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CONTENTS

ABSTRACT

This review and annotated bibliography formed the first phase of a study (Gray, et al., In press) undertaken as part of an Influenza A (H1N1) Rapid Response Research Initiative. It was launched in partnership with the Health Research Council of New Zealand (HRC) and the Ministry of Health in order to support research to inform and advance understanding of the response to the 2009 Influenza A (H1N1) pandemic, the attitudes to subsequent health threats and the effectiveness of the public health initiatives. The primary objective of the study was to rapidly provide health authorities with practical information to guide the development and delivery of key health messages for H1N1 and other health campaigns.

KEYWORDS

1.0   INTRODUCTION AND LITERATURE REVIEW KEY FINDINGS

This review and annotated bibliography formed the first phase of a study (Gray, et al., In press) undertaken as part of an Influenza A (H1N1) Rapid Response Research Initiative. It was launched in partnership with the Health Research Council of New Zealand (HRC) and the Ministry of Health in order to support research to inform and advance understanding of the response to the 2009 Influenza A (H1N1) pandemic, the attitudes to subsequent health threats and the effectiveness of the public health initiatives. The primary objective of the study was to rapidly provide health authorities with practical information to guide the development and delivery of key health messages for H1N1 and other health campaigns (Gray, et al., In Press).

The literature reviewed encompassed the most recent studies and evaluations of pandemic preparedness, public perceptions of the risk of a flu outbreak and motivations for behaviour change. The literature included quantitative and qualitative research which was conducted in several countries: The United States, UK, Singapore, Australia and New Zealand and employed questionnaires, surveys and focus groups. This review evaluated theories and models and a summary of key findings follows.

1.1   Summary of key findings

1.1.1   Saliency and complacency

- Most people are neither concerned nor well prepared for a pandemic;
- When events do not turn out to be the predicted catastrophe, complacency becomes a real issue for emergency planners – as the media reporting about it declines, in the minds of the public, so does the salience and the threat. This complacency is sometimes called 'warning fatigue';
- A real problem for government and health agencies is sustaining public awareness and alertness when people only want to know about a threat when it is imminent;
- There is a general belief that New Zealand, protected by factors such as geographic isolation, is a relatively safe place to be in the event of a pandemic.

(See: Bürgelt, Paton, & Johnston, 2009; Janssen et al., 2006; Mackie, 2009; Menon 2008.)

1.1.2   Media sensationalism

- There is widespread scepticism about the veracity of health risk warnings (because of past 'non-events' and perceived vested interests by drug companies);
- Media are seen as sensationalist and untrustworthy, amplifying the risk where some relatively low risk concerns become the focus at the expense of other more serious risks.
- Participants who received little or no information about protective actions they could take, expressed helplessness and frustration;
- The unpredictability of pandemics, the strong negative language and the perceived contradictions between media reports of stockpiling medicines and expected shortages exacerbate negative reactions;
- A belief that a pandemic had been exaggerated is associated with a lower likelihood of behaviour change.

(See: Glik, 2007; Janssen et al., 2006; May 2005; Rubin et al., 2009.)

1.1.3   Determinants of action

Information alone is insufficient to motivate people to prepare. Undertaking preventive, avoidant, and management behaviours is associated with:

- Perceptions of the risk as relevant, immediate and severe;
- A belief that an outbreak will continue for a long time;
- Higher levels of general anxiety;
- Confidence in the efficacy of the preventive and avoidant behaviours;
- Having a high level of trust inemergency management agencies, community participation and satisfaction with the communications received;
- Absence of perceived or actual economic impact;
- Being older, female, more educated, and from an ethnic minority group.

(See: Bish & Michie, 2010; Bürgelt & Paton, 2008; Paton & Johnston, 2009; Gupta et al., 2006; Janssen et al., 2006; Reissman et al., 2006; Rubin et al., 2009; Vaughan & Tinker, 2009.)

1.1.4   Trust

- Trust is especially important in situations which are uncertain. It affects how likely it is that risk assessments from authorities are deemed to be credible and this belief in turn can influence behaviour;
- Governments are seen as the experts, with responsibility for protecting the public;
- Lack of trust in authorities may affect how people process and interpret health messages and advice, increase concerns and interfere with the way that the risk messages are interpreted and acted on.

(See: Bish & Michie, 2010; Petts, Horlick-Jones & Murdock, 2001; Vaughan & Tinker, 2009.)

1.1.5   Ideal messages

Recommendations about what makes an effective or 'ideal' public information campaign include:

- Communication must be concise, timely, strategic, clear and consistent;
- People prefer risk messages that empower with information about actions that could reduce risk, symptoms that could be expected and how to mitigate consequences;
- Transparency and honest communication where both good and bad news is conveyed – this empowers the public to make their own decision;
- Messages that frame the risk positively (that is, if various actions are taken, the public can control the outcome) which reassures, recognises public fears, acknowledges the gravity and displays honesty;
- Messages need to encourage prevention, promote containment and foster resilience and recovery;
- A 'one size fits all' pandemic warning message will not work – agencies need to acknowledge the public are diverse and need personalised, targeted messages;
- The communication process needs input from a range of experts, employing a multidisciplinary approach.

(See: Bürgelt, Paton & Johnston, 2009; Fischhoff, 2005; Janssen et al., 2006; Mackie, 2009; Menon, 2008; Rubin et al., 2009; Tay et al., 2009; Vaughan & Tinker, 2009.)

1.1.6   Timing

- 'Just-in-time' messages were preferred over too many early warnings;
- However, occasional media reports are insufficient to adequately inform individuals about pandemic preparedness, and interventions are needed *before* a pandemic occurs to improve public awareness, promote effective coping responses and help in the successful implementation of plans;
- Regular exercises need to be conducted by key agencies, including coordinated responses within *and* between communities.

(See: Janssen et al., 2006; Reissman et al., 2006; Watkins et al., 2007.)

