Communicating to increase public uptake of pandemic flu vaccination in the UK: which messages work?

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Abstract

Background: Vaccination is considered the most effective preventive measure against influenza transmission, yet vaccination rates during the 2009/10 influenza A/H1N1 pandemic were low across the world, with the majority of people declining to receive the vaccine. Despite extensive research on the predictors of uptake of influenza vaccination, little research has focused on testing the effectiveness of evidence and theory-based messages.

Aims: To examine the persuasiveness of messages promoting vaccination and antiviral use either as health-enhancing or as risk-reducing, as well as messages which conveyed evidence-based information about the costs and benefits of vaccination, or which applied anticipated regret as a motivator for vaccine uptake.

Method: We conducted 11 focus groups with forty-one members of the general population in England including young and older adults, those with lower education, parents, and those with elevated health risk. The data were analysed using thematic analysis.

Results: The factual, evidence-based messages were well received with participants finding them the most convincing and useful, particularly where they gave cost-benefit comparisons. Health-enhancing messages were received with scepticism and concern that the messages were not honest about the potential lack of safety of vaccination. In contrast, risk-reduction messages were perceived as being more balanced and credible. Messages aiming to elicit feelings of anticipated regret for not getting vaccinated were generally perceived as patronising and unprofessional.

Conclusions: Vaccination messages should be kept brief, but convey balanced, evidence-based information, and be transparent in their communication of potential side-effects. The general public seem to prefer messages that are factual and emphasise the costs and benefits of vaccination, particularly with regards to vaccine safety.

Keywords: influenza; pandemic; risk communication; vaccination

1. Introduction

Influenza pandemics arise when little or no immunity to a new virus exists, leading to transmission and spread of disease (WHO, 2013) and creating levels of uncertainty and unpredictability that have the potential to severely impact populations worldwide (1, 2). Public health experts consider vaccination to be the most effective mechanism for minimising the impact of an influenza pandemic (3), but this relies on public engagement. In the United Kingdom, many people declined vaccination during the 2009/10 influenza A/H1N1 pandemic, even among specifically targeted patient groups (4) and healthcare workers (5, 6) with uptake ranging from 20.8% (the lowest), in those aged 16-25 years, to 48.2% (the highest), in those aged 60-65 years in a clinical risk group (4).

Research investigating psychological predictors of vaccination uptake found that uptake is associated with a history of previous vaccination for seasonal influenza (5, 7), perceiving the disease as more severe (8, 9) and the vaccine as effective and safe (5, 7). Factors reducing vaccination intentions include scepticism about the level of threat, not perceiving oneself to be at risk, especially if one is currently healthy, and concerns about vaccination safety and potential negative side-effects (10-14). Research suggests that these barriers might be addressed by emphasizing the positive benefits of vaccination (15, 16), while also allaying public concerns about vaccination safety and side-effects. To increase vaccination uptake during future pandemics, one way to communicate effectively with the public is to draw on relevant theories of risk communication pertaining to behaviour change. Given that the lay public relies on social trust to make decisions about risks and benefits particularly when they lack personal knowledge about a hazard (17), messages advocating vaccination could be made more transparent and thus trustworthy, e.g. by acknowledging uncertainty around the benefits of vaccination. Also, given that any situation involving risk can be 'framed' in two different but logically equivalent ways, e.g. lives *saved* vs. lives *lost*, attention should be paid to how the risk of pandemic influenza is communicated. Message framing can impact persuasiveness and thus risk perception, as highlighted by Prospect Theory (18), with gain-framed messages being more effective than loss-framed messages at encouraging prevention behaviours (19, 20).

