

TORONTO STAFF REPORT

April 21, 2005

To: Board of Health
From: Dr. David McKeown, Medical Officer of Health
Subject: Pandemic Influenza Planning in the City of Toronto

Purpose:

The purpose of this report is to provide an overview of the pandemic influenza planning that has occurred in the City of Toronto and to identify current issues and future directions.

Financial Implications and Impact Statement:

There are no financial implications arising from this report.

Recommendations:

It is recommended that the Board of Health forward this report to City Council for information.

Background:

An influenza pandemic or worldwide epidemic, constitutes a global health emergency and is associated with high morbidity, mortality and social disruption. Influenza pandemics tend to occur every 35 to 40 years when there is an abrupt change in the influenza A virus. Influenza pandemics occurred in 1918 (Spanish flu), 1957 (Asian flu) and 1968 (Hong Kong flu), causing millions of deaths. It is generally believed that another influenza pandemic will occur but no-one can predict when that might be.

Given the serious implications of an influenza pandemic, planning is occurring at all levels of government to minimize severity of illness, the number of deaths and societal disruption. The World Health Organization (WHO), Public Health Agency of Canada (PHAC) and Ministry of Health and Long-Term Care (MOHLTC) have each released pandemic influenza planning documents which are regularly updated.

Toronto Public Health (TPH) is the lead agency for City of Toronto pandemic influenza preparedness and response. Although local planning must be based on the federal and provincial

plans, local contingency plans are required for vaccine and antiviral drug distribution, communications, disease surveillance, health services and emergency measures.

TPH has adopted a key stakeholder model for the development of the Toronto Pandemic Influenza plan. This is comprised of a large multi-sector steering committee and five workgroups (see Appendix 1). Planning was initiated in December 2002 but had to be put on hold during 2003 due to the SARS emergency. TPH reconvened the steering committee in January 2004, building on the lessons learned through SARS.

TPH staff and other stakeholders in the City of Toronto also participate on federal and provincial planning committees.

The initial draft of the Toronto plan is expected to be completed in June 2005. The plan will need to be updated regularly as new information becomes available. This plan will become a part of the Infectious Diseases Emergency Operating Procedure in the City of Toronto's Emergency Plan.

Comments:

The Influenza Virus and Pandemics:

Influenza is an acute viral illness with an incubation period of one to three days. It is transmitted primarily by contact: droplet, indirect and direct. There is some evidence that airborne transmission is a factor. The period of communicability is 24 hours prior to the onset of symptoms to 7 days after symptoms develop. Symptoms include: abrupt onset of headache, chills, dry cough, followed by high fever, myalgia, malaise, and loss of appetite. There is evidence for asymptomatic and subclinical infection as well as lesser illness such as rhinitis and pharyngitis. It can also progress to more severe illness such as pneumonia with fatal outcomes. Influenza is of such concern as a result of the rapidity with which epidemics develop, and the associated widespread illness and severe complications (viral and bacterial pneumonia). There are three types of influenza virus - A, B, and C (pandemics are associated with Influenza A).

The influenza virus is constantly mutating or changing. This usually results in minor changes (or "drifts") in the virus which cause flu outbreaks every winter. A new vaccine is developed every year based on viral strains identified through world-wide disease surveillance. When the virus undergoes a major change (or "shift"), a high proportion of the population will have little or no immunity. If this virus causes serious illness and death and can be transmitted efficiently person-to-person, the conditions for a pandemic will exist.

Unlike SARS where transmission was primarily confined to hospitals and close household contacts, pandemic influenza can spread quickly throughout the community. Pandemics typically occur in waves. The first wave is expected to last six to eight weeks. A second wave often occurs six to nine months later and the level of illness is often more severe than in the first wave. A third wave can also occur.

Avian Influenza:

Avian influenza (or “bird flu”) is a strain of influenza virus which typically affects birds but can, less commonly, infect mammals. Domestic poultry flocks are especially vulnerable to infections that can rapidly turn into epidemics. Over the last year, confirmed poultry outbreaks have occurred in South Korea, Japan, Cambodia, China, Indonesia, Laos, Vietnam, Thailand and Malaysia. Despite implementation of control measures including mass culling of poultry flocks, humans have contracted avian influenza. The WHO reports a total of 79 human cases from October 2003 to April 4, 2005, with 49 deaths (or 62% mortality rate) in Thailand, Vietnam and Cambodia. Investigation has revealed evidence of limited probable human to human transmission. At this time there is no vaccine available for this strain of influenza virus.

