think this type of issue should be confidential, and stakeholders, decision-makers, and the public should be aware of activities surrounding emergency planning. The communications person is a key member of an emergency management team, Patrick said. SARS was the first major post-Internet epidemic, said Blatherwick. It changed the way communications are handled during a crisis, due to the public's access to 24/7, all-news outlets. Health care professionals realized they needed a communications person to field media calls and arrange daily briefings.

If SARS recurs, or a similar event happens, Canada still has not developed a coordinated national approach to deal with it, a delegate stated. Patrick responded that Canada is in an inter-crisis period. One of the challenges is to marshal science to work faster to characterize the problem when it occurs and to propose solutions. Another task is to determine what kind of leadership people would be willing to accept for a national approach.

Recovery and Continuity Session #4:

Essential Services – Yours or Ours

Dr. Murray McQuigge, Clinical Adjunct Professor, Department of Family Medicine, University of Western Ontario, outlined how public health services have been exhausted by recent crises such as Walkerton, 9/11, and SARS. There is a crisis in the trenches of public health with a shortage of funding resources. McQuigge said his objectives were to see more resources allocated to public health, and to point out why funding is a big concern.

Many public health officials continue to experience post-traumatic stress syndrome in response to the crises of the last few years. During the Walkerton crisis, the water supply was contaminated with *E. coli*. In response, public health experts needed to access information sources worldwide. A website was developed to which 29,000 scientists worldwide contributed their expertise, supporting Ontario professionals with information about *E. coli*. Even with the support, many public health workers suffered from fatigue, and in some cases are still struggling to return services to the pre-crisis levels. Following 9/11, many suspected anthrax cases were reported, with innumerable calls to public health because of fears of contamination in homes or workplaces. Even though many calls were false alarms, they took a toll on resources. With the SARS crisis, public health officials are still in the trenches. During the recent blackout, questions arose about what should have been routine procedures, but it was not clear which jurisdiction had the responsibility. Given these

events, a number of questions have been raised about the role of public health services: Is public health an essential service? How important is food safety, safe water, TB immunization? How long does it take to 'return to normal'?

In the past, public health was 75% a provincial responsibility and 25% a municipal one. Today, the responsibilities are roughly shared 50:50. With this new sharing of responsibility, there's an inequity in the system, because some well-off municipalities can afford better public health facilities than others. Public health should be a provincial and federal issue, not a municipal one.

Public health funding is not adequate in Ontario, but under the province's *Emergency Management Act*, the Premier has the authority to increase public health staff as needed. While the Premier declared a state of emergency during SARS, he did not take advantage of the *Emergency Management Act* to put a comprehensive plan in place to manage the crisis. As a result, the Province and the public health departments lacked the capacity to deal with the crisis. When most agencies and health units were asked about the way in which the SARS crisis was handled, most cited the lack of overall, delineated leadership.

Public health staff are in short supply. People in the system believe there is a pool of public health professionals waiting to be called in during emergencies, but the opposite is true. When the funding for public health (\$25 per capita) is compared to funding for policing (\$125 per capita), it becomes obvious that public health is under-funded.

A CDC-like agency should be established in Canada to develop and define responsibilities and essential public health services. Certain systems are needed including surveillance, early warning systems, and what is called, "incremental recovery." Despite the number of recent disasters and potential lessons learned, McQuigge is pessimistic that an appropriate response is possible to any new crisis, unless the current public health system is overhauled.

Doug Harrison, Deputy Chief, Emergency Management Ontario, was involved in a number of recent emergencies including the 1998 Ice Storm, Walkerton, Y2K, the SARS crisis, and the 2003 power shortage. He noted that the debate rages on about essential services. People view the debate as addressing an immense problem, but it is not so complex. "You simply need to delegate responsibility to get through a crisis," said Harrison. Finger-pointing takes place during crises among the three levels of government, but the task is to make the three levels of government work together effectively.

Public safety should be a provincial responsibility, Harrison believes. During the SARS crisis, it was not clear which jurisdiction had the authority to declare a state of emergency. A more coordinated incident management system is needed, and public safety services must always be given high, overall priority. Safety impacts every aspect of living, Harrison

explained, including health, environmental issues, and economic concerns. All emergencies are economic ones.

"Surge capacity is a crock. [Public health] is a 'first' service. There is no down time."

- Doug Harrison

Ninety percent of Canada's critical infrastructure is privately owned, so there must be an examination of the relationship between the private and public sectors for critical infrastructure. Critical infrastructure involves cooperation among all stakeholders in common sectors – including insurance programs, national and provincial programs, and the financial services industry – so that all programs are brought together to promote safety.

Discussion

Delegates expressed grave concern over the cutbacks to public health funding and the need for immediate redress. A participant remarked that the undercutting in public health funding by at least 50% has been going on for the last four years. Harrison agreed that there is a need for increased funding for public health. Frontline public health officials were not ready for the magnitude of the SARS crisis, he said. Early in the outbreak, he asked for an order of one million masks, and his procurement colleagues were surprised. Harrison had to explain that 185,000 healthcare workers, each wearing several masks a day, would translate to a lot of masks. Harrison said he has become a big advocate of public health as a primary service.

McQuigge concurred that public health must be prioritized as a primary service. Despite all the recommendations that followed the Walkerton inquiry, not much movement has taken place to improve public health departments or fund them. Now, post 9/11 and SARS – as well as the Naylor Report – he is somewhat more hopeful that public health will be better funded.

Luncheon Address:

The Response Capacity of the Public Health System in Canada – Lessons from SARS



Dr. David Naylor, Chair, National Advisory Committee on SARS and Public Health, and Dean of Medicine and Vice Provost, Relations with Health Care Institutions, University of Toronto

Naylor reported on the findings and recommendations of a national task

force that reviewed the lessons learned from SARS, with particular respect to public health. Thousands of health care workers and citizens rose to the challenge of SARS, but serious questions have emerged about the preparedness of our health system to combat and contain this and similar outbreaks. Naylor paid tribute to the health care workers who

were frontline during SARS, members of his committee, and Health Canada staff who contributed to the report. He made special acknowledgement of Gerry Dafoe, retiring CEO of CPHA, for his key role in public health in Canada for over 30 years.

SARS had a profound effect on the clinical health care system and how Canadians perceive and fund their public health endeavours. The National Advisory Committee on SARS and Public Health was mandated in May 2003 to draw some lessons from the outbreak and focus long term on how best to direct Canada's efforts. Naylor reviewed some of the highlights of the report:

- **Emergency and outbreak response:** The report describes a massive breakdown in acute care sectors with a backlog of 39,000 elective surgical procedures, an enormous disruption of the system, and the need to use the requisite content expertise within a broader all-hazards approach.
- **The clinical system in Toronto was not up to the job, it worked better in Vancouver:** No regional plans were in place in Ontario for outbreak management, and no integrated structure. Better regional planning is critically needed.
- **Complacency about infectious diseases coupled with a shortage of qualified resources:** Lessons from various expert groups continue to be ignored.
- **Clinical systems were not ready for SARS:** The Ontario Public Health Laboratory System worked very hard and processed vast amounts of material, but they are overwhelmed and had funding pressure. When the hospital labs stepped in, the results and clinical data were stuck in legacy silo systems with nothing to link them all together, to allow for a rapid outbreak investigation. Without integrated information, mid-course corrections that are so necessary for managing an outbreak are impossible.
- **Health human resources (HR):** There is a shortfall in experts, particularly with respect to public health and special needs. There is also a complete absence of a national HR strategy.
- **Local and provincial public health:** Efforts were commendable, but there was an absence of coordination among units and a lack of an integrated response. Streamlined connections must exist between MOHs, their staff, hospitals and primary care. More information must move back and forth to create the integrated health protection system Canadians deserve.
- **Unevenness across the country in public health investment:** The investments made for provincial health agencies in BC and Quebec are not made in other provinces and territories, to the detriment of those jurisdictions.