One way to frame precautionary messages is to highlight the reduction of risk vs. the enhancement of benefits. The main aim of this study was to compare the persuasiveness of messages promoting vaccination as entailing health benefits (*health-enhancing*) versus those communicating vaccination as reducing risk of infection (*risk-reducing*). Messages conveying health enhancement were expected to be viewed more positively than messages presenting vaccination as a means of risk reduction (14). Additionally, we tested messages presenting evidence that the risk of harm from pandemic influenza is greater than the risk of vaccination side-effects by prompting people to imagine how they might feel if they refused vaccination and then became ill (*anticipated regret*), and presenting factual messages about the relative costs and benefits of vaccination of the A/H1N1 pandemic (*transparency*). It was expected that evoking anticipated regret may strengthen the message impact, in light of research showing that vaccination intentions tend to be stronger when failing to act is associated with negative emotions that people wish to avoid (27).

Additionally, we examined reactions to messages about antiviral medicines, as besides treatment, these can play a prophylactic role against pandemic influenza, yet little is known about public attitudes towards their use. During the A/H1N1 pandemic in 2009/10, Australian research participants were willing to take a full course of antiviral drugs if exposed to a person with pandemic influenza (21), while US pregnant and recently pregnant women participating in focus groups indicated being poorly informed about antivirals and concerned about using them in pregnancy (22). Recent research with the UK public has indicated that lay people knew little about influenza antivirals, confusing them with antibiotics, yet viewed antivirals advice as sensible and acceptable (14).

2. Methods

2.1 Design

Eleven focus groups (40-60 minutes) were conducted with 41 members of the UK general public between October 2014 and July 2015. We used maximum variation sampling to include participants from populations varying in their likelihood to suffer complications as a result of influenza infection, e.g. parents of babies, younger and older adults, to examine a variety of views on vaccination.. As we were particularly interested in assessing the impact of messages on increasing vaccination intentions amongst non-vaccinators, we recruited wherever possible participants who were not annual influenza vaccinators (80.5% of our sample). Given the large number of messages to be tested individually (*n*=23), we used small-sized focus groups to be able to gauge in-depth the participants' reasoning around the messages.

Recruitment was by email and paper adverts through the University of Southampton and community groups. Each participant received an information sheet explaining the study and that participation was both confidential and voluntary, and £10 for participating in the research. Written consent was obtained before any data collection and ethical approval was granted by the University of Southampton Ethics Committee.

2.2 Procedure

Participants were presented with a brief, hypothetical scenario describing what might happen during a pandemic influenza outbreak (Figure 1), including information on health consequences, impact and vaccination advice. This was based on existing work (14, 15), which involved extensive consultation with public health and primary care practitioners. Open questions elicited participants' initial reactions before a series of messages, each containing four statements, were shown (Table 1). Messages were designed for dissemination through Twitter and social media networks, as during the A/H1N1 influenza pandemic the public obtained information from social media as well as from official health sources (23). Two message sets covered vaccination, and two, antiviral medications, with messages framed both negatively (focus on risk-reduction) and positively (focus on health-enhancement), with order of message presentation altered for each focus group. Participants were shown two further message sets: one set of three emotion-focused messaged elicited anticipated regret and one set of

four factual messages provided cost-benefit information about the A/H1N1 vaccination. Positively- and negatively-framed messages were based on previous research showing that participants denied being at risk of infection, arguing that they were 'fit and healthy', with a strong immune system or 'healthy lifestyle' (14, 15). -The emotion-focused messages were developed based on the omission bias and anticipated regret literature: omission bias refers to perceiving the potential harm from action (e.g. vaccination) as more negative than the potential harm from inaction (e.g. not getting vaccinated) (24, 25); anticipated regret refers to the level of regret one expects to feel when choosing (or not) a particular course of action (26). The fact-based messages were designed to test whether transparent, evidence-based information could increase trust and vaccination intentions as suggested by earlier work (5). After each set of messages, the moderator (first or second author) asked a series of open questions about participants' thoughts, reactions, and feelings, about the messages. Demographic data were collected after each group.

