Have the public’s expectations for antibiotics for acute uncomplicated respiratory tract infections changed since the H1N1 influenza pandemic? A qualitative interview and quantitative questionnaire study

Claudia McNulty,1 Puja Joshi,2 Chris C Butler,3 Lou Atkinson,2 Tom Nichols,4 Angela Hogan,1 David French2

ABSTRACT

Objective: To investigate the effect of the H1N1 influenza pandemic on the public’s expectations for a general practice consultation and antibiotic for acute respiratory illness.

Design: Mixed methods.

Participants: Qualitative interviews: 17 participants with acute respiratory tract infection (RTI) visiting English pharmacies. Face-to-face survey: about 1700 adults aged 15 years and older were recruited from households in England in January 2008, 2009 and 2011.

Results: The qualitative data indicated that the general public had either forgotten about the ‘swine flu’ (H1N1 influenza) pandemic or it did not concern them as it had not affected them directly or affected their management of their current RTI illness. Between 2009 and 2011, we found that there was little or no change in people’s expectations for antibiotics for runny nose, colds, sore throat or cough, but people’s expectations for antibiotics for flu increased (26%–32%, p=0.004). Of the 1000 respondents in 2011 with an RTI in the previous 6 months, 13% reported that they took care of themselves without contacting their general practitioner and would not have done so before the pandemic, 9% reported that they had contacted their doctor’s surgery and would not have done so before the pandemic and 0.6% stated that they had asked for antibiotics and would not have done so before the pandemic. In 2011, of 123 respondents with a young child (0–4 years) having an RTI in the previous 6 months, 7.4% requested antibiotics and would not have done so before the pandemic. Unprompted, 20% of respondents thought Tamiflu® (oseltamivir) was a vaccine.

Conclusions: Expectations of the general public for a consultation or antibiotics with an RTI are similar now to before the H1N1 influenza pandemic; therefore, public antibiotic campaign messages and general practice advice to patients can remain unchanged. Parents with young children and those with personal experience of the H1N1 influenza are more likely to consult and will need more reassurance. The public need more education about Tamiflu®.

INTRODUCTION

Antibiotic resistance is an increasing problem in the community that has been highlighted by the WHO, European Health Council and, most recently, a EU-US Transatlantic Task Force.1-3 An individual’s previous use of antibiotics is associated with a twofold increase in the risk of a subsequent respiratory tract infection (RTI) or urinary tract infection (UTI), within 12 months, being...
ARTICLE SUMMARY

Key messages
- The H1N1 influenza pandemic has not changed the general public’s expectations for a general practitioner’s consultation or antibiotics when they have a runny nose, cough, cold or sore throat but may have increased people’s expectations for antibiotics for influenza.
- Most have either forgotten about the influenza outbreak or it did not concern them as it had not affected them directly.
- The smaller subsets of the public with young children and those who have had suspected or confirmed H1N1 influenza themselves are now more likely to consult and request an antibiotic for an RTI and, therefore, these groups will need more guidance and reassurance.
- A fifth of the public believe that Tamiflu® (oseltamivir) is a vaccine, implying that enhanced information sharing is needed in this area.

Strengths and limitations of this study
- This was a large survey of the general population, repeating some of the questions asked before the 2009 H1N1 flu epidemic, using the same sampling methods.
- The qualitative interviews had recruitment problems with many potential interviewees not being at home when telephoned. However, the purpose of qualitative interviews was mainly to enrich our data, and they did help explain our quantitative findings.
- The questionnaire survey asked to recall their most recent RTI in the previous 6 months and what actions they took on that occasion. This will be subject to some recall bias.