1.1.7   Other

- Small to medium businesses are not well prepared – governments need to communicate more with this sector of business (Schneider, 2009: Watkins et al., 2007);
- Once the pandemic has arrived, surveillance is crucial which would be combined with good scientific information and operational research (Tay et al., 2009).

2.0   LITERATURE REVIEW

Alan, M. F. (2009). Influenza A (H1N1) pandemic: True or false alarm. *Journal of Epidemiology and Community Health, 63*, 862.

This letter to the editor Alan argues that the World Health Organization (WHO) response to the possible H1N1 outbreak with the raising of alert levels from 3 to 6 in less than a month, combined with the mass media overestimating and exaggerating, provoked unnecessary alarm rather than promoting calm and conveying a sense of safety. He states that rather than representing the virus as infectious (with rapid and sustained community-level outbreaks) it was inaccurately depicted as novel and virulent.. He points out that, despite reports to the contrary, seasonal vaccines and/or seasonal influenza infections have not shown to protect against H1N1, although those aged 60 and over seem to have some immunity. He also critiques the recommendations for widespread use of antiviral drugs, which saw the price of Oseltamivir increase rapidly.

Bish, A. & Michie, S. (2010). Demographic and attitudinal determinants of protective behaviours during a pandemic: A review. *British Journal of Health Psychology, 29*, 1-27.

In order to better understand protective behaviours during a pandemic, this review set out to identify key attitudinal and demographic determinants of preventative, avoidant and management of illness behaviours. The objective was to better understand these behaviours in order to inform communications and interventions during the 2009 and subsequent swine flu pandemics. Stating that it is important to understand factors that influence how people behave when faced with a potential disease outbreak (in order to decrease the likelihood of disease infection, transmission and severity), this review evaluated twenty-six papers detailing studies carried out in different countries with differing populations. The disease studies were all respiratory.

The preventative behaviours were categorized as hygiene, mask-wearing and uptake of vaccinations, and avoidant behaviours including social distancing (avoiding crowds, public transport) and observing quarantine recommendations. Management of disease behaviours included taking antiviral medications, and asking advice from recognized professionals, also via the internet or health help lines. These findings are consistent with theories offered by health behaviour, however this review suggested that intervention and communication strategies focus on particular demographic groups, to raise awareness of perceived threat, and confidence and belief in recommended stated protective measures. A suggestion for further research was to develop predictive frameworks using a mixed methods approach as the most useful approach to forecasting health behaviour during a pandemic.

Blendon, J. R., Koonin, L. M., Benson, J. M., Cetron, M. S., Pollard, W. E., Mitchell, E. W., Weldon, K. J., & Herrmann, M. J. (2008). Public response to community mitigation measures for pandemic influenza. *Emerging Infectious Diseases*, 14 (5), 778-786.

This paper outlines research conducted by the Harvard School of Public Health that evaluated the public's response to community mitigation interventions for a severe outbreak of pandemic influenza. The interventions included isolation and treatment, voluntary home quarantine, the closing of schools and social distancing in the work place. The authors state that a high level of public cooperation would be needed for these interventions to be successful.

The study concentrated on the economic imperatives that drove decisions about the sorts of action that could be taken. The representative survey consisted of 85 questions that were asked of 1,697 adults (of whom 821 had children) and began with a cue statement that asked them 'to imagine that there was a severe outbreak of pandemic flu in their community'. The questions broadly covered six areas of concern: familiarity with pandemic influenza, ability to stay home, stay home from work, to cooperate with other recommendations, school closings and problems responding to other recommendations.

The study found that if community mitigation measures were instituted for a severe influenza pandemic, most respondents would comply with recommendations, but would be challenged to do so if their income was severely compromised. Resilience during home quarantine would depend on the level on preparedness, and many had not prepared at all for a public health emergency. The closing of schools would impact on care-givers required to stay home also, resulting in severe income loss for families. The authors argue that ways to mitigate secondary consequences such as income loss need to be included in community mitigation measures, which would enhance adherence to public health recommendations and that coordinated community responses within and between communities will be key.

Briggs, C. L., & Nichter, M. (2009). Biocommunicability and the biopolitics of pandemic threats, *Medical Anthropology, 28* (3), 189-198.

From a discourse analytic approach, this paper comments on the value of a 'medical anthropology of epidemics' to provide insights into factors that contribute to the ongoing production of knowledge about epidemics. It examines how competing accounts circulate and interact, and who the stakeholders in the process may be. Public health official and news reporters alike are identified as conduits for knowledge production where the politics of global health citizenship are debated. Responsibility for 'balancing' news about health threats is attributed to journalists, who need to mitigate the hype and conspiracy theories that often

surround stories about pandemics. Focusing on how knowledge can change audiences, the authors ask 'why is health news so closely tied to health-related advertising', and 'how do communicable models differ between media genres, countries and over time?' They focus on the role of the Internet commenting that, despite having the potential to overwhelm it can provide a surveillance function, making it more difficult for countries to hide potentially devastating outbreaks. They conclude that there is a need to develop a framework to study how stories are created, made credible and how the story-production process shapes assumptions about biomedical knowledge.

Bürgelt, P. T., Paton, D., & Johnston, D. M. (2009). *Factors and processes influencing individual and community preparedness for a pandemic outbreak in New Zealand.* **GNS Science Report, 2009/09.**

This report begins by stating that for risk management information to be effective, it is necessary to understand how people interpret information, and how individual and environmental factors influence these interpretations. Between 2007 and 2008, Bürgelt et al. conducted eleven semi-structured interviews and found that although the preparedness varied widely between participants, they generally prepared in the following five ways:
- Stockpiling food and water;
- Finding ways to mitigate loss of mains electricity;
- Understanding about infection control and stockpiling first aid supplies;
- Acquiring camping equipment;
- Making sure they had medication specific for influenza such as Tamiflu.

In terms of risk communication, the participants thought the following would be useful:
- Positively-framed messages;
- Communicating messages in appropriate language;
- Recommendations for actions that could mitigate consequences;
- Presenting information with honesty and integrity through a variety of media from brochures and letterbox drops, to TV, radio and websites (internet).

