Public behaviour during a pandemic

Hagan, Maguire and Bopping outline a number of public response issues for effective pandemic planning.

Introduction

A pandemic resulting from a newly emerged disease constitutes one of the more probable events likely to threaten national security (Cecchine and Moore, 2006, Brower and Chalk, 2003). Like many countries, Australia is currently taking steps to improve its ability to manage an outbreak of pandemic. An important component of these efforts to date is Exercise Cumpston[1], a multi-jurisdictional exercise held in October 2006. Exercise Cumpston provided State and Federal Government agencies an opportunity to validate elements of their pandemic influenza management plans. Moreover, it offered us a means by which to test and, if necessary, refine the inter-departmental coordination processes so critical to the effectiveness of any response.

The plans developed by government agencies form the first part of what we see as a two-part pandemic management equation. The second part relates to the public—specifically, how the public is likely to behave should a pandemic occur. What is rarely discussed is the dependency between these two parts. The quality of an agency's pandemic management plan will depend, to a large degree, on the quality of the assumptions it makes about how the public will respond. There is little sense in assuming that people will seek help from influenza assessment centres, for example, if the prevailing public intention is to present at hospital emergency departments. What must be recognised is that plans themselves cannot *ensure* the public will do the 'right' things. People will differ in their responses, and the majority of people will react based on their best understanding of the situation, an understanding that will depend on what information they have and how they interpret that information. Ultimately, the success of the pandemic plans will depend on their ability to predict the ways in which people will act in a pandemic.

This paper outlines a number of public response issues for effective pandemic planning. These include conforming to movement and quarantine regulations, following health and medical advice, and staffing 'essential worker' roles. Our analysis of these issues leads us to the key concept of compliance. We argue that by better understanding the drivers of compliance, communication strategies can be devised to benefit the management plans of government agencies.

Movement restrictions

One of the fundamental methods of containing a pandemic (and thereby slowing its spread) is the imposition of restrictions on movement and gatherings (WHO, 2005, Office of Health Protection, 2006). Restrictions can be placed on the movement of the uninfected population at local, national and international levels. At the local level, many pandemic plans call for school closure along with more general recommendations to avoid crowds (WHO, 2006). At the national and international level, restrictions will be placed on people's capacities to move from one region to another. As a global phenomenon, a pandemic would bring about severe international movement restrictions.

A range of psychological and social factors will influence the effectiveness of restrictions on movement. People are motivated to contravene movement restrictions by a strong desire to be with their families and community, to protect their economic wellbeing, or even due to their mistrust in the advice of the government. The motivation to flee en masse can be driven by anxiety and fear of contracting the disease. The plague outbreak in Surat, India in 1994 led to the uncontrolled flight of 600,000 people, including essential medical staff (Ramalingaswami, 2001). The extent to which fear and anxiety drive this sort of collective 'panic' will be related in part to people's beliefs about the effectiveness of the government's response. While panic is a highly uncommon response to crisis (Auf der Heide, 2004) there is a large amount of research showing people's unwillingness to modify their movements in the ways that the authorities would prefer (Donner et al., 2007). The public's response to instructions is dependant on a range of social and psychological factors (Mileti and Sorensen, 1990).

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[1] Exercise Cumpston was Australia's largest health simulation exercise, testing preparedness for response to pandemic influenza. It served as a comprehensive test of Australia's National Pandemic Plan.

Relating to this, there is mixed evidence for the effectiveness of isolation measures in stopping the spread of highly contagious diseases like influenza (WHO, 2006, Garrett, 2005). If such information questioning their effectiveness becomes public knowledge, and the availability of information in our culture suggests that it will, we can expect it to affect people's willingness to comply with movement restrictions. At the national level a lack of coordination in policy can lead to problems. During the 1919 Influenza epidemic in Australia, differences in State policies led to interstate tensions, when States unilaterally implemented movement controls to protect themselves (WHO, 2006). We can expect modern media to immediately report on such problems, and for awareness of this to affect people's attitudes and behaviour.

Quarantine

When a pandemic first emerges, we can expect that at least its first victims will be quarantined in hospitals. As it develops, victims may also be quarantined at home (Cava et al., 2005b, CDC, 2007, Office of Health Protection, 2006). Any new influenza virus has unique characteristics and it takes time to develop an understanding of how it is transmitted and when protective measures need to be taken. In particular, it is well understood that it will take between 4 to 6 months to develop effective vaccines (CDC, 2007).