caused by an antibiotic-resistant organism. England, as well as other European countries, has implemented public health campaigns, based mostly on general practices and pharmacies, to encourage the public to ask for and to expect antibiotic prescriptions less often. The key message of recent English campaigns has been: ‘The best way to treat most colds, coughs or sore throats is plenty of fluids and rest. For advice talk to your pharmacist or doctor’. A further Department of Health (DH)-funded antibiotic campaign was planned for autumn 2009. However, in spring 2009, cases of H1N1 influenza A in England began to rise and, to avoid any public confusion with messages about what they should do when they had an RTI, the antibiotic campaign in the autumn of 2009 and spring of 2010 did not proceed. Flu response centres were set-up with the aim of delaying onward transmission of the virus. Initially, all suspected cases of influenza and their contacts were tested for the virus and given antiviral treatment or prophylaxis with Tamiflu® (oseltamivir). By July 2009, the H1N1 influenza virus had become widespread in the community, and the primary aim became the clinical management of cases through a dedicated National Pandemic Flu Service (NPFS) website and telephone service (flu line). This was for people with flu-like symptoms (including high fever, aching muscles, headache, sore throat, cough and runny nose); symptoms which have a high sensitivity but low specificity for influenza. Those with suggestive symptoms were given a unique ‘flu number’ to obtain a course of Tamiflu® treatment. Of patients with flu symptoms authorised to receive Tamiflu® by NPFS, selected to be sent a swab kit and returning a specimen, 7% were positive for influenza A H1N1.

Two waves of pandemic activity were observed, separated by the closure of schools for summer holidays. Community transmission was initially observed in London and the West Midlands following large school outbreaks. Cases were reported from all UK regions in the summer wave, though there was a variable level of transmission; all regions of the UK were affected in a more uniform way during the autumn wave. Most cases were reported to have a mild illness consistent with influenza. Severe disease, hospitalisations and deaths were reported in a minority of cases, particularly among those with underlying clinical disease that had a 10-fold risk of hospitalisation. There was an overall low case death ratio of 0.04%, particularly compared with previous pandemics. Pandemic H1N1 vaccine was used and was effective, though uptake only increased in the second half of the autumn wave.

By February 2010, as numbers of influenza in the community had dramatically decreased, the NPFS was closed and care of patients consulting with flu-like or respiratory symptoms returned to the responsibility of general practitioners (GPs) or NHS Direct. From then on, GPs have decided whether to prescribe antibiotics/antivirals based on their clinical judgement and local antimicrobial guidance. In 2010, because of budget restrictions, the DH launched a low-budget antibiotic awareness campaign through the professional societies. It coincided with European Antibiotic Awareness Day and was aimed at promoting prudent antibiotic use in hospitals, while continuing to reinforce the messages to the general public and GPs. GPs received an email highlighting the day with links to materials to download or order.

The advice to the general public during the 2009 H1N1 influenza pandemic ‘to always seek health advice when they had respiratory or flu-like symptoms’, essentially so Tamiflu® could be prescribed, ran counter to National Institute of Clinical Excellence RTI advice, which recommended that GPs should follow a ‘no’ or a ‘delayed’ antibiotic prescribing strategy for patients with acute self-limiting RTI and may have ‘medicalised’ acute respiratory illness. As a consequence, the general public may now have lowered their threshold for consulting and increased their expectations for antimicrobial treatment for RTI or flu-like symptoms. We, therefore, aimed to determine whether the general public’s expectations for a consultation or an antibiotic changed as a result of their experiences of the 2009 H1N1 influenza pandemic and to explore their understanding of Tamiflu® treatment. We considered that the findings could not only inform the key messages to the general public during future antibiotic awareness campaigns but also inform key messages for the general public during the next rise in seasonal or H1N1 influenza.
METHODS

First, we used in-depth telephone interviews with patients, enrolled when visiting pharmacies, to explore their views on their own management of recent respiratory illness. Second, the results of this qualitative research informed questions in an Ipsos MORI survey in England in January 2011. Some of the questions regarding beliefs about and use of antibiotics were asked in related 2008 and 2009 Ipsos MORI surveys before the H1N1 influenza pandemic, and so it was possible to compare the results of the three surveys, two before and one after the pandemic.