- **Surveillance and intelligence:** There is an acute need to collect and analyze data in order to provide alerts. A ‘receptor’ capacity is needed at the hospital and family physician levels to make use of alerts.
- **Focus on a three-level response:** Investments, inter-governmental agreements, legislative renewal, and new structures (for local, provincial and federal roles) are needed.
- **Federal role:** Resource funding is being pulled away from public health. The Federal role in funding, coordination and leadership must be re-visited.
- **Infectious diseases:** Thirty new viral diseases have emerged since 1973. SARS is not the worst or the last of these. Public health has a tall order of duties, even without outbreaks, such as addressing Aboriginal health, chronic disease, obesity, immunization, etc.
- **Structures include Canadian agency for public health:** A full-spectrum public health agency is needed. Co-locate technical resources with provincial centres of excellence to build capacity across the country. A Chief Public Health Officer will provide leadership, along with a national public health advisory board of experts. A network for communicable disease control is needed to pull together an all-hazards network and bridge gaps at the provincial/territorial level.
- **Legislation and protocols:** Major governmental review of processes and policies is needed to find a common framework for surveillance.
- **National Immunization Strategy:** A well-supported (\$100 million annually) immunization strategy is required, which should also allow for access to newer vaccines.

Public health plays a vital role in counter-terrorism, but to focus on bio-terrorism at the expense of public health *writ large* is a mistake. Any counter-terrorist response must be vested in the public health system. “We don’t need an anthrax scare to understand that public health matters. Public health has enough to do without even thinking about terrorism. The focus has to be on nesting public health renewal in a broader strategy to optimize the health of all Canadians,” Naylor concluded.

“We can’t be a part of the emerging global public health community without a strong federal role.”

- Dr. David Naylor

Plenary IV:

Canada’s National Counter-Terrorism Arrangements



Robert Lesser, Deputy Director General, Counter-Terrorism Unit, Solicitor General Canada, explained that the National Counter-Terrorism Plan (NCTP) is based on an evolving threat assessment, not risk assessment. “We’ve heard about different types of threats at this conference, and what the plan needs to do is be flexible enough to respond to any eventuality,” Lesser noted, while recognizing that a real event will likely be somewhat different from what is anticipated.

The NCTP can be implemented in response to any threat or actual incident related to national security. The plan was introduced in 1989, and has gone through several revisions since then. While the Solicitor General is the lead minister for national security and related enforcement issues, NCTP recognizes the role of other departments – for instance, Health Canada for a crisis like SARS, and Agriculture and Agri-Food Canada for an animal disease.

Since counter-terrorism events can cross municipal, provincial/territorial, and international lines quickly, a key priority is to mobilize national resources to support local first responders. Recent events have demonstrated the “very strong political significance of terrorist acts,” Lesser said, in contrast to the impact of non-terrorist, criminal activities. As a result, the plan must anticipate that any local incident “will within seconds become a provincial and federal event, and within minutes will be on CNN to become an international story.”

These factors inform the NCTP to make it:

- adaptable to either full or partial engagement, so that the response, resources, and expertise can be streamlined to the level of a particular event or threat;
- coordinated through the National Operations Centre of the RCMP, which calls in the specific resources that are needed to respond to a particular incident;
- flexible enough to respond to rapidly-changing circumstances (e.g., on 9/11, RCMP officers in Whitehorse had 11 to 12 minutes to decide whether to shoot down an incoming Korean Air Line jet, based on minute-to-minute consultation with the Prime Minister, other key ministers, and senior advisors);
- linked to other federal departments’ operations centres through an interdepartmental policy advisory group, “where the bureaucratic world meets the real world, and key departments can coordinate competing demands for limited resources.”

The “melding of crisis and consequence management” is a current challenge, because the two roles can easily become intertwined on the ground. Another issue is the balance between the government’s responsibility to warn citizens of impending danger and the need to investigate and arrest

people who are doing harm. “The trump is public safety,” he said. “But short of that, there’s always the challenge of what you say, how you say it, and when you say it.”

The Canadian Security Intelligence Service (CSIS) has just announced the formation of a national security assessment centre that will bring together federal departments, provincial law enforcement, and the US FBI to arrive at common assessments of emerging threats.



Dr. Frank Welsh, Director of the Office of Emergency Preparedness, Planning and Training (OEPPT), Health Canada, stressed the extent to which the events of 9/11 were important for public health professionals. The anthrax letters that circulated in the period following 9/11

demonstrated “that health had a very significant place within our counter-terrorism arrangements,” not just in a supporting role, but through the recognition that disease outbreaks could happen at any time. In the past, people assumed that traditional police investigations would respond to terrorist events, and that public health would deal with infectious disease outbreaks or other health outcomes of terrorism. In practice, the two disciplines come together at the emergency room door.

However, “over the last two years, we’ve rethought what we’re doing and how we work together, both from the public health perspective and from the Solicitor General’s side of the house,” Welsh said. There is much wider recognition that broader collaboration must happen horizontally across federal departments, and vertically across levels of government.

“Overall, federal agencies have come a long way in the past two years, from being at a point where we knew that each other existed, to being able to work and talk together and make some significant steps ahead.”

- Dr. Frank Welsh

Certain standard counter-terrorism responsibilities fall under the heading of public health. Preparatory activities include: mitigation, training, planning and exercise, and supplies. During an event, the focus shifts to frontline supports like epidemiology and emergency social services. As public health professionals develop a better understanding of the health implications of a terrorist event, that information must somehow be transmittable to the police to assist them in their investigations.

Another question is how, precisely, to respond. Welsh presented a checklist of appropriate responses to CBRNE attacks, but noted that the basic response is the same for physicians and medical support personnel. He contrasted an overt attack, in the form of a defined release or explosion, with a covert release where the impact could show up minutes, hours, or days later. “It’s going to be the knowledgeable

practitioner who will be able to identify how we respond and what the issue is,” he said. The MOH will ultimately have to judge whether an incident is actually a terrorist threat, though that process raises legal issues related to evidence and physician-patient confidentiality. Discussion of the extent to which privacy rights supersede the investigative capacity of police agencies “is going to have to happen fairly quickly,” Welsh said, “because we never know when these things could occur.”

The period since 9/11 has seen closer links among federal agencies, as well as positive developments in the key areas of surveillance, sharing of surveillance information between public health and police, preparedness exercises, and direct discussion of counter-terrorism issues. At Health Canada, terrorism concerns are being integrated into national plans to address pandemic influenza and smallpox.



Tracy Thiessen, Senior Analyst in Communication and Consultation with the Privy Council Office (PCO),

presented polling results on Canadian attitudes toward terrorist and bioterrorist threats. Canadians are less worried about terrorism than they were in August 2002, when the threat

seemed more imminent. Thiessen added “that’s not to say that Canadians are not concerned.” Most believe another incident will likely take place in the US, and 40% believe themselves to be at moderate or high risk of terrorist attack.

Across the country, and not only in major centres, Canadians are quite worried “and would be glad that we’re deliberating on this subject today,” Thiessen said. Despite all the planning that has gone on, Canadians do not think the country is very well prepared for a terrorist event, and “the numbers remind us that we’re dealing with a pretty sceptical, worried public out there.” From a PCO perspective, the terrorist threat brings together issues management, policy and program development, and public security. Thiessen explained that the government might communicate more broadly about an earthquake than a terrorist event, reflecting the balance between security issues and the public’s right to know. There are theoretical models that map the flow of information in urgent situations, but the reality is that “the hierarchies begin to collapse” when crisis hits. Flexibility is important, and “the more people invited into the tent, the better off we are.”