Key findings included:
- Preparedness takes time;
- Decision to act or not to act (on advice, warnings) depends on how relevant and immediate people perceive the risk to be;
- People's level of preparedness depends on their perception of the risk as high or low;
- Saliency is relevant – is it a 'hot topic'?;
- General belief that New Zealand agencies will manage a pandemic well and that New Zealand is a relatively safe place to be in the event of a pandemic. However, there was also a lack of trust in information providers as well doubt that the health system would cope;
- Economic pressures to stay at work instead of staying at home as recommended as a concern. However, the participants recognised that isolation was a vital response strategy.

A key recommendation from the authors was that as New Zealand society is very diverse, differing strategies would be needed to communicate the threat of a pandemic effectively.

Fischhoff, B. (2005). Scientifically sound pandemic risk communication. Presented to the House Science Committee Briefing: Gaps in the National Flu Preparedness Plan: Social Science Planning and Response. In D. Kamien (ed.). *Risk perception and communication. Handbook of Terrorism and Counter-terrorism* **(p. 463-492). New York: McGraw-Hill.**

This paper identified patterns of behavioural responses to risks (such as pandemics) and suggested that these responses can be predicted. Observations include:
1. People want the truth, even if it is worrisome, so honesty is crucial;
2. People can absorb only a small amount of information at a time so risk communication must identify the most critical facts;
3. People have difficulty understanding some kinds of information (e.g. virulence versus transmissibility), so communication must take this into account;
4. Emotions, even as a small effect can cloud people's decision making, so communicators must treat audiences respectfully[1] ;
5. Communications campaigns need to be systematically evaluated *before* being implemented.

Communication process needs input from a range of experts, including public health, risk and decision analysts who can identify information needed for diverse audiences (elderly, children, those with chronic health problems), psychologists and communication specialists. They argue that any risk communication strategy should include:
1. Acknowledging the gravity;
2. Recognising the public's concerns, emotions and efforts;
3. Reassuring the audience;
4. Expressing a coherent and consistent communication philosophy;
5. Providing quantitative risk estimates;
6. Providing analyses of possible protective actions;
7. Leading by example;
8. Committing to earning and keeping public trust.

Gerrard, M., Gibbons, F. X., & Reis-Bergan, M. (1999). The effect of risk communication on risk perceptions: The significance of individual differences. *Journal of the National Cancer Institute Monographs*, *25*, **94-100.**

This paper examines the evidence supporting the view that individuals will be more capable of making important decisions about risk behaviours if they are given more knowledge about those risks and the consequences. Little is known about the causal links between risk communication and behaviour change, but it is widely accepted that vulnerability is the major motivational force behind precautionary behaviour. Optimistic bias is examined as a possible predictor of reluctance to change behaviour, but was found to be tempered by reality; this is not to say that personality traits influence responses to risk - they do. For example high self-esteem is correlated to high defensiveness when unwise behaviour is implicated.

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[1] Maybe Sandman's concept of 'outrage' is applicable here. Sandman, P. M. (1993). Responding to community outrage: Effective strategies for effective risk communication. Virginia: American Industrial Hygiene Association.

Behaviour change was found to be linked to positive outcome expectancy, in that risk information will lead to behaviour change (or intention towards) only when it is accompanied by belief that the problem is severe and the behaviour change will be effective. The authors suggest that rather than asking 'whether risk information is effective in altering risk behaviour', the question should be 'what are the conditions under which risk information is most effective in moving people towards behaviour change'?

Glik, D. C (2007). Risk communication for public health emergencies. *Annual Review of Public Health, 28*, 33-54.

In this paper work is reviewed from four different disciplines that inform crisis risk communications: environmental risk communication, disaster management, health promotion and communication and media and communication. Glik distinguishes between risk communication and crisis risk communication and maintains that the latter presumes an emergency, and should be communication that is timely, relevant, reassuring and give people hope. Elements of a crisis condition combine unexpectedness, high levels of threat, a stressed population and media looking for breaking news stories, so the communication needs to contain elements of trust, credibility, honesty, transparency and accountability. Of particular interest to Glik was the overview of the media's contribution in times of health crises, and the author comments that it appears that the media is a powerful factor in how the public respond, often mixing truth with exaggeration. The meaning construction of the press lead people to act on, not what is truly taking pace, but what they *think* is taking place. Risk is not seen as an objective hazard, threat or danger, but as one that is mediated through cultural and social processes. Message framing is also identified as key, meaning that different presentations of the same information can elicit different responses. Glik also credits the media with amplifying the risk perceptions, where some relatively low risk concerns become a focus at the expense of other more serious risks; in other words the risk communicated may not be an accurate reflection of the true risks.

The bibliography of this paper was particularly relevant and extensive.

Goodwin, R., Haque, D. S., Myers, L. & Neto, F. (2010). Initial psychological responses to swine flu. *BMC Infectious Diseases*, *9*, 166-171.

This paper examined the behavioural and attitudinal responses towards to the H1N1 virus (swine flu) in the six days in early 2009 following the raising, by the World Health Organization, of the pandemic alert level to 5. Using an internet and paper-based questionnaire, 328 respondents from Malaysia and Europe detailed attitudes to preparedness, risk beliefs, vaccination effectiveness and changes in pork consumption, and were evaluated for indicators of anxiety. Results showed that there were regional differences in anxiety, with family and friends reinforcing anxiety levels. Particular groups were shown to be more at risk (homosexuals, prostitutes, the homeless) possibly because of potential prejudice. Europeans needed more information than Malaysians about the protection offered by the flu vaccination and also underestimated the mortality of the seasonal flu. A third of respondents indicated intentions to use the public transport less and also to purchase emergency supplies (although few had done so at the time of the survey). Hygiene and social distancing were seen as the main ways of protecting themselves, and most had continued to buy and eat pork. Because of the recent bird flu scare, there was high awareness and anxiety about the new influenza, which, along with cultural anxiety, was seen as the greatest predictor of behavioural responses to a pandemic influenza.