Study population for qualitative interviews

To obtain a sample of adult participants with diverse ethnicity and deprivation in urban, city, and rural settings, including some patients with personal experience of H1N1 influenza, we recruited members of the public in nine pharmacies based in four different areas of England, all with a high level of Tamiflu dispensing and with above average or normal H1N1 influenza activity during the pandemic. As the interviews were conducted during the recruitment period, the pharmacies were visited several times, in rotation, until data saturation was reached. In total, the pharmacies were visited 26 times for 3–6 h at a time. In 2010, 65% of the general public reported visiting a pharmacy in the past year. Recruiting participants in pharmacies allowed us to obtain data from members of the public with current symptoms of cough, cold, sore throat or flu who had either recently consulted a doctor (and may be picking up a prescription for antibiotics); those who were managing the condition themselves (buying over the counter remedies) and others who were in the pharmacy to consult with a high level of Tamiflu dispensing pharmacies in South Birmingham (The Midlands, England), and three were randomly selected from such urban pharmacies in Enfield (North London; both areas with above average QSurveillance ILI activity). We also randomly selected one rural pharmacy with high Tamiflu dispensing in West Hertfordshire (South East England) and one such rural pharmacy in Oxfordshire (Central England); both areas had normal QSurveillance ILI activity.

Two researchers separately visited the pharmacies several times between October and December 2010. Pharmacies displayed a poster provided by the research team that introduced the research. Members of the public in the pharmacy were opportunistically approached to complete a short pro forma that asked if they, or someone they were caring for, was currently unwell with symptoms of cough, cold, sore throat or flu-like illness that had started within the preceding 3 weeks. If they answered ‘no’, they were not eligible to take part; but they were offered information about managing coughs, colds and flu. From the pro forma, one in three persons was found to be eligible at each pharmacy on each day of recruitment. If they answered ‘yes’, the pro forma went on to ask if they would be prepared to be interviewed and, if so, to provide a telephone number and time that the researcher could contact them to undertake a telephone interview. The pro forma also asked about age, sex, ethnicity, children younger than 5 years, sources of advice during their current illness and whether they had taken Tamiflu or collected Tamiflu for someone in the past year. Potential participants were telephoned by one researcher to arrange a telephone interview and to discuss the study. Participants gave verbal informed consent before the telephone interview, which we aimed to complete a maximum of 14 days after the pharmacy visit, and retrospective written consent. Participants received a £10 Lloyds Pharmacy voucher as a thank you for their time. The interviews were undertaken just before the 2010 rise in ILI consultations in general practice (figure 1).

Sampled participants for Ipsos MORI questionnaire survey

Multistage sampling was used to recruit a target of 1800 adult aged 15 years and older in England in January 2011. A market research company, Ipsos MORI conducted the interviews as part of their weekly ‘Capibus’ survey that collects a wide range of patients recruited to the qualitative work and timing of Ipsos survey relative to the number of general practitioner’s patient consultations for influenza-like illness (ILI) per 100 000 population in England and Wales. Consultation rates compiled by the Royal College of General Practitioners (RCGP), Research and Surveillance Centre and supplied by the Health Protection Agency.


Figure 1 Number of patients recruited to the qualitative work and timing of Ipsos survey relative to the number of general practitioner’s patient consultations for influenza-like illness (ILI) per 100 000 population in England and Wales. Consultation rates compiled by the Royal College of General Practitioners (RCGP), Research and Surveillance Centre and supplied by the Health Protection Agency.
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information from across the country in a single week. Approximately 180 Local Area Authorities are randomly selected in the first stage of sampling. Some of these are in Wales and Scotland and do not feature in this study. In the second stage of sampling, one Output Area (OA) is randomly selected from each Local Area Authority. An OA is a small area made up of between 60 and 100 addresses. Interviewers are given quotas of people to interview for each OA according to age and gender. Interviewers go door-to-door and invite the person who answers (as long as they are 15 years and older) if they would be willing to take part in the survey. If that person refuses, interviewers can invite another member of the household to participate. Visits are spread out over the week so households are visited in the daytime, evenings and both Saturdays and Sundays to ensure inclusion of people who work weekdays. If there is no response from the household, then interviewers do not revisit. Interviewers generally get about one complete interview for every three or four doors on which they knock.