In any crisis management scenario, information must move quickly and efficiently. There may be a need for different kinds of information flow – from polling data, to timely discussions among key decision-makers. As well, communications strategies during the acute stage of a crisis must recognize that emergency planners need the media as much as the media need them, and must ensure that the right tools are in place to keep working journalists and decision-makers up to date. Media lines must be coordinated across the Federal Government structure.

Thiessen stressed the following points from a communications perspective:

- the public needs to see elected officials on the job in times of crisis to provide a degree of assurance, credibility, and authority;
- public servants need to acknowledge a crisis situation and indicate when resources have been fully committed to support first responders;
- a well-organized communications plan contributes to emergency planning and response;
- emergency messaging must remain focussed on the frontline response, and especially on the victims; and
- even the best emergency response plan will fail if people don't know about it or fail to respond.



Dave Redman, Director of Crisis Management, Emergency Management Alberta,

described provincial emergency preparedness as the glue between the federal and municipal levels of government. Emergency response is definitely a work in progress for municipalities, he

said, and many communities are looking for help with implementation.

There are three scenarios for a possible bioterrorist attack, beginning with an event that has been anticipated. If things are working correctly, one of the options is that you know it's going to happen beforehand. If this is not the case, then the money invested in security and intelligence has been wasted. The other two possibilities are an obvious terrorist attack for which there is no warning, and an apparently natural event that is gradually shown to have been a deliberate act.

In Alberta, the all-hazards approach to emergency management is divided into two categories, natural and human-induced. The key difference is the potential for mitigation. With human-induced disasters, "you actually can mitigate the hazard itself, not just its effect." Regardless of the nature of a specific event, there is an obvious role for health within an all-hazards approach – as a supporting agency, if not as the lead.

Alberta's philosophy of emergency management presumes that first response begins with its citizens, who are expected to be 'self-contained' for the first 72 hours if they are not immediately affected by the event. The next step is local government, where each of the province's 359 municipalities and 46 First Nations is required by law to have a municipal emergency plan in place and conduct exercises every four years. When necessary, a committee of local elected officials has the authority and the responsibility to declare a local state of emergency and take on powers that are roughly equivalent to the Federal *War Measures Act*. Beyond that, the provincial emergency organization provides direct support and acts as a liaison to federal and international partners.

Following 9/11, Alberta set up an emergency plan to review its approach to mitigation and preparedness. The assumption was that "consequence management starts the minute we fail: a terrorist gets through and something happens." The review focussed on the need to determine the level of threat to the Province, identify critical infrastructure and levels of criticality, take appropriate steps to sustain critical infrastructure or bring it back online as soon as possible, and link critical infrastructure emergency notification systems. The identification of critical infrastructure was based on eight criteria that begin with health and safety, loss of life, and injury. Other criteria – like interdependence and economic impact – are equally important: "If the economic engine of the Province stops dead for six months, you don't recover."

Discussion

A delegate asked how long it would take to spot the placement or dispersal of radioactive materials in public places. Lesser said Canada and the US have been involved in efforts to identify gaps in their response to covert releases and their ability to get appropriate technology into the hands of first responders. Redman said Alberta is addressing the need for detection, recognition, identification, and neutralization of CBRN threats with municipal authorities. Welsh said the traditional health emergency response becomes more complicated when victims don't get sick right away.

A participant questioned Thiessen's assertion that political leaders, over scientists or public health officials, should be visible in the midst of a crisis. Thiessen agreed that officials should visibly support elected representatives. But she noted that world-class agencies and scientists back federal ministers, and pointed out that senior officials are unable to make on-the-spot, political decisions that belong to their ministers.

"Our politicians are very much a part of the team, and the sooner we recognize that, the easier it's going to be for our officials down the road."

- Tracy Thiessen

**Plenary V:
Media Hype, Media Help**



Peter Calamai of the Toronto Star

spoke about his experience with respect to the potential role the media could play in a CBRNE incident. He emphasized that the media's chief interest differs significantly from that of public health. In a public health emergency, the first priority is to get it right ASAP. The media only wants to get the story as fast as possible, then correct it afterwards. The frame of mind of most reporters is not that "we are all in this together, and that we all want the same thing. Besides, people do honestly disagree on what is 'good': for instance, the optimal number of respirators in a hospital."

With the proliferation of news services, competition and deadline pressures for journalists are intense. Reporters are pushing for updates every 15 minutes. The people who must manage these events cannot meet the media's demand. Reporters will always get the story – “it may not be accurate, but it will fill the air time.”

“We do want you to give us advice; we're not that pigheaded. But my final advice to you is never, never, never lie.”

- Peter Calamai

Security around a hospital may create problems for the media. Calamai suggested establishing off-site media briefings capabilities, which will have benefits for maintaining the public health messaging as well. For instance, anxiety among medical personnel can be quite elevated during a health crisis – personnel may be concerned for their families and themselves. However, public health communications planning should note that such natural anxiety is not something that should be visible to the media. A crisis will magnify any chinks or gaps in the plan or in the personnel themselves.



L. Ian MacDonald of Southam News

spoke about media hype as ‘feeding frenzies’, which are the result of several factors such as 24/7 all-news networks, and 15-minute rolling deadlines that drive competition. All-news TV cannot stand a vacuum. If there is no news, journalists will

conclude that health authorities cannot answer their questions. In those cases, the media bring on the ‘talking heads’ to fill the air time. The best example of this was during the anthrax scare in the US. The news media and environment at large were “super charged” after 9/11. Coverage became even bigger than it would normally have been, with some networks fanning the flames of anxiety and panic.

There are questions to be asked about the role of the Federal Government during SARS. Did the government do enough to send out the right messages internationally? With respect to future public health-related crises, priorities should be to ensure there is only one message and that it's truthful, as well as releasing “all the bad news first”, if possible.



Maureen Taylor, National Health Reporter, CBC Television, spoke about the role of the media in a national event. The public health community will want the media to get their message out. The media, however, is focussed on delivering news, not necessarily messages. Taylor defined her role on

the subject of counter-terrorism as looking to the community to see if responders can in fact meet the challenges. “We saw SARS as a dry run for a terrorist attack and response, and the Canadian media were pretty responsible on SARS.”

Taylor took exception to what she saw in the Naylor Report as a recommendation that infectious disease interviews be scripted for the media. “We are not looking for scripted answers. We purposely sought out frontline specialists with no political bosses looking over their shoulders.” The single spokesman approach will not always work, as journalists will find a way around that person.

Prevention Session #5: Preventive Tools 2

Dr. Slavica Vlahovich, Senior Medical Advisor, Health Canada, studied the health effects of radiation exposure for 10 years and is currently involved in the study of radiological emergency planning and response. While there is little that health professionals can do to prevent this kind of exposure, there are ways to limit the impact of radiation exposure to affected populations.

Vlahovich cited a case study of the health effects that occurred in 1987 when scavengers in Goiania, a city in south-central Brazil, happened upon an abandoned canister of cesium-137 and opened it, launching the second largest nuclear accident after Chernobyl. Children and adults rubbed the luminous blue powder they found in it on their bodies, inadvertently contaminating themselves, families and neighbouring homes throughout the city. Of the 112,000 people monitored for contamination, 249 were found to be contaminated, 50 received medical treatment, and 20 special medical treatments. Four people died, including one six-year-old girl.

