REPORT OF THE
INTERNATIONAL CONSULTATION
29-30 OCTOBER 2008
LYON, FRANCE

CITIES AND PUBLIC HEALTH CRISES

LYONBIOPOLE

World Health Organization

REPORT

WHO/HSE/IHR/LYON/2009.5

REPORT OF THE
INTERNATIONAL CONSULTATION
29-30 OCTOBER 2008
LYON, FRANCE

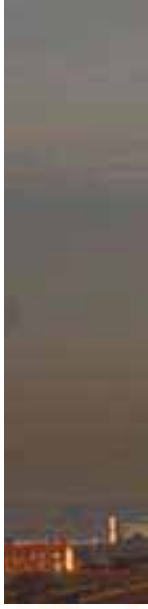
CITIES AND PUBLIC HEALTH CRISES

REPORT

CITIES AND PUBLIC HEALTH CRISES

REPORT

CITIES AND PUBLIC HEALTH CRISES



EXECUTIVE SUMMARY

The International Health Regulations require countries to strengthen their capacity for surveillance of and response to disease outbreaks and other public health emergencies both at national level and at state or city level too. That is why the World Health Organization (WHO), with the support of Lyonbiopôle, jointly organized an international technical consultation on "Cities and Public Health Crises" in Lyon, France, on 29-30 October 2008. Some 70 health specialists and others experienced in responding to disease outbreaks in cities took part.

In 1900, just 13% of the world's population lived in urban areas. By 2008, half of the world's population was living in urban settings. By 2025, 70% of the world's population will be urban.

Cities have a number of vulnerabilities such as unhealthy slums, crime and violence, and can even be targets for terrorist attacks. Further, since a city contains so many people, infectious diseases will be communicated faster and to more people there than in rural areas. Many cities have large international airports and sea-ports, making them prone to the import of diseases, while unsanitary areas within a city may be breeding grounds for epidemic-prone diseases such as cholera and other diarrhoeal diseases. People living on the street may become reservoirs of infections such as drug-resistant tuberculosis, while flocks of poultry and pigeons provide convenient hosts for emerging infections such as avian influenza viruses.

Coordinating the response

Crisis management in a city must be coordinated outside between the municipal and national or state authorities and inside between the services that provide health care and those that provide emergency response, as well as with public amenities such as transport services, airport and port authorities, tourism, industry, education, commerce, and the media.

A framework for collaboration between national and local authorities in times of crisis must be developed in advance to avoid confusion.

Maintaining water supply, sanitation and waste management is crucial to keep people in good health so if the usual services cannot be maintained alternatives must rapidly be provided. Many city-dwellers rely on public transport to get to work and buy food. Also, to avoid major financial losses, city authorities and company owners will need to keep businesses running during an emergency. Solutions must be found in advance to enable, for instance, employees to work from home. Plans should also be ready to mobilize medical staff from other places to provide health care in designated facilities at a time of crisis. Last but not least, legal issues – such as quarantining infected persons or sharing a patient's data with outbreak investigators – are best resolved before a crisis occurs.

Managing the response

If a person is diagnosed as having a dangerous disease transmitted from person to person, one of the first steps is to trace the people with whom the patient has had contact. In a large city with mass transit systems, crowded sidewalks and busy entertainment venues, this is hardly possible. If it is to be attempted it will require specially designed databases, reliable maps (even of slum areas), and three-dimensional projections of high-rise areas where people live at different levels.

For most diseases, there are standard treatment protocols, but medical staff may be dealing with the disease on a large scale for the first time. If the disease

is unknown, there must be rapid and effective diagnostic services at hand. It should also be remembered that recent outbreaks of emerging diseases have, in proportion, predominantly affected health care workers because they had the closest contact with infected persons. In addition, hospital supplies may rapidly be exhausted and plans for accessing extra stocks of medical equipment must be at hand.

A major outbreak in a city can lead to mass exodus but also cause a "surge" of patients seeking medical care at the same time. Addressing the possibility of panic and uncontrolled evacuation will always be a challenge while temporary locations will need to be found where refuge can be offered and treatment units can be set up. Apart from those needing hospitalization, many with mild symptoms may be asked to quarantine themselves at home in case they infect others. Self-quarantined persons will need to rely on friends and neighbours to bring them food or whatever else they need since social welfare agencies will be overwhelmed.

In planning for emergencies in cities, the presence of diverse populations, various ethnic groups, and large numbers of non-residents must be taken into account.

Past experience shows that if a person who can be identified as belonging to a particular social group is thought to be the first to be infected, that social group may be blamed for "causing" the disease. The crisis management team should take a lead in supporting citizens' rights and in countering negative attitudes to specific social groups.

Communicating during a crisis

Common failures in outbreak management are often linked to poor crisis communication, including withholding information about risk, not coordinating with partners, and not listening to those affected by the emergency.

Crisis communication must build and maintain trust between the public and the crisis management team. People should be told the truth. If the news is good, there is no reason to withhold it; if it is bad, it will seem much worse if people find out later that it has been hidden from them. Information should be timely and should tell people about real or potential risks and what is being done about them. As new developments occur, they should be communicated proactively without waiting for people to ask. Communicating with people is easier if you understand their fears and hopes. During a public health crisis it is important to find out people's views and concerns.

Information provided to the media should be science-based and accurate. It should also be coordinated to avoid mixed messages. Many migrant communities have their own media services, often in other languages, and these can help ensure that immigrants receive the same messages as the rest of the population.

Conclusion

Participants in the Lyon consultation concluded that, in today's largely urban and interconnected world, infectious disease outbreaks and other public health emergencies pose a real threat to large cities but that with a good understanding of the specific issues posed by urban settings, and appropriate preparation from municipal and national stakeholders, that threat can be mitigated.

CITIES AND PUBLIC HEALTH CRISES

1 - INTRODUCTION

This report outlines the issues discussed at an international technical consultation on "Cities and Public Health Crises" held in Lyon, France, on 29-30 October 2008. The consultation, jointly organized by the World Health Organization (WHO) and Lyonbiopôle, brought together some 70 public health specialists and others experienced in dealing with disease outbreaks in cities in order to share experiences and make proposals for managing public health crises in cities.

The main focus of the consultation was public health crises caused by infections and, because many of the concerns are similar, by chemical and nuclear accidents. The participants made it clear that managing an epidemic outbreak in a city is as much a task of coordinating multiple stakeholders – from sectors such as transport, air travel, tourism, education, media, business, and security – as it is of planning and directing medical services. And they concluded that communication – founded on openness and credibility – is the backbone of any crisis response. Whatever the scientific basis of the actions taken in the response, it is the way they are communicated that most influences people's cooperation.

In contrast to a natural disaster such as an earthquake or hurricane, which usually happens in one area for a limited time, an outbreak of infectious disease, or chemical or nuclear pollution, starts small but has the potential to spread. In an epidemic the number of victims increases as each day goes by. All disasters cause shock, but deadly epidemics cause anxiety and fear because they grow and grow, striking people at random with no clear end in sight. Allaying fear while giving people the information they need to protect themselves is an essential role of communication during the response to an epidemic.

In 2007, the newly revised International Health Regulations came into force. The Regulations apply to all countries, and WHO provides technical guidance for the implementation of the Regulations worldwide. A critical requirement of the new Regulations is that each country shall develop and maintain "core public health capacities for surveillance and response" to public health emergencies such as epidemics and pandemics. City authorities have a key role to play in this because cities gather a lot of people in one geographical location – an ideal situation not only for increased employment and leisure activities but also for random contacts with multiple people and for the rapid spread of disease.

Large cities are prone to the import of infectious diseases. As centres of economic, political and social life, cities attract huge numbers of travellers and migrants, as well as bringing in many animals and animal products – all of which are potential carriers of exotic infectious agents. Cities (and specifically city hospitals) are also the places to which persons with new and unusual illnesses are brought – because the unknown disease is beyond the scope of the rural clinic. Furthermore, large cities not only host major research laboratories and biotechnology companies but also constitute targets of choice for deliberate epidemics and malicious poisoning.

That is why, in the context of implementation of the International Health Regulations, WHO wishes to raise awareness of the vulnerability of cities. WHO is concerned about countries' level of preparedness to address the specific challenges posed by public health crises in cities – precisely because the conditions in cities are conducive to the spread of disease. Current guidance on the response to disease outbreaks, whether from governments or from WHO, tends to be generalized and does not specifically focus on the unique circumstances of cities.

This report does not contain guidelines. Those will come at a later stage. Rather, the report includes ideas and suggestions based on past experiences in

managing – and communicating about – public health crises in cities. The problems that arise from a public health crisis will vary from place to place according to the nature of the emergency and the readiness of the city administration to deal with it. Cities are different and crises are different, but the Lyon technical consultation identified a number of approaches that apply to most if not all large urban settings. WHO is consulting further on these approaches and others in order to develop specific guidelines for managing public health crises in cities.