2.3 Data analysis

Focus groups were digitally audio-recorded and transcribed verbatim. Inductive thematic analysis of each transcript was carried out (27), supported by use of QSR NVivo 10.0 software, and coded into emerging themes, which represented prevalent patterns of meaning within the dataset without these necessarily being highly frequent (28). Analysis was iterative, with two researchers independently reading and re-reading each transcript. Following consultation, the initial coding structure was revised to develop a consensus on the codes and themes. Coding followed the aims of the research, focusing on participants' reactions to each message set.

3. Results

Thirty-two (78%) women and nine (22%) men participated, with an age range of 19-77 and a median age of 33 (SD=15.9). Of the participants, 19.5% had regularly received the seasonal influenza vaccination since the A/H1N1 pandemic. Full demographic details are available in Table 2.

Results for vaccination and antiviral messages were combined due to similarity in participant responses; we highlight differences where present.

3.1 Positively framed, health-enhancing messages

Participants within each group had concerns that the health-enhancing messages (messages 1b-8b) down-played the severity of the situation, or expressed scepticism surrounding the validity of health-enhancing claims and the seemingly counter-intuitive message that a vaccine could boost the immune system. Such claims were seen as unfounded given the novelty of the vaccine. For most, scepticism stemmed from a belief that the messages were misleading, implying that only vaccination or antiviral treatment could improve health. Several participants mentioned other measures may also improve health and that further information was needed about how treatments worked:

> *'It'll prevent you from getting flu, but it's not going to prevent you from getting other infections, so it's kind of misleading.' (FG5, female, 20)*

Some participants expressed concerns that the messages seemed too "casual" or "relaxed" for a pandemic emergency, while others felt that the language and style of the messages seemed more appropriate for vitamin pills rather than vaccination or antiviral medication. For some, the messages came across as "pushy" or "intimidating". Several participants reported feeling that the messages were implying that their own natural defences or current health state were inadequate:

> *'It tells you that maybe your natural defences aren't good enough. I think mine are fine.' (FG3, male, 65)*

However, there were some who viewed the messages more positively, feeling that the statements would not cause alarm or overburden people with medical terminology. They liked how the language of the messages allowed for personal choice as the tone felt more advisory than threatening. Overall, participants felt that the messages could be improved through the inclusion of more evidence about effectiveness and the way treatments work.

3.2 Negatively framed, risk-reducing messages

Participants had mixed reactions to the risk-reducing messages (messages 1a-8a), i.e., some participants held ambivalent views on the four risk-reduction messages, liking some more than others. . However, feedback on the risk-reduction messages tended to be positive, particularly when compared with the health-enhancing ones. Messages were found to be clear and convincing, and written in sensible language that did not feel patronizing or threatening. Language such as 'reduces risk' increased the perceived accuracy and trustworthiness of the message by allowing room for the admission that vaccination or antiviral medications may not be 100% effective for all people, thus appearing more open and honest:

> *'The ones that say 'reduce the risk' are more convincing than the ones that say 'prevent'. Everybody's heard of having the flu jab and still getting ill afterwards, so it's more convincing.' (FG2, female, 30)*

Focusing on risk reduction provided participants with more information about the consequences of refusing vaccination, which they felt would help them to make a decision regarding treatment uptake. For others, the message that being vaccinated or taking antivirals would prevent the spread of illness to their family or colleagues was the most persuasive:

> *'…my concern is spreading it to my parents at some point because they're less likely to be able to fight it off successfully without complications.' (FG1, female, 30)*

Negative evaluations of the risk-reducing messages were less common, but were discussed by all groups and were more evident in relation to the antiviral messages than the vaccination messages. Several of the antiviral messages were aimed at those in a 'priority group', e.g. people with an underlying health condition (messages 5a & 8a), which some participants reported finding worrying as they did not know if this related to them, or because it sounded like special treatment being reserved for some groups.