Gupta, R. K., Toby, M., Bandopadhyay, G., Cooke, M., Gelb, D., & Nguyen-Van-Tam, J. S (2006). Public understanding of pandemic influenza, United Kingdom. *Emerging Infectious Diseases, 12* (19), 1620-1621.

This letter to the editor suggests that issues highlighted from the 1918 -1920 pandemic and from the SARS outbreak include public compliance, understanding and perceptions of uncontrollability. The authors argue that little attention has been paid to public knowledge about the threat of pandemics and that in order to optimise public education strategies, this research is vital. They reference a survey carried out in the UK to 'identify public knowledge about pandemic influenza, awareness of its potential effects and willingness to follow advice about public health measures' (p. 1620). Participants were approached at random in public places, and using a structured interview of 20 questions, were asked their opinion about a range of issues, including the likelihood of a threat, problems such as health-care and infrastructure services and sources of information about influenza. The results were that the public wanted symptom details about influenza the most, and cited television as their preferred means of receiving information during a pandemic. 97% would wash hands 5 times a day if requested and 86% were happy to stay at home or away from public gatherings. However, only 61% said they'd stay away from work. Older adults were more aware than younger ones, and economic concerns seemed to determine decisions around avoiding the flu.

Hinyard, L. J & Kreuter, M. W. (2006). Using narrative communication as a tool for health behaviour change: a conceptual, theoretical, and empirical overview. *Health Education and Behavior, 20* (10), 1-16.

The authors in health communication, where the objective is to motivate and support behaviour change, narrative communication is promoted as an important tool. Narrative effects which incorporate storytelling, testimonials and entertainment education are posited as being able to achieve the same outcomes as more theoretically-based initiatives. Narrative 'ways of knowing' can include gripping drama, historical accounts, personal experiences and faith and religion and these exemplars can be further defined, for example identification of the story paradigm as having five types: official, invented, firsthand, second-hand and culturally common stories.

At the heart of the narrative 'tool' is the principle that 'we construct and tell stories, in part, to teach ourselves what we know and what we think', (p. 2) which involves a cognitive process of storing and retrieving [stories] from memory. Narrative effect research has utilized psychological models of information processing including the elaboration likelihood model (where processing is central and peripheral) and the heuristic systematic model. Both these models suggest that information will be processed effectively even when motivation or ability to process messages are low. In social cognitive theory, behavioural modelling is central to observational learning, a tenet which has been demonstrated conclusively in reinforcing desired behaviour through daily soap operas. Personal experience narratives have been used to increase self efficacy in breast-cancer awareness programmes where cancer survivors have shared their experiences. Conversational narrative has been found to be effective, however in terms of persuasion, a statistical evidence approach has been found to achieve similar results.

The authors call for more research that combines both narrative and statistical approaches to promote adoption or maintenance of health behaviours to address issues of audience,

threshold, perspective and the wide variety of available media. They conclude that narrative approaches can counter the more quantitative approaches that have, to date, dominated health communication, and may be most effective when communicating with sub-groups and populations which have a strong oral tradition.

Janssen, A. P., Tardif, R. R., Landry, S. R. & Warner, J. E. (2006). "Why tell me now". The public and healthcare providers weigh in on pandemic influenza messages. *Journal of Health Management Practice, 12* (4), 388-394.

This study was conducted in four cities in four regions of the United States: New York City, Wichita, Portland and San Francisco. Focus groups and interviews with healthcare providers provided the basis for research on what types of messages about pandemic flu was most well understood and used by the public and healthcare providers. Fourteen questions were devised to explore public understanding of influenza pandemic issues and concerns which included:

- What is an influenza pandemic?
- If the pandemic comes to the United States, who is likely to get it first?
- Is the United States prepared for a pandemic?
- What should people do in the event of a pandemic?
- Who should get pandemic influenza vaccines if there is not enough for everyone?

The analysis showed that participants and healthcare workers had a low awareness of the pandemic influenza generally, and that amongst healthcare workers, there was very little sense of urgency. Google was listed as a primary source of information. Amongst the public, the risk information was described as 'scary' and there was a strong desire to know about how to protect themselves and their families during influenza pandemic. Being able to act (once the pandemic had hit) provided a sense of relief that 'they could do something', however, when a pandemic was neither present nor imminent there was less interest in preventative action. A notable finding was that participants who received little or no information about protective actions they could take, expressed helplessness and frustration. The unpredictability of pandemics, the strong negative language (eg., catastrophic, severe) and the perceived contradictions between media reports of stockpiling medicines and expected shortages exacerbated these negative reactions. Information about signs and symptoms were beneficial to public understanding of the pandemic; however distinctions between vaccine and antivirals needed to be made clearer. A 'just in time' delivery of information was preferred by both groups who would rather avoid having to think about pandemic influenza unless they had to, or unless a pandemic was imminent. The authors' conclude that the lack of immediacy of an influenza pandemic is the biggest challenge facing health agencies wanting to warn a population, however opportunities to anticipate and prepare and to make the subject of pandemic influenza meaningful should not be ignored.

Leppin, A. (2009). Risk perceptions related to SARS and Avian Influenza: Theoretical foundations of current empirical research. *International Journal of. Behavioural Medicine, 16*, 7-29.