2 - BACKGROUND

The growth of cities

In 1900, just 13% of the world's population lived in urban settings. By 2005 this percentage had risen to 49% and in 2008 fully half of the world's population was estimated to be living in urban settings. Already in 2025, according to United Nations estimates, some 4.9 billion people (70% of the world's population) will be living in urban settings. Half of the current urban-dwellers are living in cities or towns with fewer than half a million inhabitants, and half of the increase in urban populations in the coming years is expected to be in urban settings of this size.

Countries have different definitions of what a city is, making it difficult to compile data and make international comparisons. In many countries, geographical administrative divisions include "municipality" (usually used for budget, health and public administration), "districts" (used, for instance, by police), "metropolitan areas" (usually used to reflect transport data and other statistics) as well as various other terms. The United Nations uses the term "urban agglomeration" to describe large areas of urban development, sometimes including several ciies and towns.[1]

1 The United Nations defines an urban agglomeration as the built-up or densely populated area containing the city proper, the suburbs and continuously settled commuter areas. It may be smaller or larger than a metropolitan area; it may also comprise the city proper and its suburban fringe or thickly settled adjoining territory. A metropolitan area is the set of formal local government areas that normally comprise the urban area as a whole and its primary commuter areas. A city proper is the single political jurisdiction that contains the historical city centre.

CITIES AND PUBLIC HEALTH CRISES

In 2007 there were 460 cities with between 500,000 and 1 million inhabitants, according to the United Nations Population Division, and the number of these cities is predicted to rise to 551 by 2025.[2] There are also currently 431 cities with more than 1 million inhabitants. Of these 431 cities, there are currently 382 that have populations of between 1 million and 5 million, and the number of cities with populations of this size will rise to 524 by 2025. Urban agglomerations of 5–10 million inhabitants currently number 30 and are predicted to increase to 48 by 2025.

The world had 19 "megacities" (urban agglomerations of more than 10 million inhabitants) in 2007, according to the United Nations, and this number is expected to rise to 27 by 2025. One in every 25 persons on earth lives in a megacity, and in Latin America megacity-dwellers account for one in every seven persons.

The world's largest urban agglomeration is Tokyo with 35.6 million inhabitants, followed by New York City and Mexico City with 19 million people each. Asia has 11 megacities, Latin America has 4, Northern America has 2, and Africa and Europe have one each. Eleven of these megacities are capitals of their countries. By 2025, when the number of megacities will have risen to 27, Asia will have increased its number by 5, Africa by 2 and Europe by 1. The population density of the Tokyo prefecture, the core of the urban agglomeration, is 5847 persons per square kilometre according to the Tokyo metropolitan government.

China counts 101 city agglomerations of more than 1 million inhabitants, according to United Nations figures. India has 40 cities of more than 1 million persons, the United States of America has 39, India has 40 and Brazil has 17.

Urban growth has benefited many local businesses and economies. It has brought benefit to many urban citizens, providing them with easier access to education, employment and health care. The larger part of city populations are the middle class – in business or paid employment, living in accommodation with water and other amenities, and having a level of education higher than the rural population. They help make the city successful, and they rely on the city to take good care of them.

Of course, uncontrolled urban growth is also at the root of a range of problems that specifically affect city-dwellers – such as the lack of adequate urban housing, high population density, inadequate transportation and too much pollution. Poorly planned and badly managed urbanization can lead to the deterioration of sanitary conditions and to uncontrolled overcrowding that favours the spread of disease.

The vulnerability of cities

Slums

The world's slum population in 2001 was around 1 billion people, according to estimates of UN-Habitat. Slums grow rapidly and are populated by poorer, less educated and younger families usually from the rural areas of developing countries. Slums typically lack basic services, including health services, as well as the basic infrastructure of water, electricity, sewage disposal and waste management. Slum-dwellers tend to run higher risks of infectious disease than citizens in other parts of the city, and toxic and chemical disease events have occurred because of dwellings being erected on dumps or polluted sites.

The Millennium Development Goals (MDGs), adopted in 2000 by the United Nations General Assembly, address issues relating to poverty, health, gender equality, education, and environmental sustainability. They include "by 2020, to have achieved a significant improvement in the lives of at least 100 million slum-dwellers" (MDG 7, target 11), as well as targets to improve education, health, and water supply and sanitation.

2 World Urbanization Prospects: the 2007 revision. (http://www.un.org/esa/population/publications/wup2007/2007wup.htm).

Crime and violence

Crime and violence are more pronounced in urban areas, and especially in slum areas, than in rural settings. A recent study showed that 60% of urban dwellers in developing and transitional countries had been victims of crime during a five-year period. Homicide rates are high and still growing in some cities – especially in Africa and Latin America. Robbery poses a major problem in many urban centres – not least because it contributes to the general feeling of fear and insecurity. A crime-prone environment presents particular challenges to those trying to bring assistance to the victims of an emergency.

Terrorist attacks have also increased in cities – precisely because anyone bent on death and destruction can cause more of it in a city than in the countryside. Infectious agents can be spread deliberately too (witness the anthrax attack on Washington in 2002) and, if they are, a city is the most likely target.

Natural disasters

Extreme weather and geological events are not the norm, but they do occur – often without warning. Natural disasters can take a heavy toll in human lives and disruption of essential supplies and services, so cities need to be prepared in case they are affected. This element of preparedness is common to infectious disease outbreaks, and to acute chemical or nuclear accidents, and is mandated by the International Health Regulations. Preparedness for a public health emergency may not stop it from happening, but an unprepared city is certainly more vulnerable to an emergency's catastrophic effects.

Infectious diseases in cities

The speed of infection

In terms of infectious diseases, the risk in urban settings is closely related to the characteristics of cities. Since there are so many people in a city, they are almost constantly in close proximity to each other – passing each other in the street, travelling together in the bus or subway, working together, enjoying sport or cultural events together, eating together in restaurants and drinking together in bars. When a disease is communicated from person to person – particularly if it is air-borne or transmitted through casual contacts – it will normally be communicated faster and to more people in a city than in a rural area.

Urbanization has thus become one of the factors that enhance the spread of disease in today's world. In a city an outbreak can soon become an epidemic. And if the city has good road, rail and air links to other cities, the epidemic may soon become a pandemic.

Diseases may spread differently in different cities. In a high-rise building with multiple apartments or offices and with floor levels linked by elevators, infections are likely to spread faster than down a residential street with a row of separate one-family homes. But the difference is likely to be a matter only of speed of infection; it is impossible to say that any particular part of the city is safe.

CITIES AND PUBLIC HEALTH CRISES

Imported infections

People who move from rural areas to cities may bring diseases with them. Outbreaks of leishmaniasis in urban areas of Latin America are thought to be due to persons moving from rural areas to the periphery of the city with their domestic animals. People new to cities also take on new behaviour patterns. Because of the range of options available, they tend to try out different foods, different social circles, and different sex partners. These new behaviours – which involve new contacts with new people – contribute to the patterns of disease spread that are specific to the urban setting. Cities, and large city hospitals, can be places where diseases amplify, as shown in the emergence of HIV/AIDS, extensively drug-resistant tuberculosis, the SARS epidemic, or hospital-borne Ebola outbreaks.

With bus stations and train stations at their centre and with international airports nearby, cities are at the crossroads of today's population movements. Many cities also have sea-ports. If an infectious disease is going to be brought into a country by an infected person, the first port of call or landing place is likely to be a city. SARS is a recent example of a disease that travelled rapidly across the world from city to city. Sometimes an infectious disease may even be brought into a city when an infected person is transferred from a rural setting to a city hospital for the very good reason that treatment facilities in the city are better – but so, of course, is the likelihood of infecting others.

Foodborne diseases

Foodborne diseases are a growing public health problem worldwide. They result from consuming contaminated foodstuffs and include diseases caused by a variety of microorganisms as well as by chemicals. City life is frequently associated with eating ready-prepared, rather than fresh, food. While rural residents tend to eat more locally prepared food, with local ingredients, urbanization has led to a steep increase in the amount of food prepared outside the home – sometimes far away on other continents and almost always at places unknown to the consumers. This increases city-dwellers' vulnerability to foodborne diseases that may originate somewhere along the increasingly complex food-chain.

Infections that originate in the city

An infectious disease does not have to be imported; it may very well start within the city itself. Unsanitary conditions provide ready ground for outbreaks of cholera or other acute diarrhoeal diseases. Even outbreaks of malaria, a disease formerly associated with rural situations, are now traced to vectors successfully living and breeding within city boundaries. Any discarded piece of debris that can hold rainwater can provide the conditions for disease-carrying mosquitoes to breed (elsewhere the water would have simply soaked into the ground). An example is *Aedes Aegypti*, the "Tiger" mosquito, which has proven to be an efficient vector of epidemics such as dengue fever, Chikungunya, and yellow fever. Thanks to globalization and urbanization, *Aedes Aegypti* can now be found in virtually all large cities from the Mediterranean to Africa, Asia, the Caribbean, and Latin America.

Apart from mosquitoes, potential disease vectors common in urban areas include the huge population of rodents that all cities have, hidden in the basements of buildings and the tunnels of the sewage system or the subway lines. Plague, a cause of major urban epidemics in the Middle Ages, is carried by rat fleas that can spread the disease to humans. Large flocks of crows and pigeons in cities provide convenient hosts for emerging avian influenza viruses and for other viral diseases such as West Nile fever. Stray dogs and cats may also be hosts of rabies and other diseases that can be readily passed to humans.