Impact of Pandemic Influenza in Toronto:

Pandemic influenza has the potential to infect up to 50% of the population and many people would be unable to work. There would be a severe strain on health care services with a large number of individuals requiring some level of health services. Increased absenteeism among health care providers off ill from work would place additional strain on the health care system. Absenteeism would likely be high in all workplaces.

For the purposes of planning, estimates of 15% and 35% influenza rates are utilized in Table 1.

Table 1
Estimated Direct Health Impact of Pandemic Influenza on the City of Toronto

Clinically ill	392,000 - 914,000 individuals
Require outpatient care	175,000 - 431,000 individuals
Require hospitalization	2,900 -12,000 individuals
Deaths	910 - 5,000 individuals

Source: Communicable Disease Surveillance Unit. Based on population estimates of 2,611,661 by Age Group and Gender based on the 2001 Census for 2003, Statistics Canada, July 2004.

Figures are extrapolations of the U.S. CDC model developed by Meltzer and colleagues (www.cdc.gov/ncidod/eid/vol.5no5/meltzer.htm)

Potential Impact upon the City of Toronto Corporation:

Absences from work as a result of influenza are expected to be 30 to 35% or higher. There will be a tremendous strain on city services and inability to maintain current levels of service. Therefore TPH recommends scale back plans be developed for different divisions. One of the lessons learned from SARS was to involve the city unions early in planning for an emergency.

TPH staff recently met with the Corporate Human Resource Directors to identify and discuss the human resource issues that will occur during a pandemic and the need for emergency-related policies and procedures.

It was agreed that TPH will attend a special meeting of the Toronto Public Service Initiative to discuss the impact of pandemic influenza on the City of Toronto.

Business Continuity Plan:

Businesses in Toronto will be significantly affected by employee illness and absenteeism, changes in supply/demand of products and services, decreased travel within the city, and societal disruption. TPH has held meetings with key business leaders to enter into discussions about the planning that needs to take place. A factsheet will be posted on the TPH website for reference. A vaccine distribution planning tool is being piloted with large organizations. A business stakeholder advisory group is being formed to provide further direction.

Toronto Pandemic Influenza Planning:

The Toronto Pandemic Influenza Steering Committee was formed to provide expert advice and direction for the development of a pandemic influenza plan for Toronto. This includes liaison with appropriate external agencies to coordinate activities and receive advice and support. The Steering Committee has met approximately every two to three months over the past year and is currently meeting on a monthly basis.

The Committee has five working groups comprised of TPH and other City and community organizations/agencies. Each Working Group addresses a major component of the Toronto Pandemic Influenza plan. These are described below.

1. Vaccine and Antiviral Distribution:

The Vaccine and Antiviral Working Group is developing a plan for distribution and access to vaccine and antiviral medication within Toronto. This is being done in collaboration with a GTA group. Key stakeholder membership includes hospital representatives, the Ontario Long Term Care Association, the Ontario Pharmacists Association, the College of Family Physicians, Toronto Emergency Medical Services and the MOHLTC.

It is expected that while vaccine will not be available in the early stages of a pandemic, antiviral drugs will have a role in reducing the pandemic's impact. Recommendations for priority groups for vaccination and antiviral medication have been established federally and accepted by the provincial government (see Appendix 2). Toronto Public Health will have a role in the administration and distribution of vaccine and antiviral medication. A vaccination distribution planning tool is currently being piloted with large organizations in Toronto, to effectively plan for mass vaccination clinics during a pandemic. Work is commencing on a plan for the use and distribution of antiviral medications as well. A GTA-wide vaccine/antiviral committee is planning for a coordinated approach across municipalities. Further planning and dissemination of

guidelines from the Ontario Health Pandemic Influenza Plan will provide direction on specific local health unit roles and responsibilities.

2. Communications:

The Communications Working Group is developing a communication plan and educational tools in collaboration with the province. This includes information materials for the public, media and for TPH staff. Public information would be available in multiple languages and key messages would be developed for specific audiences (e.g. health care workers, city staff, schools). The plan also includes ongoing updates to Toronto Public Health staff to ensure access to the most up-to-date information and links with external stakeholders. TPH will continue to link with the Provincial Communications Subcommittee as communication mechanisms and strategies are being developed. Undoubtedly there would be intense media interest and all levels of government will need to use consistent messaging as much as possible.