Ethics
The Ipsos MORI surveys and interviews were undertaken outside the NHS setting and therefore did not need NHS ethical approval. The study was approved by the ethics review board at Coventry University. Consent for the Ipsos MORI questionnaires was by verbal agreement to participate with completion of the questionnaire considered as indicating consent; respondents were not given any financial incentive. Respondents were able to refuse to participate in the interview or questionnaire at any stage in the process. All data were processed in accordance with the Data Protection Act 1998.

Schedule for qualitative interviews
The semistructured interview schedule was developed collaboratively by the authors, a member of the public on the steering group and with input from the DH communications team and the paediatric representative of the DH Education Subgroup on Antimicrobial Resistance and Healthcare Associated Infections (ARHAI) (online appendix 1).

The schedule was based on Leventhal’s Common Sense Model and previous research exploring beliefs about antibiotic use, influenza and consultation behaviour in primary care. The Common Sense Model proposes that, when faced with a threat to their health, the coping strategies adopted by the individual depend on their ‘common sense’ beliefs about that threat and possible coping strategies and, in particular, whether possible coping strategies make sense in terms of their beliefs about the threat. The interviews therefore aimed to elicit beliefs about the health threat (ie, respiratory or flu-like symptoms) and the possible behavioural responses such as seeking a prescription for antibiotics or self-management. The schedule was piloted with five members of the public to explore ease of comprehension. Topics explored included the current illness episode, and what healthcare advice they had sought, if any, and why and about their perceptions of the sorts of medications that might help cough, cold, sore throat or other flu-like symptoms. When participants had explained their current illness decisions fully, they were then asked whether the swine flu outbreak the previous year had affected the decisions they had made about their current illness, how the swine flu outbreak was handled by the DH and whether the public campaign message ‘Antibiotics don’t help when you have coughs or colds’ should still be used following the recent swine flu outbreak. The terms ‘Swine flu’ and ‘swine flu outbreak’ were used in the interviews and questionnaire as H1N1 influenza was not common parlance in the winter of 2010/2011.

Qualitative data collection and analysis
The interviewer (PJ) encouraged respondents to speak candidly about the management of their recent RTI illness. All interviews were recorded and transcribed verbatim. Data were subjected to thematic analysis. Transcripts were coded into themes by one member of the research team (PJ). Themes were discussed and agreed upon by the steering group, including three members of the research team who read a sample of the transcripts (LA, DF and KN).

An iterative process was used (where interviews and analyses occur in parallel) allowing additional exploration of new themes as the process progressed. We considered after 17 interviews (including five people with experience of H1N1 influenza) had been conducted that no novel material was being elicited.

Questionnaire for Ipsos MORI survey
Some questions about expectations for antibiotics for runny nose, cough, cold, sore throat and flu, use of and knowledge about antibiotics in the Ipsos MORI surveys in 2008 and 2009 were left unchanged so that responses could be compared before and after the H1N1 influenza pandemic. Other questions were new to the 2011 survey; some of these were based on the qualitative interview findings, including some hypothetical questions about whether respondents thought their behaviour in relation to a recent RTI would have been different before the H1N1 influenza pandemic. To reduce acquiescence bias, general questions were asked first followed by questions about their recent RTI, which were asked in a separate part of the same Ipsos MORI survey; the questions about understanding of Tamiflu® (oseltamivir) were asked in a separate survey the following week. The 2011 survey was carried out just after the fall in ILI in January 2011 determined by QSurveillance data (figure 1; online appendix 2).

Questionnaire data analysis
Weights provided by Ipsos MORI and based on the National Readership Survey were used to correct for known selection biases. Weights are defined by gender and, within gender, by age, social grade, region and working status. Initial data processing was carried out by...
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Ipsos MORI, with further data management, and all analyses performed by TN using Stata V.11.2 (Stata Corporation). All results make use of the weights and allow for the clustering of the sample. Significance tests for differences in percentages were a variation of the Pearson $\chi^2$ test.

