

Preventing Pandemonium: Pandemic Preparedness Planning and Communicable Disease Outbreak Management in a University Setting

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The prospect of a possible influenza pandemic¹ spurred the senior administration at the University of Alberta to commission a Public Health Response Committee [PHRC]² to develop a Public Health Response Strategy (Strategy)³. The PHRC began work in January 2006 to develop a decision-making model, business continuity plan, human resources plan and communications plan that would be operationalized in the event the University faced a major public health event. This article provides an overview of the ongoing development of the Strategy. As well, it describes how a recent outbreak of norovirus in a large student residence enabled the emergency response team to apply and assess the Strategy during an actual public health situation. Key lessons learned relate to the importance of raising awareness and understanding of emergency preparedness and response on campus, crisis communications practices, and adequate provision of resources related to emergency preparedness and response.

Background, Development of Ethical Principles, and Survey of Knowledge and Attitudes

The PHRC is a multi-disciplinary team with 27 representatives composed of students, faculty and staff from key areas

of the University, and from external agencies, including the regional health authority for the region (Capital Health) and the Alberta provincial government. In carrying out its mandate, the Committee's priorities include an emphasis on planning for and ensuring, insofar as is possible, the health, safety and security of staff and students, maintaining the essential services of the University, and communicating effectively with stakeholders and partners, including all levels of government.

Governments and institutions, including the University, will be called on to make difficult decisions in the event of a serious public health event such as a flu pandemic. Thus, a key component of the Strategy has been to identify a set of ethical principles to facilitate ethical decision-making in the best interests of the University community, as well as the community at large. The following "NOFLU" ethical principles were drafted after a review of the literature regarding ethics and public health.⁴ They have been adopted by the PHRC in its approach to developing the Strategy. NOFLU will guide decision-making in the event of a public health emergency:

1. Need to protect: While there is a need or duty to take steps to protect the community generally (see utilitarianism below), there is also the need or duty to protect



those who incur risk for the benefit of the community, to protect vulnerable populations within the community, and to uphold or protect individual rights and freedoms.

2. **Openness:** Decisions should be made in an open and transparent manner, with clear lines of accountability. Decision-makers should provide information on how decisions are made and on what basis they are made as much as is reasonably possible. The University community (and, where appropriate, the larger community) should be kept informed, and decision-makers should be open to revisiting and revising policies as new information arises.
3. **Fairness:** The principle of fairness should inform both the process of decision-making and its substantive and procedural outcomes. Decision-making and priority setting should be fair processes and include consultation with stakeholders where appropriate. Outcomes should reflect a fair distribution of the benefits and costs. Procedural fairness carries an obligation to provide protections to those whose rights or liberties are restricted in an attempt to protect the well-being of the community.
4. **Least-Restrictive/Proportionate:** In the process of decision-making, if there is more than one option that would achieve a particular aim, the least restrictive alternative should be chosen. This does not mean that decision-makers must choose the least restrictive means if it may lack effectiveness compared to other options in a given situation. Rather, the choice must be proportionate. In the absence of full information, decision-making should be taken on a precautionary rather than an evidence-based model.
5. **Utilitarianism:** Decisions should be made to achieve the greatest benefit to the community.

Some members of the PHRC also created a survey, which was administered to all students and staff of the University of Alberta⁵. Questions were posed around issues such as knowledge of transmission, prevention and treatment of influenza. Opinions were also solicited around matters like willingness and the perceived duty to volunteer during a pandemic, as well as how scarce resources should be allocated. This was done to gather information about knowledge and attitudes in order to assist in planning for education, and the development and implementation of the Strategy.