3.3 Emotion-focused, anticipated regret messages

206 The message comparing the risk of experiencing vaccination side-effects to the risk of harm from
207 pandemic influenza (message 11) was the most popular as participants liked the way the message
208 showed two sides to the issue: acknowledging that vaccination side-effects are possible, yet weighing
209 these against the risk of contracting influenza:

210 *'That statement does say the risk of side-effects, but it says the risk of harm from flu is higher*
211 *than the risk of side-effects, which sort of minimises the possibility.' (FG3, female, 67)*

212 Although participants preferred the risk comparison message over others, many reported that they
213 only liked this section of the statement and would change or remove the section that explicitly
214 mentioned regret. Across all groups, participants largely disliked the use of the terms 'regret' and
215 'upset' within messages which they considered "unprofessional" and "less authoritative", and not
216 necessarily reflecting how they would respond emotionally:

217 *'I think [the statement] is a bit patronizing, I don't want to be told when I'm likely to feel upset*
218 *about something.' (FG7, female, 35)*

219 The majority of participants also disliked the message which mentioned a small risk of unknown, long-
220 term effects from vaccination (message 9), as this would provoke fear or alarm, reduce levels of trust,
221 and draw attention away from the positive aspects of vaccination. Participants generally reported that
222 they would like more detailed information about potential side-effects, although a couple mentioned
223 finding this unnecessary as it could make vaccination sound "too risky". In addition, participants
224 mentioned that the most trusted and credible information source during a pandemic would be health
225 authorities such as the UK's Department of Health, and that they would not expect to receive these
226 emotion-focused messages from professional sources.

227 *3.4 Fact-focused messages*

228 Balanced messages presenting the risks and benefits of the past A/H1N1 pandemic were generally
229 well received due to their inclusion of factual information (messages 12-15), as the facts and numbers
230 made the messages more striking and convincing, particularly as it appeared that they were providing

231 "evidence" and not just unsubstantiated "advice". Several participants spoke about preferring these
232 messages to others as the amount of information included enabled them to make their own decision
233 about vaccination or treatment:

234 *'They don't feel manipulative. It feels just like you're being sent information for you to be able*
235 *to make your own decision.' (FG7, male, 36)*

236 The statistical information gave participants a reference point from which to make more meaningful
237 judgements about the risk and severity of both the pandemic threat and the vaccination. In addition,
238 several participants felt that the messages were made more compelling by focusing on the impact of
239 the A/H1N1 pandemic on children, as they could have the potential to invoke stronger emotions in
240 others (e.g. fear), particularly those with children, although they did not necessarily elicit stronger
241 emotions. There were no gender-specific responses to these fact-based child-focused messages
242 among the participants.

243 Some participants found the factual messages less accessible, saying the statistics might confuse
244 people and mentioning side-effects such as narcolepsy could cause concern as not everyone would
245 understand such terms. It was considered preferable to avoid mentioning serious side-effects as these
246 may discourage some people from getting vaccinated. There was also some scepticism about the
247 messages, particularly the claim that vaccination would have saved the lives of children who died
248 during the A/H1N1 pandemic (message 14).

249 **4. Discussion**

250 This study offers novel insights into how the general public may be likely to respond to messages
251 advocating vaccination and antiviral medicines. Participants largely preferred the risk-reducing
252 messages, perceiving them as more balanced and credible, particularly when compared to health-
253 enhancing messages, which elicited greater scepticism. Factual, evidence-based messages
254 emphasising the costs and benefits of vaccination were well received, while emotion-focused

messages explicitly aiming to evoke feelings of anticipated regret were generally seen as patronising or unprofessional.