Reservoirs of human infectious diseases in cities are also often maintained in groups of impoverished populations. Homeless people living in cities in dire conditions may themselves maintain reservoirs of infections such as louse-borne diseases (typhus), diarrhoeal diseases (shigellosis, typhoid, cholera), or infectious agents that are highly resistant to drugs (multidrug-resistant tuberculosis). The association between poverty and infectious diseases is well established.

Nuclear and chemical accidents

In the early stages of an outbreak, it is not always clear whether the illness is due to an infectious agent, an allergen, a chemical or a radioactive substance. Serious public health emergencies have occurred in cities as a result of accidents at chemical plants and the irresponsible handling of waste products – with a significant number of people affected and loss of life among citizens who lived too close to the site. Major chemical incidents have become more frequent, often occurring within or next to large urban centres (e.g. Bhopal, India, 1984; Toulouse, France, 2001; Abidjan, Côte d'Ivoire, 2006).

The International Health Regulations

In 2005, the World Health Assembly (WHO's governing body which has delegates from 193 countries) adopted a revised version of the International Health Regulations. These Regulations lay out the rules for the management of "events which may constitute a public health emergency of international concern". The revised Regulations, which came into force on 15 June 2007, represent a significant improvement in the international management of public health risks that increasingly have an impact on large urban areas.

The International Health Regulations form an international law aimed at saving lives and livelihoods threatened by the international spread of diseases and other health risks. The Regulations are intended to prevent and protect against the international spread of disease while avoiding unnecessary interference with international traffic and trade. They are also designed to reduce the risk of the spread of disease at international airports and sea-ports, as well as at border crossings.

The Regulations require countries to notify WHO of all events that may constitute a public health emergency of international concern and to reply to WHO's requests for verification of information about such events. This enables WHO to ensure there is appropriate collaboration to prevent emergencies or contain outbreaks and, in some cases, to inform other countries of the public health risks where action is necessary on their part.

In particular, the Regulations require countries to strengthen their capacity for surveillance of diseases and response to disease outbreaks not just at national level but at local and intermediate (state or city) level too. The local level is to report "events involving disease or death above expected levels". The intermediate level confirms the events, implements control measures if necessary, and reports the disease threat to the national level which passes the information on to WHO if the disease is likely to spread widely.

At airports, sea-ports and ground crossings in all countries there should be medical services with diagnostic facilities so that ill passengers can be diagnosed and treated – and if necessary quarantined well away from the point of entry. These are major requirements but they are considered necessary if the international spread of infectious diseases is to be effectively stopped. In today's world where the majority of the population is urban, these requirements apply primarily to cities and peri-urban environments.

CITIES AND PUBLIC HEALTH CRISES

3 - COORDINATING THE RESPONSE TO PUBLIC HEALTH CRISES IN CITIES

In managing any public health crisis, a city will have two overall tasks – dealing with the sudden large number of sick people and keeping city life as normal as possible for everyone else. A crisis will lead to some disruption but it does not necessarily have to lead to chaos. With efficient coordination backed by an effective communication effort, crises can be managed.

The extent to which a city will manage the crisis will depend on just how much independence it has in relation to the provincial or national governments. Some municipal authorities with clear administrative and financial autonomy may be fully in charge of managing a public health emergency. Other cities may depend heavily on government assistance – particularly during a crisis.

How a public health crisis is managed, and who is involved, will vary from city to city according to the local situation. It is important, however, that all groups that take action in the crisis should work together rather than in isolation or – worse still – in competition.

Coordinating the stakeholders

Crisis management

Crisis management in a city has to be coordinated with all the services that provide health care and support public health. Because of the variety and complexity of these services – which include public, semi-public and private health agencies as well as transport services, airport and port authorities, industry and business – one crisis management team or committee will not be able to handle everything. However, members of that team can serve as liaison for subcommittees or other groups focusing on specific sectors. The number of other groups is less important than the fact that they should all be coordinated by the crisis team and should take their responsibilities seriously. Experience shows that, without coordination, the response to the crisis will not be effective and is likely to alarm the population rather than reassure them.

Identifying stakeholders

It will be important to identify which stakeholders need to be part of the crisis management structure. They may represent public services such as health, education, transport, environment, energy, water and sanitation, industrial development and security. They may represent the tourism sector, or large companies, an international airport, the chamber of commerce, large ethnic subpopulations, a major NGO, or in some cases an occupying power or a military faction in control of an area of the city. The media are also a stakeholder but should not be involved in the core planning group (though the group will need a media liaison person). The group of stakeholders will vary according to the location, but the need for coordination will be the same. Perhaps the most important criterion for identifying stakeholders will be whether they represent decision centres that can facilitate the action that needs to be taken.

Scenario modelling

In addition to bringing together a team that will lead the management of the crisis, consideration should also be given to setting up a separate group that will evaluate how the crisis is developing and what may happen next. This group, with epidemiologists and persons skilled in scenario modelling, could attempt to provide options for action to minimize risk in different potential situations.

Ensuring consistency

Even if city authorities have the independence and resources to take full responsibility in an emergency situation, they will still need to coordinate the emergency response activities with both the government and the neighbouring administrative areas. A public health emergency with national or international dimensions will require some resources for other affected areas or for people outside the geographic boundaries of the city. The coordinating body should ensure that national guidelines are followed in all locations since variations could cause confusion and waste resources.

If a city is close to an international border, the administration of the neighbouring areas must be involved even if they are in another country. In some cases two or more large cities are close to each other on opposite sides of a frontier and large numbers of commuters may cross the border every day. Ensuring a consistent approach between different medical or public health systems operating in different legal frameworks is not likely to be easy.

National and city responsibilities

In many of the world's largest cities, autonomy from the national government is unlikely and an emergency response will depend on human, financial and other resources from the central or provincial authorities. Even if the emergency does not take place in the capital city, that is where many of the emergency resources are likely to be. For instance, stockpiles of antiviral drugs, vaccines and other commodities for emergency response are usually controlled at national level.

In a capital city there will be both national and city authorities. It must be clear from the outset just who is responsible for what. Otherwise there could be overlap in use of resources in some areas as both authorities set out to do the same thing, and gaps in the response in other places as each group assumes that the other is responsible. The national authorities will be under pressure to act if the city is unable to manage a situation, but there may be resentment if national authorities take over a situation without being invited.

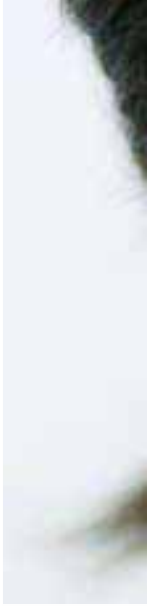
Political interests

Local and national politicians may wish to be involved, and they should certainly be kept informed of what is going on, but they may not have the background or skills to lead the response to a public health emergency. A crisis is not the time to play party politics; the stress must be on a unified effort and a common approach to overcome the crisis and to strengthen the city so it will be less prone to crises in the future.

Business interests

Virtually all commercial enterprises in the city will have an interest in surviving the public health crisis. In that sense they are all stakeholders but, since most will be small or medium-sized enterprises, they are best represented through the chamber of commerce or another representative group. Large companies may push to have more direct involvement in the crisis management structure. Multinational companies may be subject to pressures not just from outside the city but even outside the country. The team leading the crisis response should do what it can to ensure business continuity in the city. Among other actions, companies may help in limiting the spread of infection by making it possible for sick workers to stay at home if they are infected.

CITIES AND PUBLIC HEALTH CRISES



Informed decision-makers

In the response to a public health emergency it is important to ensure that members of the crisis management team are kept fully informed, that they make their decisions rapidly and transparently, and that there is clear leadership and a clear incident management system. It can be disastrous if experienced professionals dealing with the crisis have to wait for decisions, and especially if the decisions come from persons who are not fully informed.

Managing an evolving situation

It should also be made clear to all stakeholders that policies may need to change as the crisis evolves. The first day will be very different from the next two days, and they will be very different again from what follows. As the situation changes, so may the response.

One way to view an epidemic disease outbreak in an urban setting is to see the crisis in terms of phases. Phase 1, or the "uncertainty phase", chiefly involves gathering information in order to make decisions. Phase 2 is the "response phase" – though it starts before phase 1 is finished so some decisions have to be made against a background of uncertainty. Phase 3 is the "evaluation phase" in which the response being used must be tested to ensure that it is working (and must be adjusted if it is not). Phase 4 is the "recovery phase" which will already have begun during phase 2.

Coordinating resources

Cities generally have many resources for dealing with health problems and even with emergency situations. Health and emergency services exist, they are often permanently staffed, and in most cities they function responsibly and as efficiently as the local environment and infrastructure allows. Cities have hospitals, trained full-time medical staff and assistants, transport, a police force, a media service, waste management (such as the disposal of rubbish and sewage), and they also normally control their own water supply. All these resources provide regular services to the city's population, though the proportion of the population that is served will vary from place to place.