Four potential scenarios involving radioactive materials are listed below, in order of likelihood:

- dispersal of radioactive material without explosives, producing effects such as radiation burns. Usually small numbers of people are affected. There is a low probability they will suffer long-term effects;
- dispersal of radioactive material with explosives. Used primarily to engender fear by contaminating the environment, these “dirty bombs” cover a larger area and therefore affect more people. This type of bomb is not a nuclear weapon, and the health effects resemble those caused by conventional nuclear reactor accidents;
- sabotage of a nuclear reactor; and
- nuclear weapon explosion or blast with a thermal effect, like Hiroshima, in which there are usually no survivors in the target area, which extends a few kilometres. Any survivors will suffer acute radiation sickness, burns, and cancer several years later.

The types of radiation include gamma and x-rays, neutrons, alpha particles, and beta particles. In Canada, the Gray is the unit of dose used for health assessment, and the dose decreases rapidly with the distance from the source. Among accepted biological principles are: a high dose of radiation kills cells; cells can tolerate greater amounts of radiation if the

dose rate is protracted; rapidly dividing cells are the most vulnerable; and surviving cells are more susceptible to malignant concentrations. Radiation exposure can be localized exposure; whole-body exposure from an external source such as an x-ray; internal contamination via inhalation, ingestion, or open wounds; and external contamination via clothing or skin. Radiation exposure often initially has the same characteristics as a thermal burn, but because radiation is so penetrating, this may be misleading. Haematological Acute Radiation Syndrome is survivable. Gastrointestinal Acute Radiation Syndrome is usually fatal, and radiation affecting the cardiovascular and central nervous system is invariably fatal.

The sole means of preventing the onset of health effects after contamination by radioactive iodine-131 and cesium-137 is by prior ingestion of potassium iodide prophylaxis. If this antidote is taken shortly after ingestion of a radioactive substance, it can help reduce the contaminant uptake. Other treatments, such as Russian Blue and DTPA, are not available in Canada.

In the event of radiation contamination, health care workers should treat life-threatening injuries first, then evacuate upwind to carry out the evaluation of people who are uninjured or have minor injuries. They should perform decontamination when the patients are stabilized. Most radiation injuries are not medical emergencies. Universal health precautions (such as gloves and masks) will keep the exposure to contaminants at a very low level for first responders and health workers.

Dr. Anne McCarthy, Director, Infectious Diseases Division, Ottawa Hospital, General Campus, began her presentation by listing the reasons for increased interest in the use of bioterrorism agents. Such agents have low visibility, can be hard to detect, and require an incubation period before becoming obvious. They are comparatively cheap to produce but highly effective as a means of creating disruptions, terror, and death. Such weapons can also be as easy to deliver as mailing an envelope.

In 1998, a Canadian working group on civilian biodefence identified five specific bioterrorism agents and one type of viral haemorrhagic fever with the potential to cause mass disruption, illness, or death in a large attack. These agents have a high rate of mortality and person-to-person transmission, with no effective or available vaccine or treatment. Smallpox tops the Category A bioterrorism agent threat list, followed by anthrax, plague, botulism, tularemia and haemorrhagic fever.

The fallout from a major attack utilizing any of these agents would be “devastating.” Health Canada estimates that if 100,000 people were subjected to an anthrax attack, 32,875 would die and 50,000 would require hospital care, for a total of 332,500 days. The total cost would exceed \$6.5 billion. A botulism attack on the same population would affect 50,000 people, result in 30,000 deaths, involve 4,275,000 days in hospital and cost \$8.6 billion. The cost is higher because more people would suffer paralysis and need to be on ventilators for longer periods of time.

A number of lessons were learned from the post-9/11 anthrax scare. Foremost is the need for surveillance for the detection and confirmation of the toxin, followed by rapid deployment of public health and law enforcement resources to the site. The second prevention phase would entail a full-scale investigation and interventions to prevent further cases, and these should be undertaken within 24 hours. The third and final phase is a longer-term follow-up of affected individuals and decontamination. The first line of defence rests with alert clinicians – emergency room doctors, dermatologists and x-ray technicians – who can recognize symptoms compatible with a bioterrorism agent and know who to call for verification.

“It was an astute clinician and pathologist who first detected West Nile virus on Staten Island.”

- Dr. Anne McCarthy

Anthrax has no colour, smell or taste, making it undetectable. It can easily be spread by air, is highly lethal, and can be stored for decades without losing its potency. Once it has been inhaled, it can incubate for 2 to 60 days and cause flu-like symptoms. It cannot be transmitted person to person; however, if one touches the lesions, secondary cutaneous infection can occur. People with the potential of being in direct contact with anthrax are most at risk, and should routinely use gloves. Quarantine is not required as anthrax is not spread person to person. Chemoprophylaxis prevents secondary cases, and a post-exposure vaccine can reduce the chemo period to four weeks. However, the vaccine is not licensed in Canada. A pre-exposure vaccination program is in use in the US for high-risk individuals, such as military personnel and diplomatic staff in areas of high risk.

The botulism toxin usually occurs from ingestion of contaminated food. It can produce disease within 12 to 36 hours. If inhaled, botulism manifests in 12 to 24 hours. Symptoms include droopy eyelids that denote a descending flaccid paralysis to the neck, arms, and chest, where respiratory muscle paralysis can cause death if not treated. No chemoprophylaxis exists, but there is a pre-exposure vaccination used in the US and a treatment involving the use of a horse serum product.

Bubonic plague has become common in Texas and the southern US states, as fleas transmit it and the septicaemic form of the plague. A post-exposure chemoprophylaxis exists, although a post-exposure vaccine is no longer available. Tularemia manifests as a sudden and rapid fever, chills and, as with anthrax, will often appear as an ulcer with a black base. It can be acquired through the skin, ingested, or inhaled as a by-product of animal carcasses. Health workers treating tularemia should wear gloves and a mask, as it is extremely infectious. It is treated with two drugs – doxycycline and ciprofloxacin – and a post-exposure vaccine is available.

Viral haemorrhagic fevers can feature a flushed face and chest, bleeding, hypotension, and shock. In some cases, these fevers can be treated with ribavirin. Anyone within three feet of

the patient must don a surgical mask and eye protection and also wear a properly-fitted, filtered respirator if the patient is coughing or vomiting, has diarrhea, or is haemorrhaging.

Discussion

A participant asked McCarthy for her recommendations on educating busy emergency room doctors about these risks. McCarthy recommended that they learn to inquire about a patient's travel history. If the attending doctor sees something unusual, he/she should call in a colleague to ascertain a diagnosis. The doctor could also take a digital photograph of the symptom, post it on the Internet for other professional opinions, or use some of the many medical Listservs now available. Vlahovich added that there are no symptoms specific to radiation exposure, and noted that some of the symptoms of acute radiation (e.g., vomiting, diarrhea) are often confused with gastroenteritis. She said treating symptoms until a diagnosis is made is not usually detrimental.

An audience member commented on Vlahovich's statement about the health impact of radiation exposure being relatively small, adding that he thought many members of the public might believe otherwise. Perhaps they confuse radiation exposure with exposure to chemical agents, Vlahovich suggested, and directed delegates to the WHO website [www.who.int] that offers a factsheet containing information about the health risks of radiation.

Another participant said he considered botulism "a kind of orphan." Even though it is designated as a real threat, no one in Canada is stockpiling anti-toxins and ventilators. McCarthy pointed out that to do so would put a high demand on government resources. Another person asked about practical plans in the event of a large-scale attack. In response, one speaker said that the Federal Government has based its practical planning on a calculation of 100 dosages per 100,000 population. McCarthy said Ottawa-area hospitals and pharmacies do have extra stocks of prophylaxis currently on the shelf, as do most of the country's 25 urban centres.