With the goal of providing recommendations for effective planning of public health control measures in the event of a pandemic, this paper reviewed twenty-eight empirical studies (published between 2003 and 2007) which examined the role of perception in evaluating risk from pandemic influenza. The authors observed that the majority of these studies were not model-based (being more 'pragmatic' rather than theory-based), and noted that the risk

perception paradigm to date, has been largely to investigate what characterizes risk in people's view. The resultant 'risk' has then been 'mapped' to differing hazards to define risk as 'unknown' (hazards which are new, unknown to science, whose effects are delayed) and 'dread' whose characteristics include uncontrollability, fatal and catastrophic. The social context of perception is explained as understanding risk, not from an individual perspective, but from a social, collective and cultural point of view; an especially relevant approach when examining the difference in risk perceptions between collectivist and individualistic cultures. The authors conclude that the concept of 'risk perception' is a loosely-defined label and that future studies need to carry out more theoretically directed research, in order to build a sound evidence base. Even so, they recommend that traditional public health containment strategies continue to form the basis for effective preparedness planning.

Mackie, B. (2009). *Health risk communication: Reporting of avian influenza in New Zealand newspapers 2002-2003.* A Master's Thesis, School of Social and Political Sciences, Canterbury University.

This thesis comprised of three approaches to understanding the avian influenza pandemic in the New Zealand context: it compared new Zealand newspaper reporting over a six year period about the avian influenza to a 2007 U.S study; it conducted a thematic analysis of 508 newspaper articles and conducted focus groups to evaluate how the media representation of the pandemic had impacted on the general public.

The results showed that there were close similarities between the New Zealand and U.S media reporting of the threatened H5N1 pandemic; the majority of articles were framed sensationally, with little contextual or self-efficacy information. The thematic analysis evidenced media templates, or established ways of talking about the issue, which included a 'closing of borders' rhetoric, an emphasis on bio-security and a high content (over 75%) of New Zealand-relevant stories. The focus group analysis highlighted three main ways that the participants talked about the risk of avian influenza: concerns about risk to themselves and family, the influence of the media and what they wanted from future media reporting, and an attitude of 'othering' or normative social distancing.

Implications and observations from this research were that participants considered themselves protected by factors such as the geographic location of New Zealand and the perceived preparedness of the various pandemic-preparedness agencies. This led to a feeling that personal preparedness was less of an imperative which was also exacerbated by a general scepticism, fuelled by sensational media reporting. Risk messages that empowered with information about actions that could be taken were a strong preference by the participants. The author suggests that rather than focus on the role of the media in risk communication, future research should concentrate on how the public conceptualise risk, construct it in times of crisis and evaluate their ability to control it.

May, T. (2005). Public communication, risk perception, and the viability of preventative vaccination against communicable diseases. *Bioethics*, *19* (4), 407-421.

This paper concentrates on the non-compliance of vaccination uptake in children, but has some interesting observations about the role of risk communication in public health interventions. the author states that 'rational' public behaviour can only be obtained through full and accurate communication about risks and benefits, and that 'irrational' behaviour threatens the effectiveness of health programmes. Furthermore, that irrational behaviour is

tied to public perceptions which are created by media portrayals of health risks. The author goes further and argues that permeating the (U.S.) public health system is a fundamental failure of public communication, and that the media present distorted views of the world that increase 'false expectations' and 'undesirable behaviours'. In short, media portrayals of a threat can inadvertently change the basic dimensions of a threat.

The paper includes a discussion of the differing roles of scientist and journalists and an in-depth discussion about the efficacy of vaccinations. May lays the responsibility for appropriate public reaction to a health threat squarely at the feet of the media.
It should be noted that this paper takes a view of the public as 'passive recipients of information', a notion that has been comprehensively contested and critiqued.

Any further reading on this subject can be found in a wide array of 'media and the public' literature, for example those of Maxwell McCombs, Dorothy Nelkin, Sharon Dunwoody and Baruk Fischhoff.

McPhail, T. (2009). The politics of bird flu: the battle over viral samples and China's role in global public health. *Journal of Language and Politics, 8* (3), 456-475.

Focusing on China and upon issues of cooperation with the World Health Organization during the outbreak of the avian influenza (H5N1), this essay is a comprehensive commentary on how politics and health are inexorably intertwined. It covered the period from early 2005 to end of 2006 using formal written accounts from articles printed in newspapers and on the internet, as well as evaluations from informal interviews and conversation. McPhail argues that the bird flu virus came to be conceptualized as largely 'Chinese' virus; it was transformed from a series of localized outbreaks into an imminent future pandemic, a 'diplomatic problem with a clear lineage (Chinese or Asian)' which had much wider political and social implications. In terms of public health infrastructures, a 'health diplomacy' which includes the sharing of viral samples and timely case reporting, is seen as part of the political nature of disease prevention which reveals differences between the East and West. Citing numerous examples, this essay details how the boundaries between public health and the state, traditionally thought to be clearly demarcated, have become blurred, resulting in a reversed 'sphere of influence'. McPhail states that potential pandemics don't happen in a biological vacuum, outside of their social and political contexts. Whereas science had always seemed to influence public health and policy, politics has increasingly informed public health often constraining scientific research.

Menon, K. U. (2008). Risk communications: In search of a pandemic. *Annals Academy of Medicine Singapore, 37* (6), 525-534.

Singapore is a particularly useful case study, as its location on key air and shipping routes and its geographical proximity to countries (identified as 'hotspots' for human deaths from avian flu) make it a uniquely vulnerable country. Menon reflects on the lessons learned from the avian flu (H5N1) pandemic, including the difficult task that the Singaporean government had of sustaining public awareness and alertness in the face of ongoing uncertainty. It is observed that during the pandemic, the Government tried to raise the alarm whilst attempting to calm its citizen's fears, a strategy that was both reassuring yet disempowering at the same time. The author states that the Singaporeans had a seemingly high reliance on the government to manage all stages of the crisis, (which it had done very well during the 2003 SARS outbreak). Dr Ali Shan Khan, a disease expert from the US Centres for Disease

Control and prevention said "I can't think of anything that Singapore could have done better. Based on the knowledge they had at any given time, they made the right set of decisions".

Lessons learned from this crisis were articulated as follows:
• Use public education, address public concerns and fears;
• Maintain public morale, confidence and support for government initiatives;
• Reassure the public about the government's commitment to their health, welfare and safety and its ability to cope with this crisis and future outbreaks;
• Personal and community responsibility is prescribed as staying at home, avoid public places.