While Australians are familiar with the rationale and value of quarantine of diseases and pests in order to protect Australia's natural environment and industry, they are unfamiliar with quarantine of people. Evidence from several previous quarantine efforts indicates that compliance is mixed (WHO, 2006). Even where compliance is reportedly high, as it was during the SARS crisis, compliance within households was far less effective than general public compliance (Hawryluck et al., 2004). People were willing to remain quarantined at home, especially as they were encouraged to do so by social pressure. However within their home they ignored health protocols (such as wearing a mask) where they found the requirement questionable or burdensome (Cava et al., 2005b).

Evidence suggests that being quarantined has a psychological effect on an individual. Hawryluck and colleagues (2004) found that both being quarantined and being acquainted with a quarantined individual were associated with high levels of symptoms indicative of post traumatic stress disorder. Longer duration of quarantine was also associated with greater distress symptoms. This suggests that during a pandemic the process of quarantine itself will contribute a significant psychological burden on the community.

As with movement restrictions, adherence to quarantine will be strongly influenced by its perceived effectiveness. Quarantine worked well during SARS because of the low transmissibility and delay in peak infectivity (Skowronski et al., 2006). As such, the population was willing to comply with instructions. It also helped that the numbers quarantined, while large, were still small enough for compliance with the orders to be checked on a regular basis by health professionals (Cava et al., 2005a). The work load on health workers during a pandemic may make this type of individual monitoring impractical. When a highly transmissible disease (like influenza) emerges, many experts believe quarantine will be ineffective (WHO, 2006). If this doubt becomes public, a consequence may be that people are likely to be less willing to comply. The rapid transmission of information in modern society suggests that awareness of these doubts will spread quickly through the population if the crisis response suffers setbacks.

Health/medical instructions

An effective pandemic response requires people to comply with precautionary health measures. People will be required to recognise their own (or their family members') symptoms, and to follow certain instructions based on these symptoms. People will be required to make the judgment on when they should attend hospital, and when they should administer self-care at home. Self-care measures may include wearing masks, washing hands, avoiding contact with infected people, taking prescribed medication and not taking non-prescribed medications.

It is accepted that many of the people who arrive at hospitals during a pandemic will be there due to their distress and illusory symptoms, rather than actual infection (Reissman et al., 2006). These self-referrals for screening and admission increase the risk of hospital cross-infection (Wong et al., 2004). They also add to the burden on the health care system (e.g., by flooding triage and emergency wards).

People will also try to get access to drugs regardless of their actual need for them. In India, during the 1994 plague outbreak, supplies of the drug tetracycline (believed to be effective against the disease) were unavailable after widespread public buying (Ramalingaswami, 2001).

Alternatively, the public may also refuse to use drugs if they fear that they have been given incomplete information regarding particular medication. Concern about side effects may outweigh the fear of not taking the medication and of contracting the disease. Public confidence in the United States government plummeted after hasty adoption of a widespread 'swine flu' vaccination program (Enemark, 2007, Thomas, 2007). The virus only killed one person, and never became an epidemic. The vaccine that was given to halt a possible

epidemic resulted in hundreds of people hospitalised after adverse reactions, and more than 20 deaths. This outcome did considerable damage to the CDC's reputation, endangering future public cooperation (Thomas, 2007). As WHO regard the timely use of antiviral drugs as vital to containing a pandemic, such non-compliance could increase the scale of the disaster significantly (WHO, 2005).

Pandemic planning must recognise that we cannot assume that people will comply with health and medical instructions. It is likely that there will be low levels of compliance with any public health recommendations (Reissman et al., 2006). During the SARS crisis, even doctors were inconsistent in complying with basic hygiene measures (Wong et al., 2004). Wong et al. (2004) attribute this to the fact that the doctors had no experience or understanding of the disease, and no clear knowledge of its infectiousness. Clearly the public will have an even more limited comprehension of the infection, and may not understand the importance of certain measures. However understanding alone will not be enough to guarantee compliance, as social and psychological factors will influence people's response to instructions even if they understand the reasons for those instructions (Mileti and Sorensen, 1990).

Essential workers

Government pandemic plans focus on ensuring that hospitals are well equipped and supplied to deal effectively with affected individuals, and on keeping other essential services operating. Essential sectors include health, law and order, defence, electricity and water, telecommunications, banking and finance, and food supply. However, in order for hospitals and other services to function effectively, it is necessary to have people to operate and work in them. We can question whether doctors, nurses, and other essential workers will continue to work during a pandemic.