Response Session #5: Casualty Management – A Comprehensive Approach to Medical Intervention

Dr. Daniel Kollek is Associate Professor of Emergency Medicine, and Director of Continuing Medical Education, Emergency Program, Hamilton Health Sciences, at the Hamilton General Hospital. He dedicated his presentation to the late Dr. David Applebaum, director of the emergency room of Shaarei Tzedek Medical Center, who was killed on September 10th in a suicide-bombing terrorist act in Jerusalem.

Kollek defined a terrorist event as an attack targeted at civilian non-combatants and directed to affect the government that represents them. There are distinct differences between acts of terrorism and military attacks. In a military attack, the

potential victims are mainly young, male and healthy, with access to a medical team on site. The treatment site can be secured because of the training of other participants and their access to weapons. With a terrorist attack, victims will be of different ages, genders and health conditions. Nothing will be on site to aid victims, and it will not always be possible to deliver medical personnel to the unsecured site.

" 'Care under fire' is a different skill needed by health care professionals in this context, and retraining is necessary."

- Dr. Daniel Kollek

Many terrorists use a double explosion during an attack in order to affect first responders on the scene. This tactic encourages chaos; secondary events can delay response and make the site difficult to secure. The impact on health care workers' psychological health is tremendous. A terrorist attack may be a diversion from the primary target, and each terrorist event should be treated as a crime scene. When there is multiple agency response, a robust structure and system is vital to deal with victims and collect information on the incident. The majority of terrorist incidents that occur are bombings and kidnappings. Shrapnel is often packed in with explosives used by suicide bombers. In Israel, Hamas has used people infected with hepatitis B as suicide bombers, so there is a two-fold effect with the impact of the bomb and the infection of people with the virus. People infected with HIV or smallpox would not be effective weapons, as these diseases do not survive explosions. Many Colombian terrorist groups use human excrement in bombs in order to infect secondary victims.

After 9/11, Kollek surveyed Canadian hospitals about their disaster plans. Forty-eight percent of hospitals surveyed had not seen the plan in a year, and 10% in over three years. According to his survey, 45% of hospital administrators believe a risk of chemical or biological attack exists. When hospitals were asked about testing their disaster plans, 50% said that they had never tested the plan. Notification of health and other agencies is extremely important following an event: 64% of hospitals have a report protocol, while 25% do not, and 45% of hospitals did not have access to basic supplies such as extra gloves or gowns. Forty-one percent have a pandemic plan, but 34% do not.

In the case of a nuclear or chemical attack, decontamination to lessen the chance of secondary contamination due to off-gassing is critical. Only 31% of hospitals currently have decontamination capacity. Some believe that patients will be decontaminated at the site, but the reality is that patients will not wait. Many hospitals think the fire department will send a truck to the hospital to help in decontamination. But most fire departments do not have the ability to spare equipment during a crisis to support hospital needs. Of hospitals surveyed, 10% have gas masks, 44% have coveralls, and over 80% have adequate supplies of atrophic/benzodiazepins, but this is not enough for a crisis. Whether the event is terrorist or accidental, more training and understanding is needed by health care professionals to deal with biological and chemical events.

Dr. Karen Wanger, Emergency Physician and Regional Medical Coordinator, BC Ambulance Service, explained that the key to interagency cooperation is clear communication. At the beginning of a terrorist incident, many will believe the event is a simple accident. Scene management is crucial but can be very complicated with a mass casualty incident. The principles of triage are dictated by the injuries and chemicals involved. In the all-hazard model, training for one type of emergency will be training for all possibilities. Treatment does not change, and the ABC's – airway, breathing, and circulation – remain key. These are the basics of treatment, but they may be delayed. “‘D’ for ‘don’t get distracted’ is the final thing to remember.”

Using an all-hazard model for planning will insure readiness. Terrorist-specific agents and scene management specifics, especially in the context of secondary incidents, are a major concern. In BC, for example, three ambulances have become integrated emergency units, equipped to handle 50 patients with treatment at the scene for three hours. This capability is important in helping hospitals and paramedics during an emergency, especially since emergency personnel may have to stay at the scene.

Another consideration during on-scene management and agency cooperation is dealing with special populations; for example, children, elderly, and the immune-compromised, who will need different medicines and care. EMS providers are accustomed to dealing with these populations; their expertise and knowledge should be shared among professionals during the planning process. Several websites offer such information:

- www.os.dhhs.gov/disasters/index/shtml
- www.bt.cdc.gov/children/index/asp
- www.psych.org/prac_of?psych/disaster?psych/ctn

EMS and public health workers should be cross-trained to expand their response capabilities to terrorism and public health issues. An advantage to public health is that EMS is a ready, mobile workforce that is highly visible and recognizable. EMS has already developed systems such as rapid communication. Existing data can be shared between EMS and public health. The biases between EMS and public health must be overcome, so that a working relationship can be established. For more information, two websites are recommended: www.nhtsa.dot.gov, and www.apha.org.

The celebration of heroism is rampant in the media, but it is confused with bravery. The media focusses on heroes, of whom there were many during 9/11 and SARS. But there is a danger in promoting heroes. A hero is someone in an unexpected event with no training, preparation, equipment, or backup. The hero will be involved in a once-in-a-lifetime event, and the event will generally incur a high mortality. A professional is someone who can predict a situation, and is trained, equipped, and has back up. The professional has experience through multiple exposures to events and will incur a lower mortality rate. There were heroes during SARS, but health care really needs more professionals, along with more

equipment, more backup, more training, and more finances. Live professionals are needed, not dead heroes.

“Funding limitations should be a reason to move forward rather than a justification for reluctance.”

- Dr. Karen Wanger

Interagency cooperation is a responsibility to be shared; each agency has a different language, and many words used will have different meanings for each group. Some believe that HAZMAT can be split into teams to serve each hospital involved, but this will not happen. HAZMAT will not set up in the parking lot, as the plan may have originally dictated. In many disaster plans, one hospital is chosen to be exempt from accepting contaminated patients. The players – EMS, other hospitals and the public – do not know this information at the time of an event. Responsibility becomes a major issue in cooperation. Public health cannot take responsibility for a specific action and then not explain to other agencies why it is handling something – this will be perceived as a paternalistic attitude. During SARS, the system was overwhelmed and a great fear spread among individuals in EMS that their health care would fall between the cracks and they would be ignored.

Discussion

A delegate asked how CBRN teams were packaging counter-terrorism drugs. Wanger replied that more storage is always needed. “We have stockpiled more than the recommended amount in a secure area that is available to the three ambulances I mentioned,” she said.

“Do you find many ERs are too tied up by the trauma and may not know how to deal with this kind of emergency?”, a participant asked. Kolley said that the role of ER physicians is triage, and assessing patients is something they are very good at doing. The difference will be in changing their primary role to one of assessment, not treatment. Wanger said that ER physicians know the concepts, as do ER nurses – they just need retraining to a different way of doing things.

A participant asked if the provinces would want federal government involvement in a clearinghouse of information. Kolley said that EMS, public health, and ER physicians are trying to establish communication and need standards that do not currently exist globally for which every level of government must be involved. The Federal Government is currently setting up a program to support health care during disasters through special teams. Kolley said that the key is the ability to prepare for 48-hour self-sufficiency during a crisis. Wanger called it “good news.”

Response Session #6:

Mitigating the Consequences and Supporting Recovery

Dr. Colin Harwood, Director of the Office of Emergency Preparedness and Response, Health Canada, reported on the efforts of the quadrilateral consequence management group organized by Australia, Canada, the UK, and the US to arrive at a common set of methods and protocols for personal decontamination in mass scenarios. Following an extensive literature review, the group produced a booklet and CD designed for trainers, particularly for first responders.