Health care systems in large urban settings tend to be more complex than in rural areas. Health facilities and their staff may be part of the public government-run system, they may be private, or they may be run by philanthropic organizations. Many cities will have a mix of these types of health services, though the private sector is usually the largest provider of health services. Some government sectors (e.g. military, police, railways) may have hospitals and clinics for their staff and families, and some large companies may also have their own medical services. Further, large teaching hospitals or tertiary and specialized hospitals tend to be located in urban settings, often in capital cities. While this mix of institutions is a benefit to a city in normal circumstances, coordinating this variety of health care facilities is a challenge when the demand for health care suddenly increases.

A rapidly spreading outbreak of infectious disease will cause a surge of patients seeking medical help. If hospitals are full with infectious disease cases, alternative medical services need to be identified for other sick persons. Additional facilities such as sports halls may need to be fitted out as temporary hospitals. And if extra health service staff are required, they will have to be found from somewhere. In some countries, medical staff are licensed to practise only in the province or region where they qualified. But if the health services of a city in crisis need extra medical staff, can they be brought in from a different province even if their qualifications are not formally recognized in the affected city?

Maintaining city services

Most cities are able to mount some kind of a response in the face of a disaster, but it is unlikely that many cities would be able to do much alone to provide adequate services to all their citizens in the face of a major health emergency. This is especially so if the emergency is an outbreak of a deadly infectious disease which might mean that external

help is withheld either to reduce the risk of spreading the infection or simply because external help is no longer available since similar events are occurring simultaneously throughout the country, as is to be expected during an influenza pandemic.

Public amenities

City authorities will face a range of problems in addition to the immediate challenge of providing care and assistance to those directly affected. The most pressing issue will be how to keep the city – and the amenities it provides – functioning.

These amenities are normally provided routinely on a daily basis and many citizens come to rely on them. If people cannot use the public water supply because it has been poisoned, an alternative will have to be provided. If rubbish cannot be disposed of in the usual way, people will need to be given an alternative.

Many amenities are provided not by the city itself but by private companies – either because the city does not feel responsible or because the city authorities have outsourced the work to the private sector. Continuation of these services in a public health emergency may not be fully within the control of the city authorities. However, it is imperative that waste management should continue for otherwise the risk of infection from a variety of diseases will increase.

Public services

An airborne infectious disease will spread rapidly in a city thanks to the constant closeness of large numbers of people. Whatever the eventual death rate, many people, including many who provide public services, will fall ill. Most of the sick will stay away from work, either because they are too ill to do their jobs or because they have been advised to stay away to avoid spreading the disease to others. In such a situation, the provision of public services is likely to suffer.

Health services will be overloaded because of the sudden surge of patients, and because many health workers will be among the sick, and other public services will suddenly be understaffed. It may be possible to keep some services running on reduced staff but there will be little capacity for dealing with breakdowns in the system.

Public transport could be a problem if many staff fall sick and stay off work – which they would be advised to do rather than expose tens of thousands of passengers to the illness. Some people will avoid using public transport in any case, since large numbers of people in confined spaces could encourage the spread of disease. But to keep the service running, private excursion companies may need to assist with routine transport duties. This will entail negotiation both with them and with trade unions and other employees' representatives.

Ensuring business continuity

A major element of city life is commerce. Most people live in cities because cities offer more and varied opportunities for employment. City authorities and company owners will try to keep businesses running during an emergency. Not to do so for an extended period could mean economic ruin for both employers and employees. However, if travel (in a crowded bus or subway, for instance) and close contact with other people (such as at work) represents a risk of contagion, some may argue that it makes better sense for everyone to stay at home.

Of course, if everyone does stay at home, commercial activity will stop, stores will close, and there will be nowhere to buy food. That could lead to desperation, looting and even civil unrest. Schools and universities, and other public and private educational institutions, may decide to close because of the risk of disease being transmitted in classrooms. But if young people simply exchange going to school for socializing with their friends in the street or in cafés, they might as well go to school.

CITIES AND PUBLIC HEALTH CRISES

Food supply

Food supply will be an important issue. While in a rural village people may have access to the produce of farms or even of their own plots of land, this will be a very rare situation in a city where almost 100% of the population depends on supermarkets, stores, restaurants and food stands to get something to eat. Not only will food stores wish to stay open for business, but it will be essential for the population that they do so. Deliveries from suppliers to those stores will need to continue, as will the delivery of medicines that many of the population take regularly. There may need to be specific liaison with the main food stores and pharmacies, and their suppliers, to ensure their business continuity.

Small and medium enterprises

In virtually all large urban settings, most people are employed in small or medium enterprises. The crisis team will need to decide whether there needs to be direct liaison with these enterprises (of which there will be many) or whether a representative body such as a chamber of commerce or another kind of business association can serve in a liaison function. In a city where many people work in the informal sector, the challenge of coordination will be greater.

Public health in business continuity courses

A number of business continuity courses are on offer to help companies prepare for emergency situations. It is important that such courses should include a public health perspective. Public health specialists cannot tell the diverse business community what to do. However, they can tell the business community what they would expect it to do to keep people alive and healthy. While "business as usual" is the goal, most companies probably do not wish to encourage sick employees to come to work since they will want to avoid even more people falling sick. However, if employees receive no pay when they are absent, many may turn up for work even though they are sick.

Preparing for the worst

It is not possible to predict an emergency, but it is certainly possible to minimize conditions that may aggravate one and to plan and train for when the unexpected happens. Experience has shown that health workers will do their jobs as well as possible in a crisis – even when both they and their resources are overstretched. However, disorganization, lack of information, confusion and conflicting interests can ruin even the most valiant efforts to combat an outbreak of infectious disease in a city.

Existing systems for coordination

One feature that may help avert a public health crisis – or at least give increased warning of it – is a nationwide alert system that provides all cities with the same information. A feature that could improve coordination of the response would be an existing framework for collaboration between national and local authorities in times of crisis so that individuals do not have to battle with each other to establish who is to do what. For the

4 - MANAGING THE RESPONSE TO PUBLIC HEALTH CRISES IN CITIES

Whatever its existing resources, a city faced with a major public health emergency will be confronted with large-scale needs that are not always easy to predict. In the case of an emergency due to an epidemic or pandemic disease, the crisis response must be focused on scientifically sound actions and must be guided by the factors (and vulnerabilities) that are unique to a city and by the large number of people involved. It will be essential to have a communication strategy in place that is open about the crisis, takes citizen's concerns into account, and builds the trust of the population. Some of the concerns that will be relevant to the crisis response are described below.

many qualified medical staff from other parts of the country who are willing to help in a crisis but who are not licensed to practise medicine in the crisis city, there needs to be an agreement in place that permits extra staff to be brought in when a crisis occurs.

Legal issues

There are also legal issues that should be sorted out in advance. An extraordinary event may call for extraordinary action to be taken. Questions may well arise concerning the legality of quarantining the infected, or sharing a patient's data with researchers, or trying out new treatments because the approved ones do not work. In a crisis human rights must be respected. At the same time, cities must be aware that extraordinary actions considered necessary in a crisis may be challenged by a court of law unless appropriate legal provisions for crises are in place.

Emergency drills

An essential element of preparing for a crisis is to carry out emergency drills with the staff – and even potential volunteers – who are likely to be involved. Such drills can focus on specific scenarios such as the sudden outbreak of an unknown infectious disease in a city, or on the evacuation from the city of huge numbers of people.

Effectiveness of interventions

It is important to build up knowledge about how effective different crisis interventions really are. One way to do that is to plan in advance for a team of people to have the specific task of gathering data on each intervention as it is carried out. It is still not certain how viable such data-gathering will be, but it is clear that information on the effectiveness of crisis interventions is definitely lacking and research in this area is needed.

Contact-tracing

When a patient is diagnosed with a dangerous disease that is easily communicated to others, one of the first steps is to try to trace as soon as possible all the people with whom the patient has been in contact. This enables the medical services to provide follow-up, prophylaxis and care and treatment to contacts if the infection has taken hold and to isolate them so that the disease does not spread to others.

Unknown contacts

In a rural village contact-tracing is viable since people tend to know each other, making it relatively easy to identify individuals who were in contact with a contagious person or contaminated materials. However, success cannot be guaranteed even in a village, and in a large city attempts to trace contacts can never hope to be 100% successful. Some contacts – such as family members and work colleagues – will be identified, of course, but if the infected person has been in a public place – which it is hard not to do in a city – then most of the contacts will not be known until the infection has developed in them and they seek medical help. By that time they

CITIES AND PUBLIC HEALTH CRISES

may have passed the infection on to countless others. Issues may also arise about a person's right to privacy and confidentiality.

Databases

A database is an essential for 21st century contact-tracing. While the names cannot be known in advance, the database can be set up in readiness – not just to contain names and addresses but to show the links from one contact to another and on to others. In many cities the police databases tend to be the most exhaustive with a great deal of information about the city infrastructure, about places where people gather in public (and in private), and about individual citizens – including which ones keep animals or birds (that might harbour a dangerous virus). In a major public health emergency it could be tempting to align epidemiological data with a police database so as to better assess the spread of disease not only in geographic locations but also in relation to behaviour patterns and social interactions. This may be considered more operational for effective contact-tracing. However, especially in the West, this is likely to be unacceptable to the public as a potential invasion of privacy.