3. Laboratory and Surveillance:

The Laboratory and Surveillance Working Group is developing a plan regarding the collection, analysis and dissemination of influenza activity and trend data during all phases of a pandemic. Key stakeholder membership includes the Ontario Public Health Laboratory, Toronto Fire Services, Ontario Association of Medical Laboratories, Toronto Police Services, Toronto Emergency Medical Services, Toronto Practitioners in Infection Control and hospital representatives.

TPH monitors influenza activity in collaboration with physicians, laboratories, hospitals and other institutions, to identify the emergence of a new strain, or change in disease (e.g. disease cluster, increased disease activity) as quickly as possible. Individual cases of influenza and respiratory outbreaks in institutions are reportable to the local Medical Officer of Health under the provincial Health Protection & Promotion Act and associated regulations. Each case/outbreak report is investigated and the information is reported to the MOHLTC through the provincial Reportable Diseases Information System (RDIS). TPH analyzes the data and produces weekly flu surveillance bulletins which are posted on the TPH website, as well as daily, monthly and annual disease summary reports. TPH also develops and distributes a daily list of active outbreaks to relevant stakeholders (e.g. EMS, long term care facilities, hospitals, coroner) to facilitate infection control.

TPH conducts daily scans of international and national publications (including websites) for infectious disease activity that may pose a threat to Toronto. Alerts are e-mailed to public health communications as appropriate.

Post-SARS, with the development of the Communicable Disease Liaison Unit (CDLU), there has been improved liaison and communication between TPH and the hospitals. Hospitals currently report suspect cases of febrile-respiratory illness to TPH for investigation and follow-up. This facilitates the early identification and isolation of new cases of influenza.

TPH is investigating various strategies to enhance flu surveillance e.g. the development of sentinel reporting system, syndromic surveillance, mass e-mail/fax to health care providers.

4. Health Services:

The Health Services Working Group is focussing on assessment of health needs within Toronto during a pandemic and the development of plans for addressing these through working with key stakeholders. This includes the identification and consideration of resource issues (human, space, equipment, transportation, supply chain etc.). Key stakeholder membership includes hospital representatives, Toronto Fire Services, Community Care Access Centres, Ontario Hospital Association, equipment suppliers, MOHLTC (and until recently the Toronto District Health Council).

Health system capacity issues are significant. A TPH survey completed by Toronto hospital CEO's in 2004 confirmed that very little surge capacity would be available in the event of a pandemic. TPH is supporting local hospitals in the development of their internal responses. However, further direction is required from the province with respect to criteria for reducing elective services in hospitals. TPH invited the Ontario Operations Subcommittee, which is responsible for this component of the provincial plan, to a recent Toronto Steering Committee meeting and the need for further provincial direction was emphasized.

Although the federal plan calls for the development of alternative care sites, the Toronto Health Services Working Group has expressed serious concerns regarding lack of human resources to staff hospitals; As staffing for hospitals would be the priority, they have not addressed alternative sites to-date.

TPH will send an update on the Toronto planning process to all acute and chronic care facilities, Community Care Access Centres and community health centres in June 2005. This will include a facility framework planning tool which was developed based on a local hospital's planning experience. In addition, TPH is collaborating with the Ontario Hospital Association and Sunnybrook and Women's Health Services Centre to plan a training day to support health care facilities in their pandemic planning. TPH will also participate in the development of a detailed response framework to be lead by the acute care hospitals in the downtown Local Health Integrated Network (LHIN) area.

During a pandemic, triage centres must be set up to assess ill people and determine whether they need hospitalization, can go home or require other care. TPH staff are meeting with the medical directors of the Toronto Community Health Centres in late April to open discussions regarding pandemic planning and the options for triage.

Many of these issues require provincial planning direction e.g. hospital admission and discharge criteria, licensure issues for health care workers, use of alternative care facilities and triage guidelines. The Steering Committee has identified these issues to the province and will continue to urge that they be addressed.