If contamination is the presence of toxic chemicals in high enough concentrations to pose a danger to human health, decontamination is very simply the task of minimizing the risk of further harm to an acceptable level. Mass situations are defined as incidents that involve more victims than responders can comfortably deal with, whether the actual count is 50, 100, 500, or more. The purposes of decontamination are to remove the agent from the victim and reduce further exposure, protect emergency responders and unexposed victims from cross-contamination, provide victims with psychological support, and prevent victims from spreading contamination over a wider area. It is essential to prioritize those groups, and to ensure that first responders avoid becoming victims themselves. Many factors determine the most effective and operationally desirable method of decontamination, and the prioritization of victims will vary from one type of incident to another.

“Every situation will have its unique challenges. You must be flexible enough to use what you have at the time and determine the best response.”

- Dr. Colin Harwood

Responses can be initially based on the following criteria:

- number of victims;
- needs of those who require immediate life-saving procedures that normally take priority over decontamination;
- time criticality, based on the type of agent used in the attack;
- availability of rapid decontamination, even if it is just soap and water; and
- environmental factors like wind direction or heavy snow.

Since victim compliance has a major impact on the decontamination process, it is important for first responders to communicate effectively with the people they meet on the scene.

Rapid identification of the contaminant is vitally important in the effort to define isolation zones and initiate the most effective form of decontamination. HAZMAT teams in many communities are well-equipped to work with toxic industrial chemicals, but do not yet have the equipment to identify weaponized biological or chemical agents. That makes it important to rely on physical factors, medical systems, and

communication with victims to get a sense of what is out there and what needs to be done. “You have to ask the right questions.” Some of the clues to a deliberate attack include odours; vapours; clouds; liquid spills; sick or dying people with no conventional injuries; clusters of disease; abandoned spray or dissemination devices; numerous dead animals, birds, insects, vegetation; and a pattern of casualties that indicates a downwind or directional hazard.

Harwood reviewed a set of decontamination action priorities, rules of thumb, methods, and timelines for different types of contamination, and addressed some of the special challenges involved in processing large numbers of victims in unfavourable outdoor conditions. Participants were encouraged to review the quadrilateral guide and its nine annexes at www.CBIAC.apgea.army.mil.

Arpad Palfy, Policy Advisor, Office of Critical Infrastructure Protection and Emergency Preparedness (OC�PEP)

explained that his presentation represented his own views, not those of his employer. He discussed efforts to build a common understanding of emergency preparedness and disaster medicine that crosses jurisdictions and disciplines. At present, the definitions (including scale and nature) of common terms like mass decontamination and mass casualty incidents vary among first responders, municipalities and researchers. Part of the problem is that first responders need a low enough numerical cut-off with respect to the word “mass” to generate a useful test sample, given the “traditional terrorist tendency to scare rather than kill.” On the other hand, policy-makers need a mechanism to assess the overall quantity and type of resources required to respond to a mass emergency situation.

A misunderstanding around definitions can lead to significant program and policy disconnects. With a common epistemological foundation and a complete understanding of differences in interpretation, it will be possible to develop preparedness standards at the cross-jurisdictional level.

“Without greater clarity, Canada will either see itself as perpetually unprepared, or believe itself to have adequate capacity when it does not. . . . a common, policy-specific terminology becomes one of the building blocks of a safer, more secure country.”

- Arpad Palfy

At the federal level, a mass casualty incident is defined as any event with catastrophic consequences that leads to a large number of casualties, though the number itself varies across agencies. Most local jurisdictions define a mass casualty incident as any situation that overwhelms the regular emergency medical response system. The issue is not which definition is right, but the extent to which definitions are held in common. Palfy presented a graph to support a definition of a mass casualty incident (MCI) as an episode with more than 20 casualties that exceeds the local response capacity, suggesting that this approach would make it possible to operationalize a common definition. The ultimate goal would

be to arrive at an equitable, adaptable national policy that supports the goal of increasing local preparedness.

A number of factors could be folded into the definition:

- number of casualties;
- time available to assist them; and
- capacity of the receiving hospitals and the travel time to reach them.

It is difficult to account for all the variables in any context other than a case study of a past crisis. In a real disaster, local EMS resources are likely to be overwhelmed, forcing first responders to prioritize the casualties they encounter. Given that it is impractical to prepare for anything and everything, scenario assessment becomes one of the keys to arriving at an overall strategy and determining how much preparation is enough.

Just like the definition of a mass casualty incident, risk assessments must be tailored to specific municipalities, and variable selection becomes the key. A common definition of a mass casualty incident, combined with local risk assessments, would give all levels of government the analytical tools to determine how much preparedness is enough. That degree of analysis, in turn, would make it easier to prioritize funding and contribute to a federal standard on emergency preparedness.

Dr. Merv Fingas, Chief of Emergencies Science and Technology, Environment Canada, explained that his Department is just launching a three-year project to develop restoration procedures for facilities and areas that have been subject to terrorist attack, with partial funding from CRTI. Restoration is a somewhat broader area of interest than decontamination, extending to activities like neutralization, sequestration, removal, and disposal, all with the end goal of returning a site to its previous condition.

A key consideration in any project is whether restoration is really worthwhile – if a facility is burned out, it may make more sense to decontaminate it and tear it down. The procedure development project will review current research, test methods for CBRN decontamination and will lead to a number of classified projects. It will also produce a how-to manual for broader distribution to first responders. The project involves 9 direct partners, representing 12 agencies, with Environment Canada in the lead.

Overall, the project will deal with two approaches to decontamination: substance-specific measures and generic protocols. Most of the products available for specific purposes are broad-spectrum, chemical and biological decontaminants. They typically contain hydrogen peroxide and calcium hypochlorite; some may use caustic soda or chloramines solutions. Broad-spectrum products are rarely available for radio-nuclear decontamination. The good news about chemical warfare agents is that they are very reactive, and easy to neutralize. Oxidation is a useful decontamination approach with virtually all organic and inorganic chemical agents, and oxidation products are usually less toxic.

Absorption of chemical agents into building materials and carpeting can be a major decontamination challenge. Differential distribution patterns will likely mean higher levels of contamination in some rooms than in others. Current nuclear decontamination procedures call for the use of high-pressure water to blast the contaminants off surfaces. The contaminated water is then captured, concentrated, and buried forever. The only Canadian facility with nuclear decontamination capability is a research laboratory in Chalk River, Ontario.

“The postal facility outside Washington, DC that handled the anthrax letters following 9/11 is still not fully occupied two years later.”

- Dr. Merv Fingas

Biological decontamination procedures must be flexible enough to deal with a wide range of substances, from lipid-coated viruses like HIV that cannot survive outside a host for more than a few seconds, to anthrax spores that can persist in a mud wall for 50 to 60 years and, therefore, are of greater interest to terrorists. As well, the prions that cause mad cow disease have been known to survive fires.

With biological as well as chemical decontamination, standardized procedures must account for a number of variables, including surface topography, temperature, humidity, concentrations, and contact time. The experts can sometimes miscalculate. In the 2002 Moscow Opera House-Chechen guerrilla incident, authorities ended up killing people when they only intended to immobilize them, and no decontamination procedures were in place in advance. Fingas reviewed the pros and cons of different gaseous and liquid disinfectants, including formaldehyde, chlorine dioxide, and hydrogen peroxide. A key point is that decontamination and restoration can take a long time.

Discussion

A participant asked what can be done to decontaminate mass casualties at temperatures of -30°C, when they are housed in canvass tents that have no sides. Harwood said the quadrilateral document contains an annex on cold-weather decontamination, but acknowledged that “it’s not an easy situation.” Severe cold may dictate wrapping and moving victims before decontaminating them, and may also mean that dry decontamination is preferable to wet.