Contacts with no address

In slum areas contact-tracing will be hampered by the fact that the makeshift homes may have no formal addresses. And, of course, some cities have no-go areas where it may not be possible for outsiders to reach people anyway.

Case management

If the city is facing an outbreak of a known disease, there will be standard treatment protocols that should be followed, though it must be remembered that medical staff may be dealing with this disease – and certainly with this disease on such a large scale – for the first time. However, they will at least have a line of treatment to follow, even if the quantities of drugs needed are not immediately available.

Treating an unknown disease

If the disease is unknown, patients will need to be stabilized until the nature of the illness is identified. But how viable will that be? The standard treatment for a person with severe breathing difficulty is a nebulizer which functions as an aerosol and blows medication into the lungs. However, in cases of SARS the nebulizer's aerosol effect caused the infection to enter the atmosphere where it infected persons who administered the nebulizer. That lesson has been learned, but the next new infectious disease that comes along can be expected to teach further lessons.

Diagnostic services

Health service staff will need to be backed up by diagnostic services that are not only effective but also very rapid, whatever the time of day or night. It took three years to isolate the HIV genome, and three months to identify the SARS virus. In a city with an epidemic of an unknown disease, the length of time it takes to identify the infectious agent will make the difference between success and failure – and probably between life and death for many people. Health staff trying to combat an unknown disease will be overworked and tensions are likely – especially if epidemiologists and contact-tracers are pressing to interview a patient about contacts while medical staff are trying to save the person's life.

The surge of patients

One notable feature of any major outbreak is the "surge" of patients all seeking medical care at the same time. Most hospitals have only a few beds for intensive or critical care. Temporary locations will need to be found where treatment units can be set up specifically for the treatment of persons with the outbreak disease. More medical and nursing staff will most probably need to be brought in.

Non-standard treatments

A crisis is not the environment to carry out clinical trials. In any case, obtaining permission to carry out a trial will probably take too long for the research to be of much use. However, there may be cases where not-yet-approved drugs or non-standard treatments seem promising when all else has failed. This document cannot recommend the use of unapproved drugs or treatments, but the issue of using them may come up in a crisis situation.

Isolation and quarantine

When an outbreak of a dangerous infectious disease occurs, an obvious response is to isolate the cases. This may be effective if the infected persons are identified rapidly and are moved to an isolated location, far from centres of population, to minimize the risk of their infecting others. However, in a modern city isolated locations are few and far between. In a large city with an outbreak of infectious disease isolating the cases may be impractical, and even impossible.

Limiting disease spread in hospitals

City hospitals may have a number of beds in a section of the hospital specially designed for cases needing isolation. However, such isolation wards will be unable to cope in a mass outbreak when the number of cases needing isolation and care will be way beyond the capacity of current facilities. Modern city hospitals, especially in developed countries, frequently have multiple levels and are often sealed from the external atmosphere with air conditioning units providing a stable temperature. Even if the different floors of a hospital can be sealed in an emergency, the air conditioning system may circulate the air between floors, thus potentially spreading an airborne infectious agent to patients and staff in other parts of the hospital. It would be advisable for hospital authorities to take steps to ensure that this is not the case in their hospital before an outbreak occurs.

Temporary hospitals

As the number of sick persons grows, attempts may be made to set up temporary hospitals or isolation centres in sports halls or other large indoor spaces. This may be the best that can be hoped for at the last minute. It would be far better if city authorities could identify potential temporary medical facilities long before an outbreak occurs and ensure that they have sufficient washrooms and sanitation facilities as well as being sufficiently distant from where people live.

Self-quarantine

Apart from the people who are so ill that they need hospital care, there will of course be many others with mild symptoms (that may or may not get worse) who need to be kept out of social circulation in case they infect others. Most likely such persons will be told to go home and stay there. Even where the legal framework is in place for city medical authorities to instruct people to quarantine themselves, there will be no way of policing the thousands of people who will be in this situation to ensure that they stay inside. These self-quarantined persons will need to rely on friends, neighbours and family members to bring them food or whatever else they need since social welfare agencies are likely to be busy enough without going shopping for the quarantined.

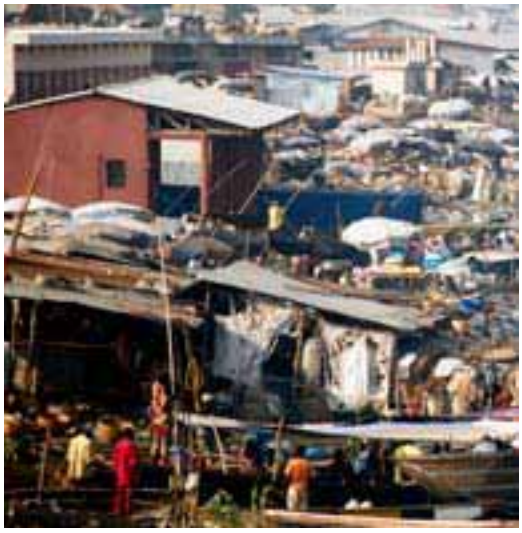
This system of "social distancing" as it has been called can have serious financial consequences if an employer does not pay wages when an employee stays home sick. Some may be tempted to ignore the quarantine order for this reason but experience shows that the majority of people will quarantine themselves if advised by the medical authorities to do so. What is not clear is the level of compliance that is required for a quarantine order to be effective.

CITIES AND PUBLIC HEALTH CRISES

Exodus

When a natural disaster threatens, people tend to want to leave the area. As an outbreak of infectious disease in a city becomes an epidemic, a mass exodus is likely to begin – especially if the disease seriously affects health or kills people, and even more so if the city authorities seem to be losing the battle against it. Fuelled by fear, such an exodus can easily become chaotic, choking roads, overloading rail services and paralysing airports. Unscrupulous elements may charge extortionately for tickets out of the city, and those least able to fend for themselves will be left behind.

If those managing the crisis consider that it is necessary to have large numbers of people move out of the city to other locations, this is best done by an organized evacuation that gives priority to the most vulnerable. Organizing an evacuation is, of course, a daunting challenge and the needs of a wide variety of population groups must be taken into account – including the need to ensure a supply of appropriate medications to persons who take them regularly. For an evacuation to run smoothly, there will need to be ample preparation in large-scale emergency drills before the event.



Stocks of medical equipment and supplies

It is no longer good practice for a business to keep large stocks of materials just in case they may be needed at some future time. Hospitals and clinics are normally encouraged to reduce unnecessary stocks of medical supplies that may never need to be used. Good business practice calls for stocks to be minimized and to be replaced as they are used with new goods from the supplier.

During a disease emergency in a city – when the health services have to deal with unforeseen numbers of sick persons – large stocks of supplies are precisely what are needed. There will be a shortage of hospital beds, life-supporting equipment and other supplies that may not be easy to come by – or even to find a place for in the hospital. If the supplier is in the city and has sufficient stocks available, all well and good. But if supplies have to be transported some distance or if a new supplier has to be found and credit established to make the purchase, or if new stocks have to be manufactured, or the normal transport system is breaking down, health staff will find their work hampered by lack of the tools they need to combat the emergency.

Cities would be well advised to make plans for emergency transportation, or permanent stockpiling, of the supplies that will be needed in a public health crisis.

Health workers

In past emergencies, medical staff have generally shown remarkable devotion to duty – working long hours in distressing conditions, entering danger zones to give medical aid to victims of catastrophes, and continuing to care for persons with deadly infectious diseases even though it put their own lives at risk. Recent outbreaks of previously unknown diseases have predominantly affected health care workers quite simply because they were the ones most closely in contact with the infected persons. The most specialized and best equipped medical services

tend to be in cities; virtually all SARS cases were in cities because the only medical services able to help persons so seriously ill were located there.

Shortage of health workers

In a major emergency situation in a large city one can probably rely on many medical staff to carry out their responsibilities beyond the call of duty. However, it is only to be expected that some will not – whether through fear, incapacity, or inability to reach their place of work. In the case of a pandemic scenario – with a new disease that infects humans and spreads easily – some health workers may simply refuse to care for those who are infected because of the risk of becoming infected themselves. Additionally, in any large-scale urban emergency a number of health workers will themselves be among the sick, the injured or the dead. And if the emergency affects the transport system, some health workers may not be able to reach their workplace.

Hospitals and health centres are intended to cope with a certain level of sickness and injury. They can of course cope with extra workloads in emergency situations. But if there is a sudden surge of people needing medical care during a major urban emergency, health workers will be overwhelmed by work and there is a limit to how well they can provide care in that situation. A natural disaster creates huge medical needs in very difficult circumstances but the situation gradually improves over time. An outbreak of infectious disease begins almost unnoticed but then grows and grows, every day getting worse – sometimes easing off a little but then returning in another wave – with no apparent end in sight. Both scenarios test health workers to the limit, and in an outbreak medical staff have the added fear that they may well be the next to succumb.