University of Alberta Emergency Response Structures

Within the University's Integrated Emergency Management Program [IEMP], the Emergency Operations Centre [EOC] provides the focal point for leadership, coordination and active support of the emergency site response. In addition to providing critical support, the EOC maintains oversight duties protecting the needs of the University as a whole during an emergency event. Actions taken by the EOC may include determining levels of response plan activation, mobilization of resources, issuance of warnings and directions, provision of aid, coordination of building and facility damage assessment, security/protection of property, and communications. In the event of a flu pandemic or other serious public health emergency, the Strategy provides for the creation of a Public Health Response [PHR] Incident Commander to provide leadership and management of the crisis from within the Emergency Operations Centre (see chart 1). The PHR Incident Commander and the EOC Director are charged with keeping the Crisis Management Team (Provost, President, Vice-Presidents) informed and briefed in order to make critical decisions, give policy direction and interpretation, and provide a spokesperson for media relations during a crisis.

Key Components of the Public Health Response Strategy

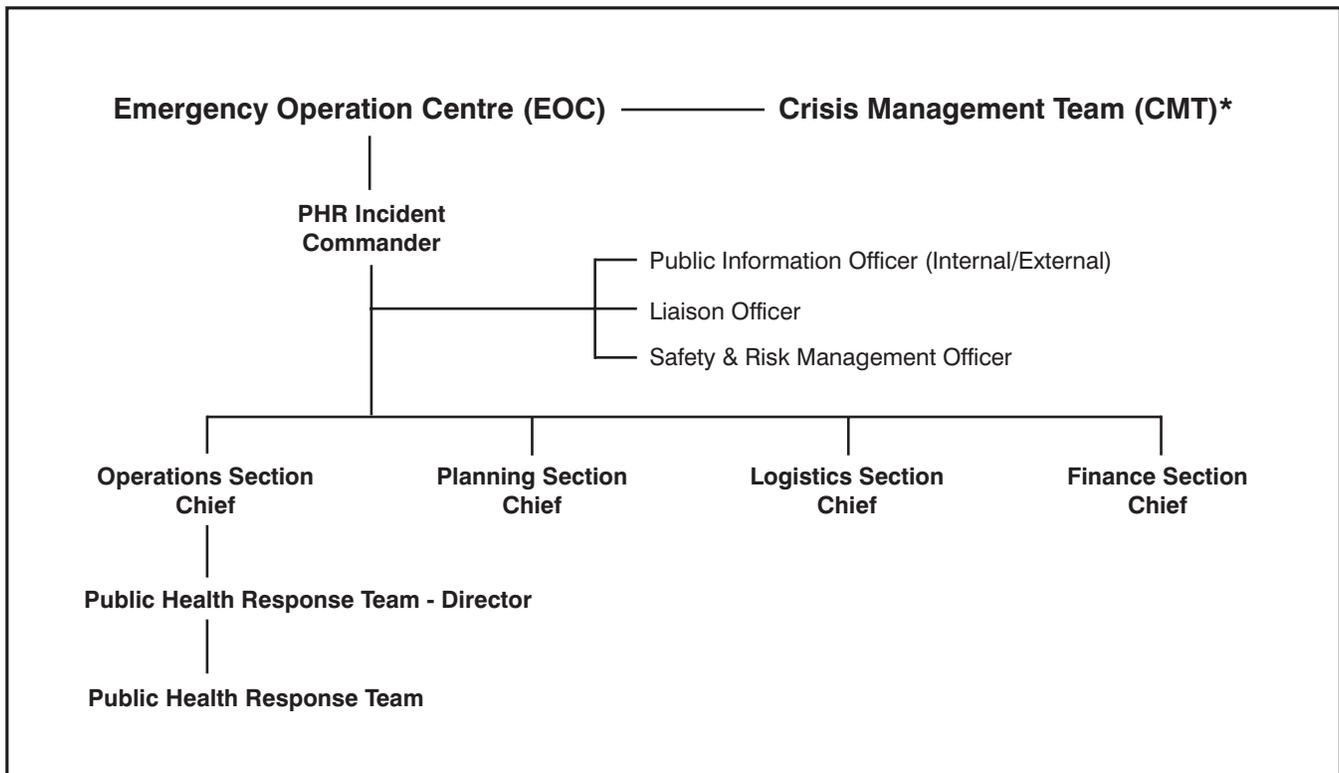
During a public health emergency, the University of Alberta aims to reduce the negative impact on the University community, property and environment by mitigating risks, and preparing for, responding to and recovering from the emergency. A public health event is a unique form of emergency and is characterized by a threat to the personal health and safety of a large population resulting in high rates of illness and/or death. It occurs over a period of time, and involves partnering of a number of sectors within and external to the University to respond to and manage the event. A possible influenza pandemic has been the public health event used to focus planning activities.