Most of the evidence about behaviour during disease type crisis events has been collected on health workers. The refusal of healthcare workers (and workers more generally) to attend work is likely to be motivated by a fear of risk to themselves and to their families (McNeil, 2003). This fear will be fuelled by uncertainty about the mode of transmission of the disease and about appropriate protective measures. The public may also see certain people as potential threats as a result of their occupation (e.g., healthcare workers exposed to infected patients) and stigmatisation may arise in response.

With continued contact with infected patients, healthcare workers are likely to be at increased risk of becoming ill. During the SARS crisis, doctors, nurses and other healthcare workers were among the first affected (Abraham, 2005). Many general practitioners

in Hong Kong changed their consulting behaviour, potentially affecting the standard of care delivered (Wong et al., 2004). A smaller number went so far as to close their clinics after a suspected SARS case. The outbreak of SARS in Taiwan led to mass resignations of medical staff, especially the poorer paid nurses (McNeil, 2003).

With such a threat, and with the fear that comes from uncertainty, it is reasonable to expect a proportion of healthcare workers to refuse to attend work. To minimise this it will be necessary for healthcare and other essential workers to be included in pandemic planning, and to ensure that they receive information about risks and about the protective measures that can be taken (Kotalik, 2005). An important first step has recently been taken in Australia with the release of the online pandemic planning tool for GPs[2].

As a pandemic spreads to a significant percentage of the population, such that any social situation is a potential threat, the above effects are unlikely to remain restricted to health workers. Workers in all the essential sectors can feel threatened, and may adjust their behaviour to minimise this threat. Given the dependency of modern life on basics, such as electricity and immediate communications, the ability of a full range of essential services to maintain staff numbers is of critical importance.

Compliance

As this paper has discussed, priority issues in pandemic planning include movement restrictions, quarantine, adherence to health and medical instructions, and staffing of essential roles. Common to each of these priority issues is the notion of compliance. Compliance may be defined as changing behaviour as expected or requested. The psychological description of the compliance process involves communication (a request) and a response (acquiescence) (Cialdini and Goldstein, 2004). Research on compliance has generally focused on questions of when and why people will comply. There is a large literature on the problems in encouraging compliance through communications during a crisis (Mileti and Sorensen, 1990, Donner et al., 2007). Compliance has also been extensively studied in the medical literature, in the context of when people will or will not follow drug regimens. Within the psychological literature several factors have been identified that influence compliance, a subset of which may be amenable to manipulation during a crisis:

- Authority

- Social Validation

- Consistency

- Reciprocity

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2   http://info.anu.edu.au/mac/Media/Media_Releases/_2007/_April/_030407_influenzaonlinetool.asp?p=1

Media can assist in disseminating information to the public during a pandemic.

An awareness and understanding of these factors will help governments and authorities increase the compliance of the population with requests made during a pandemic.

Authority

People are more willing to accede to the request of a legitimate authority (Cialdini, 1988, Mileti and Sorensen, 1990, Donner et al., 2007). Compliance is more likely to occur when the person making the request is seen as the appropriate authority to be acting in the particular situation. In terms of a pandemic, it is encouraging that Exercise Cumpston included government officials up to and including the Prime Minister, as national-level requests are more likely to be complied with when presented by the highest authority. During a pandemic, the other component of legitimate authority will be medical knowledge. Simple things like the use of the title "Doctor" may influence people's compliance with instructions, as people see the medical advice as coming from a knowledgeable source. If counter-claims about the effectiveness of pandemic response measures also come from medical authorities, the legitimate authority will be questioned and compliance will be reduced.

Social validation

People get information about how to behave by looking to the behaviour of others, particularly those in the same social group (Reno et al., 1993). This is particularly true in uncertain situations—notably in crisis situations (Cialdini, 1988). In the floods in Grafton in 2001, for example, those who were uncertain about whether to evacuate or not looked to see what their neighbours were doing (Pfister, 2002). If their neighbours were not evacuating, they also failed to evacuate. In this way, non-compliance encourages further non-compliance.