Employment conditions

Experience shows that in a public health crisis many health workers will work unusually long hours. Most will be willing to work the extra hours but the city authorities may need to negotiate terms with trade unions or other employees' representatives. It cannot be assumed that people will work regular overtime, putting themselves in the front line of risk for long periods, for the same pay as others who work only the hours stated in their employment contract. In this situation, news that a leading civic figure has gone on extended vacation to somewhere safer will not go down well.

Accommodation for staff

A further concern is that, in a major emergency, hospitals may need to find nearby accommodation for their staff. Experience shows that health workers caring for patients with infectious disease may not wish to travel home because of the risk of infecting family members and others. If that happens, the authorities will need to identify hotels or other facilities near the hospital where they can stay. Such places are best identified in advance and informed that they may be called on to perform this function in an emergency.

Burial of the dead

Care of survivors must take priority over burial of the dead. However, in a public health crisis of major proportions it can be expected that the number of deaths will rise sharply for an unforeseeable length of time. Bodies should be collected and identified and it will be necessary to discuss with families what funeral rites are acceptable. For instance, when persons have died from certain infectious diseases they must not be touched since their body fluids still spread infection. It is helpful to work with the religious authorities who can help families to understand that acting according to medical advice is acceptable within their faith.

In a city that suddenly finds itself with huge numbers of dead, there is likely to be a shortage of space for a very large number of burials within a short period. City authorities would be well advised to draw up plans for an alternative solution in case this situation occurs. Death causes distress among surviving family members in normal situations, but a mass catastrophe can push this distress to extremes.

CITIES AND PUBLIC HEALTH CRISES

Mapping the emergency

In any kind of public health emergency, geographic maps are important for identifying areas that are affected and those that are not, for locating people at risk, identifying where resources are, or for tracking the spread of disease. Maps will be used, for instance, to locate reported cases of disease and to trace persons who have been in contact with a carrier of an epidemic disease or who have arrived from an infected area. The city authorities will also have maps that show transport routes, power supplies, and water supply and sewage disposal routes.

During a public health crisis in a city, a normal street map will have limited use. Since cities contain so many high-rise buildings, as well as underground shopping malls, car parks, subways and a variety of other facilities, three-dimensional maps are needed if people are to be located effectively and danger points for disease spread identified accurately. In a city human activity extends to several levels below ground and many levels above it, so the vertical dimension has to be mapped to show who or what is at which level. Representing this visually in a convenient and operational way to support an emergency response could be a challenge to many mapping tools.

Slum areas of cities are often uncharted territory for which no reliable maps exist. In such a case, a great deal of time may need to be spent simply trying to locate people. This is better done before an emergency occurs than while one is under way.

Since certain population groups may be more vulnerable to infection than others, mapping may also be used to identify where members of these vulnerable groups (such as young children and the elderly) are located.

Travellers and non-residents

Travelling is a fact of life for many people. Even small urban centres have plenty of visitors – delivering goods, visiting someone they know, or passing through on their way to somewhere else. As for large cities, huge numbers of non-residents visit them every day and stay for periods that vary from a few hours to a few months.

New York has some 44 million visitors a year, with 4 million arrivals from overseas at its airports. In Europe, Paris claims 8000 visitors a day in the slow season and 30,000 a day in the summer months. Between 1990 and 2004, the number of passengers travelling internationally by air each year went up from 169 million to 330 million, according to the World Tourism Organization. The population in some locations will swell from that of a small town to that of a city in the tourist season. Most international airports are located in capital cities and passengers who are ill or in the incubation phase of an illness can spread disease on a vast scale within a matter of hours. In planning for emergencies in cities, the presence of large numbers of tourists must be taken into account.

Locating and accommodating non-residents

Most non-residents who are in a city as a public health emergency unfolds will want to leave as soon as possible (as will many residents), putting a strain on transport resources which may be overstretched anyway. In the case of an emergency involving an outbreak of infectious disease, there may be pressure to stop people from leaving the city for fear of spreading the infection. While most residents probably will be prepared to stay at home with their families and wait the emergency out, non-residents will want to leave and could go to extraordinary lengths to break quarantine rules.

The question arises: if non-residents who happen to be in the city during a sudden emergency outbreak are required to stay there, where should they stay and who will pay their hotel and food bills? The police may have fairly reliable information on

residents but probably will not know how many non-residents are in the city or where they are staying. Foreign visitors could potentially be contacted via their mobile phones, if they have them, as these will be traceable via satellite.

Stranded passengers

Some people may be stranded at the airport, unwilling to enter or unable to leave the infected city, but will the airport be able to accommodate them all? It would be worthwhile for airport authorities to consider in advance what they might do if a large number of people are suddenly grounded for an indeterminate time because of a ban on flying to or from that particular city. Closing an airport, especially an international one, will cause a great deal of chaos and create problems in other places. In this regard it is important for potential travellers – whether by road, rail or air – to be given the earliest possible warning that a crisis is developing so that they do not travel somewhere and simply add to the problem because they become stranded.

Screening

Scanning systems exist to screen travellers and others for infections. These have been used in crises to screen people arriving by air from certain locations. Just how cost-effective these are in a major public health crisis is uncertain. Virtually all arrivals are healthy, and virtually all of those who are not do not have conditions that could cause harm to others. Even the passenger with a dangerous infectious disease will need to have reached the infectious stage for the disease to be noticed, for the infection will not show on the scanner before that.

If a scanner shows that an arriving airline passenger has a serious contagious disease, facilities will need to be available at the airport to isolate both the passenger and everyone else on his/her plane until they can be declared infection-free.

One value of infection scanners is that they provide visible evidence that efforts are being made to detect infections and prevent their spread. Actions that reassure the population and build public confidence are important in a crisis.

The homeless

The homeless who live on the streets may be hard to find – unless they sleep in welfare shelters. Many will be poorly nourished and in a poor state of health, thus rendering them particularly susceptible to infectious disease. If they sleep on the streets they may also be in close contact with animals that carry disease. They, and their contacts, need to be traced and offered advice and care.

Human rights

Disease affects everyone. People who fall sick should not be rejected by society, and people of a similar race, population group or occupation should not be stigmatized. Past experience shows that if a person who can be identified as belonging to a particular social group is thought to be the first to be infected, that social group may be blamed for "causing" the disease. This can lead to ostracism, stigmatization or worse. Human rights must be maintained even in an emergency. The crisis management team should take a lead in supporting citizens' rights and in countering negative attitudes to specific social groups.

Immigrant communities may include a number of people – especially elderly dependants – who are happy to live within their own community and have little motivation to abandon their traditional culture or learn the local language. Such persons may not work in regular employment and could be difficult to trace. They may be reluctant to seek medical care or, if they do, will need to be accompanied by someone who can translate into the local language so that appropriate medical treatment can be given. In order to avoid causing distress, or even social unrest, traditional attitudes and customs (e.g. regarding medical examination by a person of the opposite sex, or important funeral rites) will need to be respected as far as possible.

CITIES AND PUBLIC HEALTH CRISES

Within an immigrant subpopulation there may be persons who are in the city without proper immigration documentation. In a public health emergency these persons may prefer to hide so that they do not come in close contact with officials, even from the health sector.

Security for the public health team

In some cities there are dangerous areas where personal security cannot be assured. In some places, these are virtual no-go areas, especially at night. In a public health emergency such areas will pose a problem for aid teams and medical staff who will need access to all affected areas. It will be impossible to conduct effective epidemiological investigations if the security of the investigation teams cannot be guaranteed. Some city areas may even be under the control of criminal gangs or militia groups. The crisis team will need to consider the positive and negative aspects of negotiating with these groups to allow access of the public health team to the area for the good of the inhabitants.

The psychological state of survivors

City life is often reputed to be more stressful than a rural existence. At the same time, many city-dwellers cope with stress without obvious negative effects. However, public health emergencies are extreme situations that will expose people to extreme stress.

WHO's studies of survivors of natural disasters show that many persons directly affected will suffer mild psychological distress for a few days or weeks, while 30-50% of affected persons will suffer either "moderate or severe psychological distress" that resolves with time or mild distress that may remain chronic. In general populations around the world, the proportion of persons with depression and anxiety disorders averages around 10%, but rises – possibly to 20% – after exposure to disaster.

If there is a public health crisis in a city, it can be expected that rates of psychological stress will rise among those who have lost family members, among health workers, and among those involved in handling large numbers of corpses. At the time of the Spanish flu epidemic in 1918-1920, scientific observers mentioned an increase in psychoses (as distinct from the delirium experienced while in fever) in those who had caught the flu and then recovered. The crisis management team in a public health crisis should anticipate the need for psychosocial counselling and for post-crisis emotional debriefing.

5 - COMMUNICATING IN A PUBLIC HEALTH CRISIS

If people are at risk from a public health crisis such as an epidemic or pandemic of infectious disease, they need to know the facts about the risk in order to protect themselves from it. Pretending that the problem does not exist will not help anyone. Some governments consistently denied that AIDS was a problem in their country, thus allowing citizens to believe they were not at risk until the situation had escalated and more people were affected. The main task of crisis communication will be to convey complex scientific information to people in a clear and simple manner.