i. University of Alberta Action Matrix

The PHRC has identified stages of action to align with the World Health Organization Pandemic Phases.⁶ There is also alignment with the pandemic plans of the Canadian federal⁷ and Alberta provincial governments⁸. University of Alberta stages of action include: pre-pandemic, pandemic alert, pan-



**Chart 1:
University of Alberta Emergency Response Structures with Public Health Response Team Position**



*The Crisis Management Team includes senior Academic, Finance and Administration, and External Affairs management, as well as the Office of the President. The University Emergency Master Plan notes that the CMT is constituted to advise the Emergency Operations Centre (EOC) on strategy and provide policy guidance from a University-wide perspective.

demic period and post pandemic/recovery.⁹ Stages of action were created to clarify when to activate or shut down response operations.

ii. Communication/Effective Partnerships

Delivering critical messages in a timely, meaningful and comprehensive way will ensure that the University's commitment to its vision, mission and values is upheld. Risk communication training and awareness programs are essential in providing information on pandemic influenza to all students, staff and faculty, on and off campus. The Crisis Communication Plan [CCP], another component of the IEMP, supports the Emergency Operations Centre and Crisis Management Team and is used when the University must respond to the information needs and concerns of all stakeholders and the media during a crisis.

iii. Maintaining Essential Services and Business Continuity

The business continuity plan component of the IEMP focuses on a major health emergency such as a pandemic flu and prepares the University to act in response to such a crisis. It is essential to achieving an acceptable level of emergency preparedness, response capability and capacity, and recovery and resumption measures in the event of an emergency or interruption of critical services. It provides the guidelines for faculty and departmental unit action plans and processes to be developed. All departments will be asked to complete a detailed planning tool that will enable them: to identify critical services, functions, personnel and backups; consider options to continue to deliver critical services in the event of disruption; work in partnership with other departments, faculties or external partners regarding planning for



shared critical services; and identify inventory requirements such as equipment needs to deliver critical services. The tool asks departments and faculties to plan for emergency communications. The completed planning tool will form an annex to the overall business continuity plan. The aim is to ensure, insofar as is possible, that the health and safety of people are protected, and that there is continued availability of essential academic, research and support services. The Strategy will also guide recovery following an event, identifying needs for services and support in the University population, restoring operations to normal, and assessing the effectiveness of the response. Taken together, the systems, structures and processes outlined in the Strategy will enable the University to be as prepared and effective as possible in its response to a flu pandemic (or other public health event). Members of response teams, departments and faculties have completed initial training in the Incident Command System. The training is designed to continue through various levels of the command system and will be targeted at key university community members.

Tabletop testing exercises to enable learning in a simulated event have been undertaken with the Office of Public Affairs, the PHRC, and other departments, and others are planned. However, an unplanned opportunity arose in the fall of 2006 on campus in the form of a norovirus outbreak that enabled the testing and assessment of the University's emergency response structures and processes.