5. Emergency Measures:

The Emergency Measures Working Group is addressing coordination and preparation of services needed to maintain public safety and order during a pandemic. This includes security for vaccine transportation and clinics, location and acquisition of city space as required, coordination of volunteer management and death care issues. Key stakeholder membership includes Toronto Police Services, Toronto Fire Services, Toronto Emergency Medical Services, Toronto Transit Commission, Office of Emergency Management, Corporate Security, Canadian Red Cross, St. John's Ambulance, Toronto Children's Services, Office of the Chief Coroner, Funeral Home Association, Ontario Hospital Association and the Greater Toronto Hotel Association.

The Emergency Measures Working Group has identified the issue of volunteerism as being key in the time of an emergency. Volunteer agencies such as the Canadian Red Cross played a key role in the SARS outbreak and it is anticipated that they will play an integral role in a future pandemic. In collaboration with the City of Toronto Office of Emergency Management and Corporate Human Resources, Toronto Public Health is supporting the development of a volunteer management plan whereby volunteers would be referred to affiliated agencies e.g. Volunteer Toronto, Canadian Red Cross. This will be part of the operating support functions of the Toronto Emergency Plan. Two meetings with major volunteer organizations have been held to further the development of the framework, with a view to developing memoranda of understanding for volunteer management.

Influenza pandemics are expected to have a higher than normal mortality rate. Planning for mass fatalities is essential since there will be a strain on the current system for body management, pronouncement and certification of deaths, morgue capacity in acute care facilities, identification and retrieval of bodies, and planning for gathering at funerals. Toronto Public Health is collaborating with the Office of Emergency Management in the development of a mass fatality plan, which could be utilized in the event of a pandemic. An advisory committee of key stakeholders in the funeral home community has been established. Two meetings with the Toronto Regional Coroners Office have occurred to further the development of this plan.

Roles and Responsibilities:

All levels of government and all sectors have a role to play in the preparation for, response to and recovery from an influenza pandemic. It is crucial that roles and responsibilities are clear and there is good communication and coordination of efforts before an emergency occurs. This was one of the many lessons learned from the SARS outbreak. Planning participants are working very hard to ensure that this happens but further work needs to be done. A summary of the general roles of the WHO, PHAC, MOHLTC and TPH is presented below, based on current understanding.

The WHO conducts world-wide surveillance to identify the beginning of a pandemic, and will coordinate the global response. The PHAC is responsible for procuring vaccine supply, establishing priority groups for vaccine administration and co-ordinating national surveillance and response, including the declaration of a federal emergency. The MOHLTC would co-

ordinate provincial surveillance and response, including the declaration of a provincial emergency.

At this time the federal and provincial plans focus on the importance of basic hygiene and staying at home if ill to reduce transmission of influenza. The federal plan calls for very limited quarantine of close contacts when the initial case is identified locally, in an attempt to prevent transmission in the local community. Once the disease has spread in the community, quarantine will not be an effective control measure and is not recommended. However, the isolation of ill people is recommended to reduce the spread of infection. Community-based measures to increase social distancing for disease containment such as school closures, limiting large public gatherings, etc. will be considered.

The TPH response plan will utilize the Incident Management System. The major roles and responsibilities of Toronto Public Health during a pandemic will include the following:

1. Disease surveillance and reporting .
2. Case investigation and management – Establishing procedures for managing cases through the use of isolation control measures and facilitating access to the health care system as needed.
3. Identification and follow-up of close contacts.
4. Health risk assessment and communications.
5. Liaison with hospitals and other agencies regarding infection control – TPH staff will be on-site at hospitals to support the early identification of new cases, efficient reporting to TPH and enhance two-way communication.
6. Community-based disease control strategies.
7. Vaccine/antiviral distribution and administration.

The SARS experience identified the need to develop a plan for individuals unwilling or unable to be effectively isolated and/or quarantined. This would in particular include those in homeless shelters, rooming houses, correctional facilities, university residences, etc. A provincial plan for this issue has not been developed to date, although they have agreed to join the Toronto planning table. Toronto Public Health is coordinating the development of infection control principles for use by agencies that have individuals who are unwilling/unable to be isolated or quarantined. This framework will be reviewed and further developed by the City's Infectious Disease Preparedness Committee in spring 2005. Other key stakeholders, such as universities, will be approached for comments as well. Meetings with senior staff of homeless shelters to identify key issues/obstacles/barriers are ongoing. Once the principles are finalized by external stakeholders, a plan to communicate and educate relevant agencies on this issue will be developed.