A delegate asked what practical steps are being taken to help the responder community meet the perceived capability gap that Palfy had described. Palfy said that casualty forecasting would likely be done at the local and provincial levels, where people know their own threats. Those levels of government could work with federal authorities to develop a common model for casualty forecasting, based on the probability of an incident versus the number of victims produced. But “there has to be a certain limit... if we have 5,000 casualties, we won’t be able to deal with it,” the delegate said. He went on to say that this is an area in which local governments have been waiting for strategic leadership from the Federal Government:

“After two years, there have been very few deliverables.” Palfy agreed, noting that that was the concern behind his presentation.

Recovery and Continuity Session #5:

From Chernobyl to SARS – What Have We Learned?

Dr. Murray McQuigge, Clinical Adjunct Professor, Department of Family Medicine, University of Western Ontario, told delegates that the Walkerton public health crisis was started by a series of coincidences, including infected calves, heavy rainfall, a poorly protected well, and a sub-optimal level of chlorine in the water system. The catastrophic result was that 65 people were hospitalized and 7 individuals died. When SARS arrived in Toronto, 44 people died. The lives of Canadians have been changed by both events, McQuigge said, and not for the better.

These events were predicted and their aftermath was, and is, significant both emotionally and financially. Government officials had warned about the possibility of water-borne diseases long before Walkerton. The cost of Walkerton is approximately \$50 million, and SARS costs are estimated at the hundreds of millions of dollars. Newly emerging infectious agents caused both events. Global warming, the global marketplace, food production and distribution channels, and global travel have changed the face of infectious outbreaks. There is also the risk of terrorist attack using a modified biological agent.

The public health infrastructure needs to be much more robust, despite considerable political rhetoric to the contrary. When the public health system is working well, it is invisible. The very success of public health makes it difficult for younger generations to comprehend the value of what the public health system provides and to urge government to be adequately prepared for emergency events.

“The public does not see the terrible repercussions of the diseases that we prevent or the battles to keep them at bay.”

- Dr. Murray McQuigge

Convincing governments of the need for adequate infrastructure for prevention and preparedness is a difficult task. A new balance must be struck between supporting business and protecting the public. Early on in the SARS outbreak, political mutterings were heard about over-reaction and the damage it could do to tourism and the economy in general. A comprehensive early warning system and a federal disease control system should be in place to oversee these types of health crises.

Public officials and the media need to strike a careful balance between creating an informed public versus a terrified public. The Walkerton incident killed seven people, and it should

never have happened in an industrialized nation like Canada. However worldwide, a child dies every seven seconds from drinking contaminated water. Influenza kills hundreds of thousands of people every year. Information must be presented clearly and reasonably, McQuigge noted.

Finally, and most importantly, a plan is needed. Pandemic influenza preparedness plans did not work well for SARS. A plan needs to be developed that outlines agreements among all levels of government, so that each one understands the roles and responsibilities of its own and other sectors.

Graeme Jannaway, Managing Director, Jannaway and Associates, said that many recent disasters, including Chernobyl, Walkerton, and SARS, were predictable. Experts in various fields knew these events were a question of “when, not if”. Since the 1980s, there have been natural disasters, health crises, and other tragic events in Canada – a considerable change from its previous, relatively benign environment. The rate of increase in such incidences and the accompanying losses will bankrupt the country if it continues. People are finding they are uninsurable for certain risks, including interruption of business insurance because of the prohibitive premiums. Prevention gives ‘the most bang for the buck’, but prevention depends on things like early detection and quick and efficient responses to an event.

Businesspeople often use personal experience to guide their decisions. The cost of developing and implementing a business continuity plan is difficult to justify economically if disaster is perceived as unlikely to happen. A businessperson’s horizon is very short; disasters are only interesting for the current quarter. However, many businesses do possess a disaster recovery plan. What they often do not realize is that if they have not done exercises or drills with the plan, it has limited usefulness.

For industry, the events of 9/11 focussed their interests on emergency preparedness and planning. However, the interest was short-lived. One month after the event, industry became very interested in insurance and planning for adverse events. Another four weeks down the road, 9/11 was viewed as a single, isolated occurrence. A couple of months later, everyone returned to normal – it was as if they had learned nothing from the experience.

“We are relying on infrastructure that was built in the 1950s, and it’s starting to bite us.”

- Graeme Jannaway

In a post-SARS world, everything has to do with business resilience. The just-in-time approach breaks down. Business continuity programs should be in place for government just as much as for private industry. The public should demand development of recovery plans for disasters, because preparedness does pay.

Paul Wright, President, P.E. Wright and Associates Inc., noted that the concept of business continuity planning may not be overly familiar to public sector workers, but essentially it means survivability. How it is developed and implemented depends on the culture of an individual organization. The personality will drive the importance of business continuity, so recruitment of a top-level advocate is essential.

Business continuity is important because it allows business to recover faster from an event, no matter what specific conditions it has faced. A plan is ready to be implemented by people who understand their role in the process. The organization needs to develop the mindset that contingency plans must be in place or customer service will falter. In general, a business contingency plan is only as relevant as the last event. It must be maintained on a regular basis because business lines change, and human resources change. The key is to develop a business contingency plan that is an 'evergreen' document, designed around the concept of planning for how an event affects a business, not the event itself.

Three fundamental corporate assets should be protected in the plan: human resources, communications and vital information access. A business must be able to access the information it needs, particularly requirements for emergency procedures. A number of important lessons have been learned from previous disaster events that should be addressed in a plan:

- lack of pre-event preparedness;
- lack of awareness during mid-crisis management;
- lack of senior management involvement;
- lack of rehearsal and exercises;
- informal instead of formal structure of command and control; and
- contact lists not kept up to date.

Discussion

A delegate said that business preparedness planning is one side of the coin and prevention of events is the other and is fundamentally different. Prevention can be specific to the nature of the event, but it also involves doing business differently so that disasters do not happen in the first place. Prevention must be included in a business continuity plan. Done properly, a business continuity plan will change the way the business makes decisions, said Jannaway. Personally, he would prefer to spend money on prevention rather than lurch from crisis to crisis. Fast detection of an event is an important component of a plan. In the public health sphere, that can mean syndromic surveillance.

It has been said today that our strength is in our people, a delegate remarked. Corporate officers do what they have to do because they have a mandate to answer to their shareholders and consequently suffer from short-term vision. One thing governments can do is to pass along their responsibilities to corporations. In light of the risk-benefit analysis that corporate officers perform on a daily basis, why not make the provisions

described today a legal requirement? There are laws relating to life safety issues, Jannaway replied. He acknowledged that if major employers do not get back up to speed quickly after a disaster, then whole communities suffer. But to mandate business recovery and continuity would be very difficult. Sometimes the best answer from a business point of view is to close the business. Legislating responsibility for the greater good is difficult to do.

Plenary VI: Bioterrorism – The Modern Peril



Laurie Garrett, Writer, Newsday, Author, "Betrayal of Trust: The Collapse of Global Public Health", USA

Laurie Garrett cited 9/11 as the moment when the US Administration of President George W. Bush was forced to think differently about national security and to consider the possibility that they grossly underestimated the threat. Gradually, the concept of national security was being transformed from battles with countries, to preparedness for battles from non-state actors. The evidence was building: economies collapsing into civil war, political instability in the recently developed and developing world, the rise of zealots and religious fanatics, HIV/AIDS dooming hundreds of thousands and making orphans of many children in Africa. These factors and others are referred to as the roots of terrorism.