Case Study: Norovirus in the Lister Centre Residence

Introduction

Norovirus is the leading cause of gastrointestinal illness outbreaks in the western world. The virus can be found in the feces and vomit of infected people, can be spread through contact with contaminated surfaces (hands, door knobs, etc) and can be spread by ingesting food contaminated by people ill with the norovirus. Symptoms usually include diarrhea and vomiting, and appear 12 – 48 hours after ingesting the virus. The illness lasts 12 – 60 hours.¹⁰

Background

On September 27, 2006, two students, both residing on the same floor in Lister Centre Residence, were seen in the University Health Centre within 48 hours of one another, presenting with symptoms of a gastrointestinal illness. The attending physician notified the Office of Environmental

Health and Safety [OEHS] who, in turn, notified Capital Health (Public Health Division), the Director of Residence Services and the Public Health Response Committee Chair (Vice Provost, Academic). A 24-hour surveillance of the specific floor revealed 7/44 students reporting symptoms of gastrointestinal illness. In the next 24-hour period, canvassing by floor coordinators and residence assistants throughout Lister Centre revealed 90/1797 students reporting onset of diarrhea and/or vomiting in the previous week.

The Crisis Management Team Director (Provost) was notified by the Director of the Public Health Response Committee of the suspected communicable illness outbreak on campus and results of initial surveillance in Lister Centre on Thursday, September 28. An update of further developments was provided Friday, Sept 29, including results of residence-wide surveillance. A review of University-wide priorities included in the PHRC Strategy Report set the stage for a coordinated response to this public health event and the Emergency Operations Centre was activated on Friday, Sept. 29.

Decision Making Processes

The decision to activate the Emergency Operations Centre was made jointly by the core team:

- Director, Office of Environmental Health and Safety [OEHS]
- Public Health Response Chair (Vice Provost, Academic Programs)
- Director, University Health Centre
- Office of Public Affairs

This decision was guided by the Emergency Master Plan [EMP] flow chart which outlines 3 levels of emergency response, based on criteria related to the severity and consequences (or potential consequences) associated with the emergency event. The norovirus outbreak in residence met the criteria for a level two emergency as two decision-making thresholds were present: the situation was beyond the capabilities of front line management (residence managers), and it was likely to attract media attention.¹¹ Notification of key team members of the EOC occurred following the decision to activate, including a scribe and a representative of each of the following:

- Residence Services
- Facilities and Operations
- Campus Security



- Risk Management/Finance
- Office of the Provost
- Office of Environmental Health & Safety
- Capital Health Office of Emergency Preparedness (external to U of A)

The EOC was called upon to make a number of critical decisions in the days that followed, with Capital Health advisors providing direction through daily conference calls. Within this decision-making framework, complex issues were addressed, such as imposing restrictions on student and visitor activities within Lister Centre, urgent relocation of planned conferences, protecting the health of the greater University and surrounding community, and addressing needs of the media.

The “NOFLU” ethical principles provided guidance. For example, in deciding between voluntary compliance to ‘self segregate’ versus quarantine for students with symptoms, the decision was made to request voluntary compliance. This decision took into account the communal washrooms in the older residence facilities, which required all students to leave their rooms regularly. It was also anticipated that ill students would comply with this request, insofar as was possible, with the support of residence coordinators and student volunteers. Given these considerations, the least restrictive option was chosen. A second example of the application of the ethical framework was the decision to hold an open ‘Town Hall’ information session in the residence in the early days of the outbreak. Led by a public health official, the Vice Provost (Academic Programs) and the Director of Residence Services, this event demonstrated the University’s commitment to communicating information and making decisions in an open, transparent, timely and accountable manner.

Health and Safety of Students, Staff and Visitors

To determine the extent of the problem within residence, a “case listing” surveillance form was developed on day one and updated daily with the assistance of residence student

volunteers. The form included the name of the student, contact information, date of onset and description of symptoms, and whether the ill student had visited a physician. This surveillance continued daily until there were no new cases reported for at least 48 hours. At the same time, Capital Health facilitated the collection, transport and analysis of stool samples from student volunteers to confirm the diagnosis of norovirus.