The Toronto Public Health Pandemic Influenza Response Committee has been initiated to develop policies and procedures, disseminate the plan to internal staff, and provide staff training. Policies and procedures will be updated as new public health guidelines are received from the federal and provincial planning teams. Toronto Public Health is working with the Office of Emergency Management to ensure that the pandemic influenza plan is consistent with and embedded into the overall city emergency plan.

Conclusions:

Pandemic influenza will constitute a global health emergency. It is generally believed that another pandemic will occur at some time. Planning is occurring at all levels of government and the health care sector to minimize the illness, deaths and societal disruption associated with a pandemic.

TPH has initiated and coordinated a key stakeholder approach to the development of a comprehensive pandemic influenza plan for the City of Toronto, incorporating the lessons learned from SARS. The first version of the plan will be completed in June 2005 and posted on the Toronto Public Health website. Future versions of the federal and provincial plans will enable Toronto Public Health to enhance and further develop the local plan.

In the meantime, TPH will actively communicate and disseminate the plan, continue ongoing work, ensure that the plan is tested, maintain linkages with local, provincial and federal stakeholders and advocate for clear provincial and federal government policy, as appropriate. Although there has been significant progress in Pandemic Influenza planning, there are many challenges and much work remains to be done.

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List of Attachments

Appendix 1 – List of Toronto Pandemic Influenza Steering Committee Members
Appendix 2 – Canadian Pandemic Influenza Plan: Annex D (February 2004)

Appendix 1

List of Toronto Pandemic Influenza Steering Committee Members

Terry Boyko
Toronto Fire Services

Rob Burgess (alternate for Dr. Schwartz)
Sunnybrook & Women's College Health Sciences
Centre

Dr. James Edwards
Office of the Chief Coroner

Dennis Fair (or Vera Dodic)
The Canadian Red Cross Society

Dr. Michael Finkelstein
Toronto Public Health

Sarah Friesen
Shared Healthcare Supply Services

Dr. Michael Gardam
University Health Network

Effie Gournis
Toronto Public Health

Ann Gronski
Ontario Hospital Association

Sheree Hryhor
Works and Emergency Services

Tom Imrie
Toronto Police Service

Michael Jacek
Shelter, Housing & Support

Adrienne Jackson
The Scarborough Hospital

Warren Leonard
Works and Emergency Services
Office of Emergency Management

Gene Long
Toronto Public Health

Susan Makin
Toronto Public Health

Dr. Allison McGeer
Mt. Sinai Hospital

Geri Nephew
Toronto Public Health

Bonnie Painter
Toronto Community Care Access Centre

Ric Rangel-Bron
Toronto Emergency Medical Services

Dr. Brian Schwartz
Sunnybrook & Women's College Health Sciences
Centre

Brad Scott
Toronto and District Funeral Directors Inc.
Kane Funeral Home

Dr. Fran Scott
Toronto Public Health

Jennifer Smysnuik
Office of Emergency Management

Dr. Mary Vearncombe
Sunnybrook & Women's College Health Sciences
Centre

Dr. Barbara Yaffe (Chair)
Toronto Public Health

Ernie Yakiwchuk
Toronto Fire Services

D Recommendations for Pandemic Vaccine Use in a Limited Supply Situation

Priorities for vaccination need to be established during the interpandemic period in order to facilitate planning for an efficient and consistent pandemic immunization strategy. In keeping with the overall goal of pandemic response, the prioritization process must consider the impact the vaccine will have on: 1) reducing morbidity and mortality by maintaining the health services response and by individual protection of high risk groups, and 2) minimizing societal disruption by maintaining the essential services upon which everyone depends. The pandemic vaccine will become available in lots and supply is likely to be limited during the early stage of the pandemic in Canada. Furthermore it is likely that two doses of vaccine will be required to achieve a protective response in the vaccinee. Therefore, when vaccine becomes available it is essential that it be distributed in a pre-defined equitable and consistent manner across all provinces and territories.