In terms of future effective health risk communication, it was recognised that the following was crucial:
• Decisive leadership;
• Transparency and honest communication where both good and bad news is conveyed – this empowers the public to make their own decisions;
• Employing a multidisciplinary approach with no boundaries between medicine and technology.

The three main objectives of the subsequent Ministry of Health's (MOH) Pandemic Response Plan were to maintain essential services in order to limit social and economic disruptions reduce morbidity and mortality and slow down the spread of the influenza. The Singaporean MOH developed a colour-coded Disease Outbreak Response System (DORS) which would be the framework to respond to any outbreak and ranged from GREEN (neutral, before or after a pandemic) through to BLACK, when mortality and morbidity levels are high and emergency measure would be called for (p. 529). A host of information literature was made available to the public from internet sites and online polls to mass circulated handbooks, as well as using TV in the forms of ad campaigns, advertorials and a 3-part documentary. Regular exercises conducted by key agencies coordinated emergency preparations; the largest one involved 18 000 government personnel enacting different scenarios, and another one by the Ministry of Trade and Industry encouraged people to stock up on 2 weeks supply of non-perishable goods in the event of an emergency.

In the hospitals, practical measures were put in place: basic hygiene, more high-tech isolation rooms, redesigned traffic flow and curbing the numbers of exit and entry points to have better control of visitor movements The Infrared Fever Screening System was designed during the SARS outbreak, and added invaluable capacity to the healthcare response system.

In the event of a pandemic the government planned to set up a central database to keep track of patients who had received antivirals, and a decision was made not to give those to healthy patients who wanted to use it as a preventative. However, the author notes that despite all these preparations, and because the avian flu did not turn out to be the predicted catastrophe, complacency is a real issue for emergency planners – as the media reporting about it declines, in the minds of the public, so does the salience and the threat. Therefore, the immediate challenge facing public health communications agencies is how to sustain public interest and awareness over a protracted period.

Paton, D. (2008). *Modelling societal resilience to pandemic hazards in Auckland.* **GNS Science Report 2008/13 23.**

Paton defines a resilient community as one that uses individual, collective and institutional resources to cope with and adapt to the problems that arise as a result of a hazard event such as a pandemic. The author developed a model to test resilience in a community during a hazard event (volcanic eruption) and then tested it on another hazard (pandemic) for generalisability.

When the model was applied to pandemic preparedness and tested community resilience, Paton found that community participation and trust in emergency management agencies played significant roles in increasing community preparedness, willingness to take responsibility for own safety, risk acceptance and satisfaction with communication. He found that information that gives people knowledge about the hazard increases their belief that they will be able to cope in an emergency and negative outcome expectancy (for example, that the pandemic consequences would be so severe as to render personal actions futile), needs to be addressed in risk management programmes. Paton notes that the quality of the relationship between authorities and the community has a direct effect on the uptake of risk messages, and trust in the message providers. Trust is not something that can be generated overnight; it has to be built into the community long before a hazard event occurs.

Paton, D., Parkes, B., Daly, M. & Smith, L. (2008). Fighting the flu: Developing sustained community resilience and preparedness. *Health Promotion Practice,* **9 (4), 45S-53S.**

The authors suggest that 'decisions to act' are a reflection of how people interpret information and make it meaningful. They contend that provision of information alone (to the public) is insufficient to motivate people to prepare, and that people overestimated existing preparedness, the time it may take to prepare and that others were better prepared for risk (compared to themselves). When faced with uncertainty, people turn to others to reduce their uncertainty and guide their preparation; often these are family and friends, but also health agencies with whom they have a direct relationship.

'Costs' and 'benefits' and expected outcome are all important issues that influence people when making a decision about whether to act (on advice about a pandemic). For example, people don't act if they perceive the outcome to be negative (i.e. the costs outweigh the benefits). Conversely, if people think that the benefits will outweigh the costs, (i.e. there is a positive outcome expectancy), they will be more likely to take action. The authors suggest there is a direct relationship between personal empowerment and trust in health agencies, and in terms of pandemic education, that community processes such as community forums and discussions could be useful. They argue that effective pandemic risk management will integrate communities, peoples and health agencies. 'Risk communication should provide information that helps people differentiate between uncontrollable causes and controllable consequences [and] it is particularly important that the media echo these sentiments' (p:8).

Rimer, B. K. & Kreuter, M. W. (2006). Advancing tailored health communication: A persuasive and message effects perspective. *Journal of Communication, 56.* **S184-S201**

This in-depth paper outlines the history of tailored health communication (THC) and by referencing several communication and psychology theories shows how it can be used to influence the 'behaviour change pathway'. THC is 'any combination of information and behaviour change strategies intended to influence one specific person based on information unique to that person', with the intended outcome to facilitate behaviour change. It is an assessment-based approach which has changed markedly from the uneconomical undifferentiated mass communication of the 1980's.

Distinct population groups (for example pregnant women, smokers, and blue-collar workers), can be targeted for health change, using principles of social marketing and informed by models such as the Health-Belief model and Transtheoretical model, (more commonly referred to as 'stages of change' or SOC) which recognizes an individual's readiness to adopt or modify health behaviours. By influencing steps on the 'pathway to change', THC recognises that different messages are needed for people in differing stages of readiness where the readiness process involves being aware of the problem, engaging in thinking about the problem, deciding whether or not to take action, taking action and then maintaining any changes that result.

Critiques have pointed out that behaviour prediction theories do not necessarily take into account message effects, which are influenced by many things; literacy, salience and gender for example. Credibility of message source is an important influence (in the uptake of recommended behaviour change) and the cost-effectiveness of THC campaigns needs to be considered alongside the alternative non-tailored options. Combinations of both approaches have resulted in changing health behaviour and more research that collaborates between behavioural and communication-scientists. This is recommended.