Crisis communication, which includes a broad range of communication specializations from media relations to social mobilization, is essential to managing a public health emergency. It enables the public to adopt protective behaviours, helps heighten disease surveillance, reduces confusion, and promotes better use of resources – all of which are necessary for the response to the emergency to be effective. The people who are trying to cope with the emergency will need information and guidance quickly, they will need it to be accurate, and they will need it to be consistent. If information is delayed, inaccurate or varies according to the channel of communication, the risk to public safety will be increased.

Despite its importance, crisis communication represents a significant challenge during serious public health events. Common failures include withholding information about a real or potential risk, not coordinating communication with partners, and not listening to those affected by the emergency – thereby failing to understand risk perceptions, social norms and potential cultural barriers to public health interventions.

Target populations are likely to be diverse in socioeconomic status and social structure, and may have different languages and ethnic traditions. Information will have to be disseminated through channels that take into account different levels of literacy and the language used. Some sub-populations will have gaps in their knowledge, different perceptions of risk, and possibly limited trust in what the authorities tell them.

While crisis communication has more to do with messages than with media, it should not be forgotten that during an emergency in a city, as very large numbers of people try to get in touch with friends and relatives, some communication channels may be overloaded and some may not work because essential staff are ill.

WHO's principles for outbreak communication

WHO has developed a set of "outbreak communication guidelines" for use when there are outbreaks of infectious diseases. The five overall principles of WHO's guidelines are remarkably simple: trust, announcing early, transparency, listening, and planning. The guidelines are designed for use in all locations but are particularly relevant to large urban centres. A public health emergency in a city will generate large numbers of media reports. Inevitably, the media, business representatives, the general public – and of course local politicians – will start to ask questions. All of them will feel they have a right to know the truth about what is going on and what is the best course of action. They are likely to speculate in any case, but without accurate and timely information they may speculate wildly.

The principle of ***trust*** means using communications during an outbreak to build, maintain or restore trust between the public and the crisis management team. Without this trust, people may not believe what they are being told and, if they do not believe it, they will not act on it.

Announcing early means giving people the latest information when it is available. If the news is good, there is no reason to withhold it; if it is bad, it will seem an awful lot worse if people find out someone has

CITIES AND PUBLIC HEALTH CRISES

been hiding it from them. Bad news delivered promptly will at least let people know where they stand. If the crisis management team does not provide information promptly, rumours will fill the gap and someone else – probably a television or radio station – will announce it anyway and people will not know who to believe. Late announcement erodes people's trust in the ability of public health authorities to manage the outbreak.

Maintaining trust calls for ***transparency*** – including timely and complete information about real or potential risks and what is being done about them. As new developments occur, they should be communicated proactively without waiting for someone to ask.

Communicating with people is always easier if you know something about them – what they like and what they do not like, what they fear and what they hope for. This is where ***listening*** comes in. During a public health crisis it is important to find out people's views and concerns, and what their beliefs and practices are. If you are going to ask them to change their behaviour or take actions they are not used to, the more you understand about them the more likely you will be able to persuade them.

And ***planning*** is just as important in communication as it is in any other aspect of crisis management. Sound planning will pay off – so long as it leads to action.

Avoiding mixed messages

Many cities are home to a variety of radio and television stations, newspapers, and magazines. Some broadcast services and news outlets may be controlled by the national or local government, while others will be privately run. These news media are likely to be the main source of news for most of the population so they are an important link in the chain of communication between the crisis management team and the citizens. In a public health emergency where the authorities need to communicate with the general public, lack of coordination with the news and media industry can lead to mixed and conflicting messages, making matters worse.

Consistent messages

One obvious source of mixed messages is having several people from the crisis team speaking to the media and expressing different views. If this happens, journalists – and their readers – will soon get the impression that the crisis team doesn't know what it's doing. In some cases that may be true, but if you are doing a good job you will convince people of it more easily if the members of the team do not contradict each other. In some situations, it may be wise to appoint one spokesperson to carry out media liaison for the team, but even if several people speak to the media the key issue is that they should all communicate the same messages. Bear in mind that if the spokesperson is a political appointee, this may undermine credibility.

Crisis communication training

The media may wish to interview the mayor of the city or local politicians – perhaps live on television or radio – so it is important that they too should be prepared. Crisis communication training will help them to speak openly, tell what they know and admit what they do not know, and avoid discussing crazy theories.

Regular news briefings

Depending on the situation, web sites and blogs about the crisis may well start appearing on the Internet. The city will probably publish news about the crisis on its own web site; if it does it should make sure that this is technically accurate and up to date. However, other sites may be written by individuals who are more interested in disseminating their own pet theories than in sharing reliable information. The best way to deal with this is to ensure that the news journalists have a regular briefing where they are kept up to date on the crisis and how it is being handled.

Setting an example

The term "mixed messages" refers not only to what is spoken or written. It also refers to the way people act. A politician or civic leader who tells citizens there is no danger and then moves out of town is sending a mixed message that ruins the credibility of the leadership.

Communicating with subcultures and immigrant groups

City populations are typically far more heterogeneous than rural ones. Large businesses and government departments attract people from all over the country, and universities and colleges bring together students from different regions. Most large cities also have a number of foreign residents – representatives of foreign governments, staff of foreign businesses, students from other countries, economic migrants who can make a better living than in their own country, and many others.

In time, whole communities grow up based on nationality or a common language. Each community has its own subculture and in some cases language of communication. In an emergency, subpopulations such as immigrant groups will need information – whether written or spoken – in their own language, and will also need translation assistance when sick or injured.

Many organizations and citizens' groups – including migrant and expatriate groups – have their own media services, often in other languages, and it is important to keep these up to date with news and advice along with the major news services. This will help ensure that immigrants and other subgroups receive the same messages as the rest of the population.

Convincing the educated

Although many cities contain large numbers of poor and uneducated people – especially in slum areas – cities are generally dominated by the middle class. Large numbers of educated professionals, often university graduates, live or work in urban areas. After all, cities usually offer the biggest range of job and leisure opportunities for business executives, lawyers, doctors, university teachers and a range of other professional groups.

The presence of large numbers of medical doctors in a city should, in principle, be a good thing in a public health emergency (though many will be in private practice and may not be accessible to the city authorities). However, the presence of many other well-educated persons, while not necessarily a disadvantage, raises an issue that will need to be dealt with. Many citizens will have considerable scientific or medical knowledge and may question instructions given by the city authorities or may refuse to cooperate.

An educated population is usually aware of its rights, and lawyers will be available to help people defend those rights. The actions of city and national authorities will be under scrutiny in a public health emergency and legal objections may be raised if a citizen feels that his or her rights are being abused. Any communication approach will need to include the educated as a specific target audience.

CITIES AND PUBLIC HEALTH CRISES

Communicating in an evolving situation

Changes in policy

In a public health crisis due to an outbreak of infectious disease, policies may need to change as the crisis evolves. The first cases of infection may be thought initially to be poisoning. Even when it is identified as an infection, the precise disease may be unclear for some time. As more becomes known about the infection and the way it spreads, advice is likely to change. It is important that health workers, city and business stakeholders, and the media understand this. There may be criticism that the members of the crisis team do not know what they are doing so it is best to make clear in advance that early decisions must be made on the evidence available at that stage, and that later decisions may be different as more information becomes available.

Science-based information

Information provided to the media should be science-based and accurate. Of course, especially in the early stages of an emergency it may not be possible to be accurate about everything – so outline what the most likely possibilities are and make clear that these are only possibilities and not facts. If rumours arise, address them promptly with objective factual information. The aim of the crisis team's communication effort is not simply to tell journalists something so that they will go away; it is to give citizens information so that they can protect themselves and their families. The media can help this to happen.

Statistics

The media will typically ask for numbers – of the sick or the dead or the numbers of doctors needed, or whatever. Explain to them that they will be given precise numbers at the start of the crisis when the numbers are small. At a later stage, if numbers become large, only approximate totals will be given – though make sure that any approximation is as close to the truth as possible.

Respect for people's concerns

Information for the public should be technically accurate, it should support the policies that are being put into effect, and it should not be patronizing. People generally do not appreciate being addressed as if they are stupid. It is important to show respect for people's concerns. They will respect the facts they are given but that will not prevent fear. A crisis leader may wish to empathize with people by admitting his or her own fear, but at the same time should clearly explain the way forward. People's confidence will not be built by pretending that everything is under control when it is not.

Media relations

The media can be a great asset since professional journalists will always check their stories or at least ask for a comment from those in charge of the situation. They will not normally publish obvious lies. However, their job is to publish something, so if the crisis team gives them no news they will find it elsewhere. Good relations with the media will help support the response to a public health emergency.