The Vaccines Working Group has developed the following recommendations for the use of vaccine in a limited supply situation to provide guidance to PIC and those involved in pandemic planning at the F/P/T and local levels. **The priority groups will need to be reassessed, and possibly altered, as soon as epidemiologic data on the specific pandemic virus becomes available to ensure that they are consistent with the overall goal of the pandemic response.** Once data on the epidemiology of the pandemic becomes available, the PIC will be the lead in the final identification and prioritization of population groups to receive influenza vaccine. These recommendations will be distributed as national guidelines as soon as possible, with the expectation that they will be followed by all jurisdictions in order to ensure a consistent and equitable program.

Recommended Priority Groups

The estimates of population size made for each group are based on 1998 data. Each jurisdiction is encouraged to develop their own estimates for these priority groups as a part of their pandemic planning activities.

Group 1: Health care workers, paramedics/ambulance attendants and public health workers (approximately 600,000)

Rationale: The health care and public health sectors will be the first line of defence in a pandemic. Maintaining the health service response and the vaccine program is central to the implementation of the response plan, in order to reduce morbidity and mortality. Health services workers may be considered in the following work settings for vaccine program planning:

- acute care hospitals
- long term care facilities/nursing homes
- private physicians' offices
- home care and other community care facilities
- public health offices
- ambulance and paramedic services
- pharmacies
- laboratories

Appendix 2

Group 2: Essential service providers (approximately one million)

Rationale: The ability to mount an effective pandemic response may be highly dependent on persons, within the groups listed below, being in place to maintain key community services. Those individuals that are essential to the response or to maintaining key community services may vary between jurisdictions. Local plans will likely reflect these differences, however they are likely to include:

- police
- fire-fighters
- the armed forces
- key emergency response decision makers (e.g. elected officials, essential government workers and disaster services personnel)
- utility workers (water, gas, electricity and essential communications systems)
- funeral service/mortuary personnel
- people who work with institutionalized populations (e.g., corrections)
- persons who are employed in public transportation and the transportation of essential goods (such as food)

Vaccine eligibility criteria should be defined based on the work/duties the individual performs rather than position label.

Group 3: Persons at high-risk of severe or fatal outcomes following influenza infection

Rationale: To meet the goal of reducing morbidity and mortality, persons most likely to experience severe outcomes should be vaccinated. For planning purpose we have based this priority group on the high risk groups identified by the National Advisory Committee on Immunization (NACI) for annual vaccine recommendations. Additional groups have also been included based on evidence indicating an elevated risk. For example, during the annual epidemics, young infants experience rates of hospitalization similar to the elderly.

Prioritization of the following subgroups within Group 3 would depend on the epidemiology of influenza disease in the time of a pandemic.

- A: persons in nursing homes, long-term care facilities, homes for the elderly e.g. lodges (approximately 200,000);
- B: persons with high-risk medical conditions living independently in the community (approximately 7 million);
- C: persons over 65 years of age living independently and not included in 3A and 3B (approximately 1 million);
- D: children 6 months to 23 months of age (current vaccines are not recommended for children under 6 months of age);
- E: pregnant women * (approximately 200,000).

Appendix 2

*Currently, NACI does not consider pregnant women as a high risk group in its recommendations for annual influenza vaccination. However, in a pandemic, pregnant women may be at elevated risk.

Group 4: Healthy adults (approximately 8.7 million)

Rationale: This group is at lower risk of developing severe outcomes from influenza during annual epidemics but is the major work force and represent the most significant segment of the population from an economic impact perspective. Vaccination of healthy adults would reduce demand for medical services and allow individuals to continue normal daily activities. Simultaneous absence of large numbers of individuals from their site of employment could produce major societal disruption even in non-essential personnel. Medical facilities could also be overwhelmed by demand, even for outpatient services. This might compromise care of those with complications.

Group 5: Children 24 months to 18 years of age

Rationale: This group is at the lowest risk of developing severe outcomes from influenza during annual epidemics but play a major role in the spread of the disease. While children's absence from school might not have the direct economic and disruptive impact of illness in adults, it could have that effect indirectly, since care for ill children would be required.

A decision to vaccinate healthy adults and healthy children (Groups 4 and 5) depends on having an adequate supply of vaccine. A much larger amount of vaccine would need to be used to prevent hospitalization and death than for older persons and those with underlying conditions, because of demographic considerations and differences in risks.

Consideration was given to prioritizing the family members of health care workers, however the decision was made that separating out these individuals would not be logistically feasible or ethically justifiable.