Reissman, D. B., Watson, P. J., Klomp, R. W., Tanielian, T. L. & Prior, S. D. (2006). Pandemic influenza preparedness: Adaptive responses to an evolving challenge. *Journal Homeland Security Emergency Management, 3*, **1-4.**

The authors of this substantial paper were interested in the psychological and social factors likely to influence human behaviour during a pandemic. Based on past experiences of public health crisis events, and using the term coined by Gladwell 'tipping point' (events, actions or perceptions that strongly influence psychological reactions or social behaviours at the population level), the authors make some assumptions about likely critical psychological and behavioural responses during a crisis: a massive surge on the medical system, low adherence to public health recommendations, grave consequences of individual decisions and health providers concerns about how their own risk would impact on care of patients.

Factors that were identified as influencing psychological and behavioural responses were: pre-existing knowledge, availability and accessibility of information, perception of equity, perceived trust in agencies and perceived or actual economic impact. 'Just-in-time' messaging that included technical terms, risks, health benefits and protective actions were seen as helping to align public perception with realistic assessments of pandemic threat. The paper reports that experts recommend four tasks to promote positive public health information:

- Maximise public trust and effectively communicate risk and health information;
- Maximise adaptive behaviour change;
- Reduce social and emotional deterioration and improve functioning;
- Support key personnel in critical infrastructure functions.

The authors conclude that all these measures need proper planning, coordination, collaboration, policy commitment and economic support at a government level before a pandemic is declared.

Rubin, G. J., Amlôt, R., Page, L. & Wessley, S. (2009). Public perception, anxiety, and behavioural change in relation to the swine flu outbreak: cross sectional telephone survey. *British Medical Journal, 339* **(2651), 1-8.**

This paper presents findings of collaborative research from senior faculty from Kings College London and research fellows from the Emergency Response Department in Wiltshire England. The study used telephone interviews to investigate whether perceptions of swine flu amongst 997 adults across England, Scotland and Wales predicted changes in behaviour (such as hand washing or social avoidance).

Results showed that behaviour change was correlated to perceptions of the flu as being severe, risk of catching it is high, outbreak will continue for a long time, authorities can be trusted, good information has been provided, people can control the risk of catching it and that specific behaviours can reduce the risk. Understandably, being uncertain about the outbreak and thinking it had been exaggerated were associated with a lower likelihood of change. The strongest predictor of change was ethnicity, with participants from ethnic minority groups being more likely to make recommended changes and carry out avoidance behaviours. The results support efforts to inform the public about specific actions that can reduce risk from swine flu, and also what the government is doing to plan and prepare. The issue of warning fatigue and the perception that the outbreak has been overhyped are issues the researchers see it as worth addressing. Public distrust in journalists and the sensationalising of health related stories is a further hindrance to taking the risk seriously and to undertaking precautionary measures.

The authors conclude that their results confirms what previous research showing that the public's first response, when faced with a novel threat is not to over-react and panic, rather the task of convincing the public the threat is real, that is the most challenging task for public health agencies. They recommend that an effective public awareness campaign should include clear consistent information, which focuses on practical actions people can do to reduce their risk, whilst engendering trust in the authorities by openly discussing the current level of knowledge, preparation and resources available to tackle the outbreak.

Schneider, R. (2009). H5N1 planning concerns for local governments. *Journal of Emergency Management, 7* **(1),65-70**.

This paper reviewed the threat that the H5N1 virus posed to local communities in the U.S and concluded that greater coordination with the private sector, improved public health surveillance efforts, planning for public education and greater attention to ethical issues should be key concerns for governmental preparedness planning. Key findings included:

- The world is much less 'self-sufficient' than in 1918 where there is more reliance on organisations and infrastructures, and dependence on income;
- Absenteeism a real issue, as it could lead to breakdown in supply chains;
- Small businesses shown to not be prepared/have a pandemic plan – need better coordination between public and private sectors. Need to know where to go to get information. Survey shows only 37 percent think that a public health crisis would affect their businesses;
- Results from American Public health Association survey (2007) show that only 14 percent of people surveyed had any kind of emergency supplies;
- Risk communication strategies seen as largely underdeveloped;
- Ethical concerns around allocation of resources need to be addressed.

Singer, M. (2009). Pathogens gone wild? Medical anthropology and the "swine flu" pandemic. *Medical Anthropology, 28* **(3), 199-206.**

Using the H1N1 (swine flu) as a reference, this paper asks what contribution medical anthropology can make to understanding disease outbreaks, and the resultant health and social consequences. Singer states that three responses are valid: field monitoring of the pandemic (as a bio-social phenomenon), assessment of its origins and the ongoing social influences and development of research-based and culturally-informed recommendations for public health strategies. The H1N1 pandemic is described as not only a medical pandemic but also as a social one; for example issues of stigmatization can often outweigh the biological impacts. The media are positioned as contributing to a 'geography of blame', and drug companies are equally held to account for seemingly profiting from health disasters. The author proposes that in times of a pandemic, it is more important to pinpoint social risk patterns than individual risk behaviours, and this is the contribution that medical anthropology can make.

Sorell, T., Draper, H., Damery, S. & Ives, J. (2009). Dunkirk spirit: Differences between United Kingdom and United States responses to pandemic influenza. *The American Journal of Bioethics, 9,* **21-22.**

This short paper built upon previous research in Michigan (US) and the West Midlands (UK) that investigated attitudes of employees towards working during an outbreak of pandemic influenza. Using data from focus group discussion which informed a survey, this study included both professional and non-professional healthcare workers. The results showed a 'Blitz' spirit was the most commonly agreed upon strategy, where people would pull together in a wartime-like solidarity, trusting the government and co-operating with state emergency efforts. Economic burdens of social distancing were a concern for almost half of the participants, with a focus on competing family and work needs, rather than being able to provide the necessities of life. Notions of obligation, willingness and ability informed attitudes and concerns.