Previous research indicates that those who view themselves as healthy are less likely to accept influenza vaccination (14, 16, 29, 30). Despite our aim to reinforce healthy identities by framing vaccination as a way to maintain or improve health in the health-enhancing messages, we found that these were unexpectedly perceived as challenging participants' existing perceptions of themselves as healthy. The present vaccination messages served as the basis of a companion study employing an online experimental design which found that the health-enhancing messages were as effective in promoting vaccination intentions as those framed as risk-reducing (31). . Perhaps this difference can be explained by focus group participants spending greater time critically reflecting on each message in order to engage in discussion, compared with the online experiment where participants may have engaged with the messages in a more cursory and/or passive manner. This corroborates research showing that when more time is spent carefully evaluating messages, negatively phrased information is perceived as more convincing than equivalent positively phrased information (32).

Participants often reported perceiving the risk-reduction messages as more credible and balanced, suggesting that presenting health messages positively may not be advisable when uncertainty exists around the effectiveness of recommended behaviours (33). Some participants viewed the mention of risk in the risk-reduction messages as acknowledging that vaccination could not guarantee good health, whereas the health-enhancing messages appeared 'one-sided' due to focusing only on how vaccination can improve health. This links to earlier research showing that two-sided messages are viewed more credibly (34), and highlights the importance of directly addressing vaccination concerns (15).

Participants largely perceived the messages aiming to evoke feelings of anticipated regret as patronising. Previous studies examining the impact of anticipated regret on various health behaviours have produced inconsistent results, such as studies investigating the role of anticipated regret in

vaccination intentions (26). A review of the literature on inducing regret (35) suggests that strong pre-intervention intentions to engage in a behaviour (36) and a lack of defensive resistance (37) may predict the success of anticipated regret as a driver of behaviour change. Therefore, the rejection of our messages may be explained by our purposive sampling of people who had not previously been vaccinated, and who were thus likely to have weak vaccination intentions. It may also be possible to induce regret less explicitly, which may be viewed more positively by the public.

4.1 Recommendations

The present findings, albeit based on a small sample of participants, suggest that transparent and balanced messages have the potential to encourage the general public to vaccinate during a pandemic influenza outbreak, and we propose several ways to do so. First, messages could incorporate more evidence-based information, particularly in relation to the safety of vaccines or antiviral medicines. Messages that present vaccination costs and benefits, or compare risks posed by vaccination to those posed by contracting pandemic influenza, allow people greater opportunity to feel that they have control over their own health. Indeed, previous research has demonstrated that appraising one's ability to cope with a given health threat, including cost-benefit perceptions, are an important predictor of intentions and behaviour (38, 39). Uncertainty surrounding pandemic emergence and vaccine development can affect the public's willingness to vaccinate (40), so it is imperative that communicators provide certainty wherever possible, while also being transparent about where uncertainty exists and why. Our present findings on the positive reactions to the transparent, fact-based messages warrant further research on how to improve trust in risk communicators as a precursor of vaccination acceptance. Given that the public prefer health advice from official health authorities (41), communicators should think about how to build trust by challenging existing misconceptions about pandemic influenza and vaccination, as well as the governance of their risks. Finally, this study illustrates that public health messages may not always be received as intended (42), suggesting that further work into the impact of emotion-focused messaging could be beneficial.

4.2 Limitations

This study employed a relatively small sample and as such cannot be held to represent the views of the general public. Nor could we draw any conclusions to reflect the views of any specific sub-group, e.g. mothers of young babies. Yet, we believe our study has 'information power' (43), as the study aim was narrow, the study design was informed by theory, the participant sample was dense, and the quality of the dialogue was strong. We would have preferred to include a greater number of men, older adults and patients with chronic health conditions, but in line with previous findings (44, 45), many who expressed interest to participate were ineligible. Further research with these populations is needed to ensure generalisability of the present results Opportunity sampling was used due to time and monetary constraints, but future research should sample a wider swathe of the UK public to increase representativeness. Furthermore, we used a scenario to elicit behavioural intentions. Although behaviour can only be directly measured during a pandemic, it is important to note that intentions are not always a completely accurate indicator of behaviour (46). For example, the emotional impact of messages may have direct effects on behaviour that are not accessible to participants' awareness.