Capital Health provided guidelines for a gastrointestinal outbreak cleaning protocol which was implemented by residence services within 24 hours of first notification. It was first conducted on the floor where the first two students resided and was subsequently expanded residence-wide for the duration of the outbreak. Bottled water, laundry detergent and washing machine facilities were provided free of charge to all areas. A written request for voluntary compliance was made to all students with symptoms of vomiting and /or diarrhea to remain in their rooms as much as possible

until symptoms subsided. Additional protocols included postponement/cancellation/relocation of all conferences/meetings in the Lister Conference Centre attached to the residence, limiting visitors to Lister Centre insofar as was possible, closing the residence gym facilities, thorough cleaning of high touch surfaces on furniture being taken out of Lister Centre, and ensuring that food/cutlery in the cafeteria was not handled by students. The contracted food service provider was asked to remind food service staff not to report for duty if they exhibited symptoms of vomiting or diarrhea.

Ongoing research, acquisition of knowledge and risk assessment were necessary to deal with questions and issues that arose throughout the course of the outbreak. For example, conference centre visitors and teaching staff that had been in Lister Centre prior to the confirmation of the outbreak included individuals with aplastic anemia and Crohn’s disease who raised concerns about being exposed to norovirus. Efficacy of hand sanitizers and effectiveness of public health education of students were also among the issues that were addressed by the EOC.

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Communication/Effective Partnerships

Timely and effective communication occurred as the flow of information passed from the University Health Centre through the Office of Environmental Health and Safety to Capital Health, Residence Services and U of A Senior Administration (Vice Provost, Academic Programs) within hours of the assessment by a physician of two students. The Office of Public Affairs was notified on day one and assumed the lead role in managing internal and external communications.

Communications during the outbreak were categorized into three areas: within the EOC, internal U of A audiences, and external audiences, including government and media. In addition to the initial notification of key outbreak management personnel (including Capital Health and EOC members), the City of Edmonton was notified via email.

From inside the EOC, a “Situation Report Board” management and communications method (goals, objectives and command structure, including a designated Incident Commander and operational period planning) outlined regularly updated information including Key Issues, Key Actions, Next Operational Period (24 hours) and Long Term Planning. Twice daily conference calls with public health officials guided operations in each 12 – 24 hour period and daily spread sheets with up-to-date information were distributed to each team member. In addition, there was a public affairs/media board with all written communications and articles posted, and a statistics board charting surveillance information including new cases, recovered cases and location. A ‘parking lot’ was also displayed to hold ideas/issues that would need follow up at a later date. This format of communication aided in the transition of representatives from the various departments through the EOC.

Communications with internal audiences began within 24 hours with a letter to all students in Lister Centre notifying them about the outbreak of norovirus and containing information concerning self-care/preventative measures. An additional two letters were sent updating information and providing direction for self-care/prevention and notification

of illness. At the same time, the Provost notified all senior university administrators of the situation. Over two weeks, a total of three further updates from the Provost went out to senior management. An information session was held for Lister residents with a representative from Capital Health and the EOC (Vice Provost, Academic).

With regard to external communications, coordination of joint messaging between health officials and University public affairs was critical. It ensured timely, accurate and comprehensive communications with the media regarding the nature of and response to a public health event by the University. There were challenges in developing and coordinating joint key messaging with external partners.

Managing Essential Services

The effective, timely response to the outbreak of norovirus in the Lister Centre Residence meant that the overall disruption of services was kept to a

minimum. Key to the success was the cooperation of students, and, in particular, that of student staff and volunteers who took an active role in implementing surveillance. Students living in residence were able to maintain, for the most part, their daily activities although, as noted above, there were some restrictions in place.

While providing support for front line students and staff in residence, the EOC maintained the oversight of the rest of the University and remained alert to the potential for impacts on class schedules and other essential services. For example, Campus Security staff was instructed not to transport ill students in Campus Security vehicles, and EOC staff was directed to create staff rotation schedules from within their departments for all key positions to ensure adequate respite for team members.