Tay, J., Ng, Y. F., Cutter, J. & James, L. (2010). Influenza A (H1N1-2009) Pandemic in Singapore – Public Health Control Measures Implemented and Lessons Learnt. *Annual Academic Medical Singapore, 39*, 313-324.

This paper describes the public health measures implemented in Singapore to limit the spread of H1N1 and mitigate its social effects. Singapore's public health control measures were broadly divided into two phases: containment which included triage, admission and isolation of confirmed cases, and, after sustained community transmission, mitigation. This was where the only cases admitted to hospital were those clinically confirmed, and mild cases were handled in the community. The lessons learned were:

- Be prepared but retain flexibility;
- Surveillance is crucial combined with good scientific information and operational research;
- An integrated systems-level response is essential;
- Effective handling of manpower surges requires creative strategies;
- Communication must be concise, timely, strategic and clear.

Singapore's response, founded on the 2003 SARS epidemic, was a 'whole-of-government' approach towards pandemic planning. Collaborative efforts between the health sector, businesses, government agencies and members of the public were cited as being essential in ensuring the measures to control the spread of H5N1 were implemented efficiently and effectively so as to minimise the impact on the society and economy.

Vaughan, E., & Tinker, T. (2009). Effective health risk communications about pandemic influenza for vulnerable populations. *American Journal of Public Health, 99* (S2), S324-S332.

This paper is a result of observations from scientific studies and from deliberations of public health experts at a meeting convened by the Centres for Disease Control and Prevention, held on May 1 and 2 in 2008. According to the authors, an ideal pandemic communication, maximises the public's capacity to act as an effective partner with preparedness agencies, by encouraging prevention, promoting containment and fostering resilience and recovery. It also needs to facilitate anticipation of 'surprising' events and foster an environment of trust. The quality of the communication can be measured by how it meets the needs of the vulnerable populations, defined as those in the community with an increased potential for loss, and can be individuals, groups, communities or places. Geographic aspects of vulnerability can also help in pandemic planning in terms of resource allocation during an emerging event. The authors include a comprehensive list of factors affecting the acceptance of public health messages:

<u>Environmental</u> – biology, age, gender, immune status, inequities in resources, poverty, language barriers and low rates of literacy. Socio-cultural behaviours and access to health care were also listed as factors.

<u>Social and cultural characteristics</u> – immigrant and refugee community traditional practices, subgroup responses to infectious disease outbreaks such as gender roles, generational differences, religious beliefs and language preferences.

<u>Attitudes towards public health interventions</u>- including issues of vaccines (supply, access and effectiveness), social distancing (how to facilitate), personal protective equipment

(affordability, availability) and hygiene (how to define the concept over racial and ethnic populations. Economic concerns also affect hygiene considerations.

The authors also addressed the psychology of communication responses and provided a framework for communication preparedness and implementation. This excellent paper was very relevant to the current review and should be read in its entirety.

Watkins, R. E., Cooke, F. C., Donovan, R. J., MacIntyre, C. R., Itzwert, R. & Plant, A. J. (2007). Influenza pandemic preparedness: motivation for protection among small and medium business in Australia. *BMC Public Health*, 7 (157), 1-10.

This study investigated the association between individual perception and preparedness for pandemic influenza among small and medium business owners and managers. It found that beliefs about the severity of pandemic influenza and on the ability to respond were significant factors in predicting who had a plan to deal with pandemic influenza; the perception of risk from the flu was the most important predictor of both having considered the impact of, and identifying where to get help to prepare for a pandemic. Small and medium businesses were not well prepared for an influenza outbreak, and the authors suggest that future campaigns to educate businesses should emphasize the severity of the consequences to their business should a pandemic occur, but also, at the same time, reassure managers and owners that there are effective strategies that can be implemented to deal with a pandemic. They argue that occasional media reports are insufficient to adequately inform individuals about pandemic preparedness, and interventions are needed *before* a pandemic occurs to improve public awareness, promote effective coping responses and help in the successful implementation of pandemic plans.

Witte, K. & Allen, M. (2000). A Meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education and Behaviour*, 27, 591-615.

This comprehensive meta-analysis examined 100 articles about fear appeals began by stating that despite findings that show that persuasive messages that arouse fear motivates behaviour change across a variety of behaviours, health researchers and practitioners continue to contend that fear appeals backfire.

Three key independent variables were identified: fear, perceived threat and perceived efficacy. Strong fear appeals were shown to produce high levels of perceived severity and susceptibility, and were more persuasive than low or weak fear appeals; these combined with high self-efficacy messages produced the greatest behavioural change. However, strong fear appeals combined with low-efficacy messages produced the greatest level of defensive responses. In short, fear appears to be a great motivator as long as individuals believe they are able to protect themselves.

Wraith, C. & Stephenson, N. (2008). Risk, insurance, preparedness and the dis-appearance of the population: The case of pandemic influenza. *Health Sociology Review*, 18 (3), 217-344.

In this paper the threat of pandemic influenza is contextualised within the preparedness response of the Australian government. The authors state that Australia is considered to be very well prepared for a potential pandemic., however, the Australian public appear to have 'very little interest' (p:221) in the issue, therefore highlighting a gap between the governments

preparedness and the public's lack of concern. Influential literature on risk (Tulloch and Lupton, 2003. Joffe, 1999. Durodie, 2005), state that a generalised climate of isolation and insecurity and an erosion of social connectedness has lead to a greater need for authorities to be seen as the 'expert', to mitigate risk and to alleviate uncertainty and anxiety. The authors argue that the Australian government continues to situate infectious disease within its security agenda 'ensuring the safety and security of all Australians' (p:228) Seen through the 'lens' of insurance, the responsibility for securing the population (from the risk of a pandemic) through preventative interventions is seen as the governments'. An insurance approach to public health needs to imitate the post-war 'welfare-state' approach, where there is sustained investment into the welfare of the population. But the authors suggest that the governments focus on preparedness (infrastructure and systems) could have implications for the needs of the population in terms of inequality and poverty.

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4.0   ACKNOWLEDGEMENTS