Compliance can be increased by minimising the uncertainty, but primarily by emphasising that the social group's response is to comply.
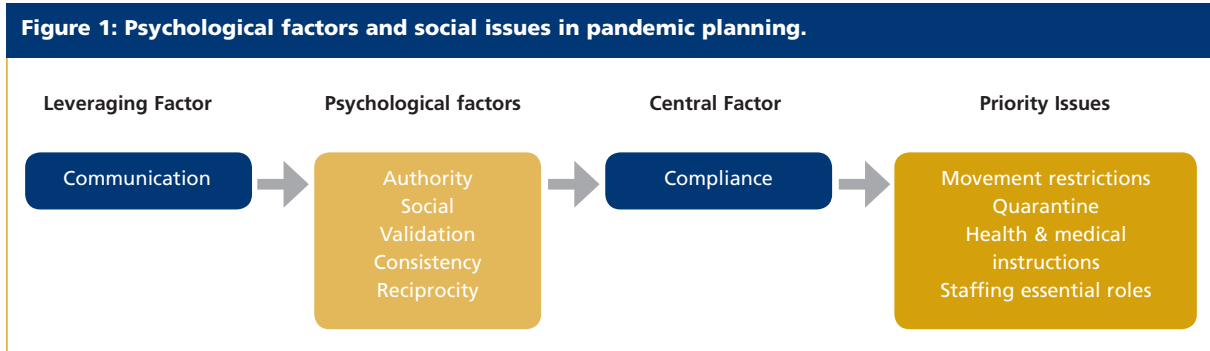
Consistency

People will behave consistently with their previous behaviour. For example, if they failed to evacuate for a previous flood (and there were no adverse consequences), it is likely that they will also not evacuate for a later flood. Thus the decision for non-compliance, if it does not result in bad outcomes, will encourage non-compliance to similar demands. This effect will occur even when the specific threat is greater, and the likelihood of negative outcomes larger, in the second incident. Consistency can also work to increase compliance, if the public's behaviour can be shaped. Cialdini and Goldstein (2004) describe the foot-in-the-door technique for enhancing compliance, which involves making a small request, obtaining compliance and then making a second, larger (related) request. Once the person has agreed to the first request, they are more likely to comply with the second (larger request). Turning this tendency into an action applicable to pandemic planning would require some creativity, however it may be possible to leverage the consistency bias in some situations.

Reciprocity

People feel obliged to repay others for what we have received from them (Cialdini, 1988, Gueguen and Pascual, 2003). One of the ways of encouraging compliance is to give something to the target, thus creating in them the obligation to give something in return. Medical workers in Taiwan, Singapore and China received bonuses and preferential treatment during the SARS crisis, specifically to encourage them to continue to work despite the threat to their person and family (McNeil, 2003, Wiskow, 2003). Reciprocity can also be activated using the door-in-the-face technique, which involves asking a large request then retreating to offer a smaller request (the intended request). Compliance is explained by the person's feeling of obligation to accept the smaller request as reciprocation for the requester's concession. This has been found to have a strong effect on behaviour, even in naturalistic settings (Pascual and Gueguen, 2006).

Communication

The primary leveraging/driving factor that government bodies will have to encourage compliance is communication. Effective communication with the public is essential for ensuring compliance with instructions given and restrictions imposed during a response. To foster trust of authorities, effective

Figure 1: Psychological factors and social issues in pandemic planning.

Leveraging Factor	Psychological factors	Central Factor	Priority Issues
Communication	Authority Social Validation Consistency Reciprocity	Compliance	Movement restrictions Quarantine Health & medical instructions Staffing essential roles

communication is important before, during and after a pandemic. Figure 1 shows a conceptualisation of the role of communication and compliance.

While it is necessary to find a balance between informative communication and panic-inducing communication (Enemark, 2006), the public will demand timely and comprehensive information regarding what is happening, what they need to do—and why (Donner et al., 2007, Mileti and Sorensen, 1990). If people are less uncertain about what is happening and what they need to do, they are less likely to turn to others to get a sense of the appropriate behaviour (i.e. less need for social validation). Adequate information can be used to discriminate the current situation from previous ones, undermining the consistency effect where it encourages non-compliance. Similarly, if information is not complete, the public may lose faith in the government as an authority (Enemark, 2006, Penfield and Larkin, 2006) and rely on rumour systems and unofficial media reports. Indeed, Kotalik (2005) argues that a concern for public panic is an insufficient reason for failing to communicate unfolding events to the public.

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A quarantine isolation unit.

By better understanding the drivers of compliance, communication strategies can be devised to benefit the management plans of government agencies. Communication is not the only option available, although it may be the simplest to apply with limited planning. Communication will be the primary factor deciding the success of using authority and social validation to encourage compliance. In the factors of consistency and reciprocity there remains greater potential for government agencies to implement creative crisis response strategies designed to maximise compliance.

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