The media will be active. Past experience shows that they will automatically tend to support the crisis response effort in the early days. Afterwards, however, they will start to interview more people than just the crisis team's media liaison person – such as relatives of someone who has died, or local politicians who may wish to win political capital by

criticising the authorities' efforts. Later still, the media may turn to more detailed assessments of the situation that apportion blame. Whatever the media may do, it is not the job of the crisis team to defend or attack the local authorities but rather to continue supplying factual evidence in a balanced manner.

The media will often find things out more quickly than the authorities so the crisis management team needs a good information flow so that it can announce news to the media rather than the other way round. The credibility of those leading the crisis response will suffer if journalists consistently find out about developments before the people who are supposed to be in charge. Rumours will arise and should be addressed promptly.

Even before any emergency occurs, it is useful to identify reliable media contacts – including those serving minority language groups – who can be useful during a crisis, and who are likely to continuing operating in an emergency situation. An inventory of media outlets and their audiences can be created with a view to reaching the maximum number of people. A meeting with media representatives provides an opportunity to discuss how you might work together if a crisis occurs. During the crisis, the media should be addressed regularly – at least daily – and information released to them all at the same time. It will create bad feeling and criticism if certain journalists or news outlets are favoured.

6 - CONCLUSION

With half the world's population living in them, cities are one of the most important features of our planet. All cities are different, of course, but they share the common feature of concentrating large numbers of human beings in one place. That common feature makes cities particularly vulnerable to outbreaks of infectious disease. Whether city-dwellers live in single-family houses or in high-rise apartment blocks or in slums, and whether they drive in their own cars or take public transport, may make some difference to how quickly the disease spreads and who it affects worst. Nevertheless, no parts of the city – especially the hospitals – will be safe. With so many people in the limited space of the city, preventing the spread of disease will be extremely difficult.

Participants in the Lyon consultation in October 2008 agreed on the seriousness of the threat that infectious diseases pose to cities, they agreed on the need for effective leadership in a crisis, for much more rapid diagnostic tools, and for research to establish just how effective traditional measures – such as closing schools or imposing quarantine – really are. They affirmed the need for coordination of a range of stakeholders in an emergency, and they stressed the vital importance of open and honest communication in helping people to endure a crisis of unforeseeable length.

However much cities may differ, cities in one country also have many things in common with cities in another country – sometimes more so than with other areas of their own country. The consultation participants proposed that a forum for sharing the experience of cities in dealing with emergencies would be a valuable resource for helping to avoid mistakes and for promoting good practice in the future. Recommending the establishment of such a forum was beyond the terms of reference of the Lyon consultation, but the idea remains as an issue worth revisiting. Cities, wherever they are, have a lot to learn from each other in many ways – and if they can share information that helps protect the health of their citizens in a public health emergency, the effort would be worthwhile indeed.

CITIES AND PUBLIC HEALTH CRISES

INTERNATIONAL TECHNICAL CONSULTATION CITIES AND PUBLIC HEALTH CRISES Lyon, France, 29 – 30 October 2008

7- PARTICIPANTS

Ms Atika Abelin
Sanofi Pasteur France, Lyon, France

Ms Kate Alberti
Epicentre, Paris, France

Ms Solène André
Département du Rhône, Lyon, France

Mr Philippe Archinard
Lyonbiopôle, Lyon, France

Dr David Bell
US Centers for Disease Control and Prevention, Atlanta, GA, USA

Mr David Bramley (Rapporteur)
Prangins, Switzerland

Dr Rolf Breitstadt
Evonik Industries AG, Frankfurt, Germany

Dr Bruno de Buzonnière
Veolia-Environnement, Paris, France

Dr Philippe Cramer
BioVision, Lyon, France

Dr Scott Deitchman
US Centers for Disease Control and Prevention, Atlanta, GA, USA

Mr Loris de Filippi
Médecins Sans Frontière International, Genève, Suisse

Dr Walter Gaber
Frankfurt am-Main, Germany

Professor Daniel Garin
Centre de Recherche du Service de Santé des Armées, La Tronche, France

Professor Marc Girard
BioVision, Lyon, France

Dr Dirk Glaesser
World Tourism Organization, Madrid, Spain

Ms Martina Gliber
Fondation Mérieux, Lyon, France

Dr René Gottschalk
City of Frankfurt am Main, Germany

Dr François Guillemin
Conseil économique et social de la Région Rhône-Alpes, Lyon, France

Dr Inge Heyer
City of Bonn, Germany

Dr Elizabeth Kaye Petersen
Gauteng Department of Health, Johannesburg, South Africa

Professor Roger Keil
The City Institute at York University, Toronto, Canada

Ms Clémence Labat
The Grand Lyon, Lyon, France

Ms Claire Leininger
Sanofi Pasteur France, Lyon, France

Dr Christophe Longuet
Fondation Mérieux, Lyon, France

Mr Benoît Miribel
Fondation Mérieux, Lyon, France

Ms Anaïs de Montjoye
Veolia-Environnement, Paris, France

Dr Alain Moren
EpiConcept, Paris, France

Mr Pierre-Yves Nury
Fondation Bullukian, Lyon, France

Mr Thierry Paux
Ministère de la santé, de la jeunesse, des sports et de la vie associative, Paris, France

Dr Pan Qichao
Shanghai Municipal Center for Disease Control and Prevention, Shanghai,
The People's Republic of China

Professor Victor G. Rodwin
New York University, New York, NY, USA

Mr Dan Rutz
US Centers for Disease Control and Prevention, Atlanta, GA, USA

Dr Ronald K. St. John
Consultant, Ontario, Canada

Professor Jean-Louis Touraine
First Deputy to the Mayor of the City of Lyon, Lyon, France

Dr Isaac Weisfuse
New York City Department of Health, New York, NY, USA

WORLD HEALTH ORGANIZATION

WHO Regional Office for the Americas Pan American Sanitary Bureau Washington, D.C., USA

Dr Jarbas Barbosa da Silva
Area Manager, Health Surveillance and Disease Prevention and Control

WHO Regional Office for the Eastern Mediterranean Cairo, Egypt

Dr Jaouad Mahjour
Director Communicable Diseases

WHO Regional Office for Europe Copenhagen, Denmark

Dr Agis Tsouros
Head, Centre for Urban Health

WHO Regional Office for South-East Asia New Delhi, India

Dr Subhash R. Salunke
WHO Representative to Indonesia

CITIES AND PUBLIC HEALTH CRISES

WHO Headquarters Geneva, Switzerland

Dr Awa Aidara-Kane
Food Safety, Zoonoses and Foodborne Diseases

Dr Stella Chungong
International Health Regulations Coordination

Dr Carlos Francisco C. Dora
Protection of the Human Environment,

Dr Pierre Formenty
Epidemic and Pandemic Alert and Response

Dr Bernardus Ganter
International Health Regulations Coordination

Mr Bruce Gordon
Protection of the Human Environment

Mr Gregory Hartl
Epidemic and Pandemic Alert and Response

Dr David L. Heymann
Assistant Director-General, Health Security and Environment

Dr Dominique Legros
Epidemic and Pandemic Alert and Response

Mr Dominique Metais
International Health Regulations Coordination

Ms Kathy O'Neill
Information, Evidence and Research

Mr John Rainford
International Health Regulations Coordination

Dr Guénaël Rodier
Director, International Health Regulations Coordination

Dr Claudia Vivas Torrealba
Global Influenza Programme

WHO Headquarters Office for National Epidemic Preparedness and Response Lyon, France

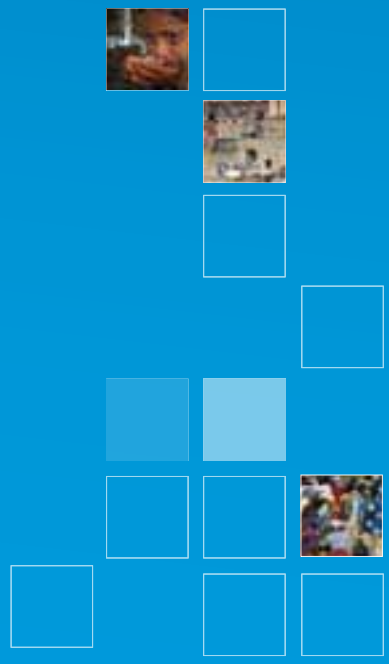
Ms Sophia Desillas
International Health Regulations Coordination

Dr Florence Fuchs
International Health Regulations Coordination

Dr Christian Mathiot
International Health Regulations Coordination

Dr Daniel Menucci
International Health Regulations Coordination

Dr Pierre Nabeth
International Health Regulations Coordination



LYONBIOPOLE

Immeuble Domilyon
321, avenue Jean-Jaurès
69007 Lyon, France
Tel: +33 (0)4 72 76 53 30
E-mail: info@lyonbiopole.com
Web: http://www.lyonbiopole.org

World Health Organization

Lyon Office for National Epidemic Preparedness and Response
58, avenue Debourg
69007 Lyon, France
Tel: +33 (0)4 72 71 64 70
E-mail: oms@lyon.who.int
Web: http://www.who.int/ihr/lyon

Design: *messaggio studios* - Print: *naturaprint* with vegetable-based inks on paper produced from 100% sustainably managed forest - Photos: © *mondolibrary* & istockphoto