Moreover, the real health threats from 9/11 itself are lingering. "We're only now beginning to understand what was in the 'plume' from the World Trade Center disaster. It certainly was a public health disaster. Recent Congressional hearings in New York revealed the number of completely disabled firefighters – not by injury, but by inhalation of this plume – now exceeds 2,400 firefighters. This means that New York City has lost about 3,500 top-trained firefighters, who perished in the World Trade Centre, suffered injuries or inhaled the plume," Garrett reported. The long-term impact of this inhalation is unknown. There has never been a chemical event akin to this in history. The plume's pH averaged between 11 and 13, in contrast to the pH of a volcanic plume at 3 to 4.

In 1972, the Soviet Union had 60,000 scientists and technicians working at more than 60 test sites and laboratories to develop super lethal viral weapons. They created 122 strains of smallpox or measles that could withstand heat and pressure, and be delivered on an ICBM. Grave concern now exists over the location of these smallpox viruses. Moreover, it is now two generations since the US vaccinated for smallpox. Most frontline workers are not vaccinated at this time, and most doctors do not want to be vaccinated. Garrett noted that 1947 was the last time a smallpox threat existed in the US, and during that period the public stood squarely with public health to make a success of a massive smallpox vaccination campaign in New York City.

Over 6.5 million people were vaccinated in six weeks time. Today, that effort could not be repeated. Public health infrastructure has eroded, and no longer engenders the respect or legal clout it once had, given the dominance of individual rights as well as the complacency towards communicable diseases that now exists in much of the developed world. However, the public “is alive” to the new threats, with more than 80% of Americans believing another terrorist attack will occur in the near future. Many feel they will be attacked in their homes, schools or offices. The Iraq War is heightening this possibility and making people nervous. The Department of Homeland Security created the \$6 billion Bio-Shield project to stimulate the private sector to manufacture vaccines for bioweapons, but no one knows exactly what bioweapons to target. There is no good intelligence on this, yet other research grants have been cut to free up funds to support this “ill-focussed initiative”.

“It’s up to the public health leaders receiving those [counter-terrorism] dollars to say that it’s good to be ready for the distant possibility of bioterrorism, but what we really need to be ready for is drug-resistant TB, resurgent gonorrhoea, and methicillin-resistant S. aureus (MRSA) in our hospitals.”

- Laurie Garrett

Regarding global public health issues, generally a negative public health direction is underway. Life expectancy for much of the world is heading in the wrong direction, driven by the poor distribution of wealth. The world’s gross income is \$31.5 trillion, and out of that only nine nations acquired \$23 trillion; 73% of the total wealth resides in just nine nations, with 32% in the US alone, Garrett noted. Thus, 4% of the global population has one third of the wealth. Other factors contribute to the decline of life expectancy and public health worldwide:

- massive urbanization into mega-cities in the Third World, with no infrastructure or public health;
- HIV drugs to prolong life are not available worldwide: In South Africa, 30% of all women between 20 and 29 are HIV-positive. A second wave of HIV is brewing in China, Nigeria, Russia, India and Ethiopia;
- widespread multiple use of medical syringes: Seventy percent of hospital injections in the former Soviet Union nation-states are non-sterile;

- blood availability and quality is unevenly distributed: A full 80% of the world’s population have access to only 20% of the blood supply, and 20% of that is totally unscreened;
- lack of fundamental skills base to ensure public health throughout the developing and recently developed world (e.g., contact tracing methodology, surveillance, vaccine safety);
- poor infection control in medical facilities; and
- crowded, filthy animal marketplaces in Hong Kong and China where the concentration of humans, pigs and fowl are key components of microbe transmission.

Before 9/11, the global health community had been deepening its understanding about the need to mobilize huge sums of money to fight diseases such as malaria, HIV and drug-resistant tuberculosis (TB), in particular. The terrorist events of 9/11 halted that ‘awakening’. However, with the recent US financial support for countering HIV/AIDS in developing countries, some optimism is returning. “We in the wealthy world will continue to be targets, if we allow the life expectancy gap to get to 50 years. An awakening [to this] is occurring. It’s prompting some support from unexpected circles for programs that might make a difference... Bill Gates for example. His philanthropy is inspiring others,” Garrett explained.

Discussion

Garrett commented extensively on what she characterized as “the political ineptitude” of the public health community. “You guys are really not very good politically. You don’t know how to do your job when it comes to Washington or Ottawa or provincial capitols,” she said, wondering why public health cannot “drive its message home” to the public and decision-makers about the essentiality of public health services (e.g., clean air, clean water, access to vaccinations). The terrorist threat is presenting a tremendous moment of possibility, with “pots of gold” materializing. Public health must seize this moment and make its case, Garrett insisted.

Closing Remarks



Dr. David Butler-Jones, CPHA Past-President, informed delegates that a coalition of national organizations, individuals and provincial organizations supported by CPHA, have come together to form the Canadian Coalition for Public Health in the 21st Century. The coalition was catalyzed by

a paper written by Dr. John Frank of the Institute for Population and Public Health of the Canadian Institute for Health Research.

“There is a fear and concern about what we can do as a nation to address the almost insurmountable issues of terrorism. It may just be a matter of scale,” Butler-Jones said, “like in the early days of public health when it addressed child labour and the huge wealth gaps.” The Coalition will try to address many of the issues raised at the conference. More information is available at the CPHA website www.cpha.ca.

Dr. Ron St. John, Director General, Centre for Emergency Preparedness & Response, Health Canada, thanked delegates and presenters for their attention and engagement in the events of the last two and a half days of the conference. He reiterated the conference themes:

- **Review of any or all hazards:** The lessons learned from preparedness experience with natural disasters have a direct application to the counter-terrorism field;
- **Integration and coordination within and across the health sector:** Because no one discipline can deal with CBRN issues, the conference planners sought out and brought together a wide variety of workers, researchers and policy-makers;

- **Health sector positioned firmly in the middle of the CBRNE spectrum:** The key role played by public health for preparedness and response to terrorism was clearly visible to all participants; and
- **Knowledge and experience were shared:** This involved both the latest terrorist threats and counter-terrorist initiatives, and revisiting an old nemesis like smallpox, as well as seeing how far ‘lessons learned’ to date are taking Canada and global partners.

St. John emphasized the need – expressed frequently throughout the conference – for stable, dual-purpose investments in public health infrastructure, saying that the tools used for response to bioterrorism are the same tools used for a communicable disease outbreak. “We need to invest in these tools, for our ultimate goal is a seamless, coordinated emergency preparedness and response capability across the country.”

Gerry Dafoe, CEO, CPHA, closed the conference by thanking the members of the Steering and Scientific Committees, delegates and presenters, and staff involved in the event, for their enthusiasm and engagement. He concluded by saying, “Your collective commitment to public health will help meet the very big challenges we face to counter terrorist threats, and maintain and improve the health of Canadians.”

Conference Steering Committee

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- Dr. Sheela Basrur, Medical Officer of Health, City of Toronto
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- Dr. Kevin Keough, Chief Scientist, Office of the Chief Scientist, Health Canada
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- Dr. John Blatherwick, Chief Medical Health Officer, Vancouver Coastal Health Authority
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- Paul Cox, Coordinator, Pandemic Influenza Planning, BC Centre for Disease Control
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- John Lindsay, Disaster Management Specialist, Manitoba Health
- Dr. David Patrick, Director, Epidemiology Services, BC Centre for Disease Control; Associate Professor, Health Care and Epidemiology, University of British Columbia
- Dr. Karen Wanger, Emergency Physician, Regional Medical Coordinator, BC Ambulance Service
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Canadian Public Health Association
400-1565 Carling Avenue, Ottawa, ON K1Z 8R1
☎ 613.725.3769 ☎ 613.725.9826
💻 info@cpha.ca www.cpha.ca