Lessons Learned

The norovirus outbreak provided an opportunity to put into practice the systems, structures and processes outlined in the Integrated Emergency Master Program, and specifically, the University’s Emergency Master Plan and newly developed

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Public Health Response Strategy. It equipped and strengthened the University in its response to the outbreak of norovirus. Early application of infection control measures limited the spread of infection to just 5% of the Lister Centre population.

Teamwork guided by the Strategy, which included partnering with external agencies such as Capital Health, aided in the successful outcome. Strong leadership and empowered team members worked with explicit goals and objectives, and acted upon decisions within a supportive environment of mutual respect using the existing Emergency Master Plan as a framework. The EMP identified key positions and established clearly defined roles and responsibilities. The EMP also assisted in the development of an 'exit strategy' from the emergency, up to and including debriefing sessions to assess performance and to determine areas for improvement.

The Incident Command System [ICS] approach to emergency management provided the university (EOC team) with an organizational structure that was temporary in nature, emphasized reliability in functions, and was atypical within a university organizational framework. The ICS is bureaucratic and hierarchical in nature, designed to manage a diverse group of resources in chaotic and complex environments, and yet, has built in flexibility and can adapt to changing dynamics associated with the emergency.

Three debriefing sessions following the closure of the EOC and resumption of all Lister Centre activities centered around three issues. The first of these was the University community's awareness and understanding of the Emergency Operations Centre, and its role, responsibility and authority. It was concluded that work remained to be done to educate the community in this regard.

The second revolved around the need for clear guidelines and regular training exercises on crisis communications practices. Specifically, while communications was handled exceptionally during this outbreak, the management of communications illustrated a need for further development of such resources, including an initial call-out system, and increased capacity on internal/external messaging and media relations.

Thirdly, further investment in EOC resources including staffing, training, physical space and equipment (including information technology and communications equipment) was seen as an important item to address for the future. Pre-

liminary statistics revealed that a total of 28 people worked in the EOC over 11 days for close to 60 hours and 660 person-hours. Not included in these statistics are the numerous student volunteers, additional cleaning and food services staff, and personnel at Capital Health. Of those who participated within the EOC, only 24% had ever done so before. While the EOC was able to address this public health incident in an efficient fashion, it raised awareness of the need for additional investment to manage future outbreaks, which may be larger in scale and/or effect. Further crisis management training will help to ensure sufficient knowledgeable staff is available to man the EOC and to manage future events within each faculty and department.

Valuable lessons learned from this experience were incorporated into the PHRC Strategy to ensure, insofar as possible, an optimal level of preparedness. In addition, ongoing development of faculty/department specific comprehensive business continuity and recovery plans will address the significant risk facing the University during events such as a pandemic.

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1. Canada, Public Health Agency of Canada, *The Canadian Pandemic Influenza Plan for the Health Sector*, Public Health Agency of Canada, online: PHAC <<http://www.phac-aspc.gc.ca/cpip-pclcpi/index.html>> (Influenza A is a common virus that is present in our community primarily on a seasonal basis. Influenza pandemics, however, have the capacity



to cause wide spread morbidity and mortality as the general population has little or no immunity to the novel circulating strain of influenza A. A pandemic can occur at any time with the potential to cause serious illness, death, and extensive social and economic disruption throughout the world. The majority of the population (over 70%) will be infected over the course of the pandemic, but only 15-35% of the population will become clinically ill (i.e., there will be a relatively high rate of asymptomatic infection). Historically, influenza pandemics have occurred approximately 3 or 4 times per century. Although there is no way to predict when the next influenza pandemic will occur, many health experts believe that it is overdue and planning should take place to deal with such an emergency. In Canada, the federal and provincial governments are coordinating efforts from the international to the local levels to be prepared).

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11. The Emergency Operations Centre was created in 2001 and the norovirus outbreak was the first time it was activated.