4.3 Conclusions

Pandemic influenza communication should convey transparent, evidence-based information. The general public appear to prefer factual messages that emphasise the costs and benefits of vaccination, particularly with regards to vaccine safety. It would also be advantageous to challenge existing misperceptions and address topics of uncertainty where possible. Although it is not feasible to pre-test messages for all potential pandemic situations and populations, it remains important to test the key components of messaging as this is the best way to ensure maximum effectiveness and reduce the chances of unintentional, negative impacts.

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Author contributions

All authors contributed to the design of the study. The first and second authors sought and obtained ethical approval for the study, recruited and interviewed all the participants. The first and the last authors led the analysis of the data. All authors participated in the writing of the article, and all authors approved the final article.

Conflict of interest

All authors report no conflict of interest.

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Figure 1. Pandemic influenza scenario text

- **HEALTH CONSEQUENCES**: A new strain of flu virus is now spreading throughout the world and a pandemic flu outbreak has been declared. Most people who catch pandemic flu will feel very ill for many days, with high fever, severe chills, muscle pain and headache. Some people who catch pandemic flu will have no symptoms but will however transmit the infection to others around them and thus keep the virus in circulation. Around 1 in every 100 people who catch this flu become so ill that they need hospital care, and about 1 in every 1000 infected people die.

- **IMPACT**: At this point, scientists do not yet know how badly the flu virus will affect people in the UK - doctors are trying to learn about the virus as fast as they can, but do not know if the pandemic will be mild or serious. When the virus spreads widely across the UK, we don't know whether life will carry on much as usual or whether there will be serious problems with services such as the NHS, schools and vital supplies. Health care may need to be prioritised for the most seriously ill. Other essential services (e.g. postal service, refuse collection, fire & police services, public transport and shops) may be disrupted, too, if people are absent due to flu illness.

- **VACCINATION ADVICE:** A new vaccine has been developed and pandemic flu vaccination is advised for all members of the general public, including children over six months of age. You will be invited to go to an immunisation clinic or to make an appointment at your surgery. If you don't hear from your GP surgery, get in touch with them and arrange a vaccination appointment.

479 Table 1. Messages seen by participants

Vaccination Messages	
Risk-reducing	*Health-enhancing*
1a. By getting vaccinated against pandemic flu, you will prevent the infection from spreading to your family and work colleagues.	1b. Getting vaccinated against pandemic flu will help you stay healthy, active, and able to look after your family during the current pandemic.
2a. Have the pandemic flu jab today! It will prevent you from becoming infected and seriously ill with flu.	2b. Getting vaccinated against pandemic flu will strengthen your body's natural defences.
3a. You should get vaccinated to protect yourself from getting pandemic flu. Vaccination will reduce your risk of infection.	3b. You should get the pandemic flu vaccination. Vaccination will boost your natural immune system.
4a. Getting vaccinated against pandemic flu reduces your chances of becoming infected and developing complications if you were to catch flu.	4b. Have the pandemic flu jab today! It will help you maintain healthy levels of antibodies.
Antiviral Messages	
Risk-reducing	*Health-enhancing*
5a. If you are in a priority group, taking antiviral medicines will reduce your risk of catching flu.	5b. If you are prescribed antiviral medicines, you should take the full course to stay healthy, active, and able to look after your family.
6a. Only by taking a full course of antiviral medicines like Tamiflu will you reduce your risk of becoming infected and seriously ill with flu.	6b. If you are prescribed antiviral medicines by your GP, taking them will boost your body's natural defences.
7a. If you are in a priority group, taking antiviral medicines will prevent the infection from spreading to your family and work colleagues.	7b. Only by taking a full course of antiviral medicines like Tamiflu will you maintain healthy levels of antibodies.
8a. If you are prescribed antiviral medicines, you should take the full course to reduce your chances of becoming infected with pandemic flu.	8b. If you are recommended antiviral medicines by your GP, taking them will boost your natural immune system.
Emotion-focused, anticipated regret messages	
9. In this emergency situation it is essential to be vaccinated even though there may be a small risk of long-term side effects we don't know about.	
10. You are more likely to feel upset if you got pandemic flu and had not been vaccinated, than feel upset if you got vaccinated.	
11. Nobody wants to do something they may regret, but the risk of harm from flu is much higher than the risk of side effects from vaccination.	
Fact-focused, A/H1N1 legacy messages	
12. In the last pandemic, a large number of children were affected by swine flu. 11 children died out of every 100,000 children infected.	
13. In the swine flu pandemic of 2009-2010, 70 children died. This is greater than the number of children who die from leukaemia each year.	
14. The children who did die from swine flu had not been vaccinated against swine flu. Vaccination would have saved their lives.	
15. About 1 million children were vaccinated against swine flu. While 11 experienced side effects, such as narcolepsy, none of them died.	

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482 Table 2. Demographic characteristics of the sample (*n*=41)

Demographic characteristics	Number / Proportion of the sample *n* (%)
Gender	
Female	32 (78.0%)
Male	9 (22.0%)
Age	
16-24 years	12 (29.3%)
25-34 years	12 (29.3%)
35-44 years	8 (19.5%)
45-54 years	3 (7.3%)
55-75 years	6 (14.6%)
Ethnicity	
White	28 (68.3%)
Other	12 (29.3%)
Prefer not to answer	1 (2.4%)
Education	
Secondary education	8 (19.5%)
Further education	3 (7.3%)
College or university	30 (73.2%)
Location	
Rural area or village	16 (39.0%)
Large town or city	25 (61.0%)
Children under 18	
Yes	16 (39.0%)
No	25 (61.0%)
Perceive self to be at high risk of contracting flu	
Yes	14 (34.1%)
No	27 (65.9%)
Regularly vaccinate for seasonal flu since A/H1N1	
Yes	8 (19.5%)
No	33 (80.5%)
Was vaccinated during A/H1N1 pandemic	
Yes	5 (12.2%)
No	33 (80.5%)
Can't remember	3 (7.3%)
Took antivirals during A/H1N1 pandemic	
Yes	4 (9.8%)
No	32 (78.0%)
Can't remember	5 (12.2%)

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Supplementary Material:

Focus Group Coding Structure

- Antiviral experiences
- Concern about spread (rate, mode, etc.)
- Concern for others (family, friends, colleagues)
- Dislike health enhancing messages
    - Pushy, patronising
    - Scepticism, distrust
- Dislike fact-focused messages
- Dislike risk reduction messages
    - Confidence
    - Contradictory
    - Lack of information
- Dislike emotion focused messages
    - Alarmist
    - Lack of information
    - Scepticism
- Distrust of pharma
- Importance of choice
- Information wanted
- Knowledge
- Like health enhancing messages
- Like fact-focused messages
    - Factual and statistics
    - Gives perspective
- Like risk reduction messages
    - Social responsibility
    - Trustworthy
- Like emotion focused messages
- Likelihood of taking antivirals
- Media impact
- Message source and audience
- Other protective measures
- Perceived severity and risk
- Perceptions of previous pandemics
- Preferred messages
- Psychological impact
- Scenario response
- Seek information
- Social media use
- Treatment of children
- Treatment pressure
- Trust in healthcare workers
- Vaccination barriers
    - Effectiveness concerns
    - Not ‘at risk’
    - Not for everyone

    - Perceptions of risk or severity
    - Safety concerns
- Vaccination beliefs
- Vaccination drivers
    - Avoid disruption
    - Being ‘at risk’
    - Concern about spread
    - Employer views
    - Past experience
    - Right thing to do
- Vaccination experiences
- Vaccination intentions (yes, no, delay, unsure)
- Vaccine or treatment access
- Vaccine versus antivirals