RESULTS

Interview results

Fifty eligible persons agreed to a telephone interview when asked at the pharmacy. Of these, three participants had given wrong numbers, two declined to participate when contacted, 10 never answered the phone (private number or number showing), nine did not answer the telephone at the time when an interview had been arranged and nine could not commit to a time for an interview despite several phone calls. In total, 17 people were interviewed between 3 and 8 days of the pharmacy visit (median 6 days). Eight had only consulted their pharmacy with their current RTI, while three had consulted their GP only; five went to both, consulting their pharmacy first and subsequently their GP, and one made several visits to both pharmacy and GP. Ten were women; 16 were white and one was South Asian; five either had confirmed or suspected H1N1 influenza themselves or lived with another member of their household who had confirmed or suspected H1N1 influenza.

None of the participants reported that the swine flu had affected their management of the current illness. Participants reported that they had either forgotten

Box 1 Quotes from interviews with members of the public visiting pharmacies with acute respiratory tract infection (RTI) in October–December 2010

Participants’ behaviour in current RTI unaffected by the swine flu (H1N1 influenza)

P33: I’ve sort of forgotten all about it now really, none of it has really stuck.

P26: I know a few people that potentially have had swine flu, but no it’s never really phased me to be honest.

P10: I know, at the time, I felt very aware of any cold or flu symptoms. It was something that was very present in my mind, at the time, but, since, it’s gone away, and now I’d probably have put it to the back of my mind.

The H1N1 pandemic was not as big as predicted, and therefore, it would not influence what they did.

P39: I thought it was all blown up out of proportion, I think it was just a bit of panic by the government—anything they always panic and they create a lot more worry to people than is necessary.

P34: No not really because I don’t think the swine flu outbreak was as bad as everyone panicked or thought it was going to be, everyone thought that everyone was going to die and everyone was going to be really really ill. I just I don’t assume that things are swine flu I think that they’re flu or a cold.

Handling of swine flu (H1N1 influenza) by the DH.

P35: I think they must have done a good job. Nothing that bad happened, did it, I don’t think.

P8: Well at first it was panic and it settled down towards the end, like very good for everybody really yeah, they got on top of it, of course if it became to be a big epidemic it would be very dangerous for everybody.

Understanding of Tamiflu® (oseltamivir)

P7: my niece was, had to take some because we thought she had swine flu.

P10: It’s the H1N1, um, it’s a inoculation, isn’t it, for H1N1.

P38: Tamiflu it’s just been on the telly there a few minutes ago, there was lots about the swine flu symptoms coming back and the kids want to get them all vaccinated.

Understanding of benefit of antibiotics for different RTIs.

P13: Well, I’ve heard that antibiotics do help if you’ve got a cold but they just tell you they don’t, for some reason, because maybe they’re not very good for you. I’ve also heard that they’re completely useless in a cold. So, I don’t really know what to believe, so, I always just go by the guidelines of if I’ve got an infection, I’ll take them and if not, I won’t.

Most participants agreed the message that antibiotics do not work on coughs and colds should continue to be used

P34: Yes, because the swine flu was different, my view is as well if you have got a cough and a cold there is no point in just going to the GP with a cough or a cold because there’s nothing they can give you, if it’s something more severe like a chest infection then they can give you the antibiotics. But I think that message still stands because swine flu was different, completely different.

P26: Yes I suppose campaigns when you’re trying to get a message across to people helps quite a lot …… I think some people go to the doctors for anything, and I don’t think the doctors really give out antibiotics for coughs and colds. So just trying to stop the amount of people that go to the doctors for coughs and colds or…

P22: I think so, yes…and it’s not for colds, is it, antibiotics?

Campaign message ‘antibiotics do not work on coughs and colds’ should not be used:

P36: No not really no. No I don’t because I find, I believe, that antibiotics do help especially when you’ve got one (a cough) like I have this week. Coz you know as I said I know I don’t get the pain in my chest—therefore they’re working.

P33: No, no, I don’t think it should be (nor) use the message. Because I think when you go to the doctors and you go with the symptoms I think it’s probably up to the doctor to decide whether or not they prescribe antibiotics.
about the influenza outbreak or, as it had not affected
them directly, it did not concern them (box 1). Several
commented that, as the swine flu outbreak had not been
as serious as the government had expected, they did not
need to worry. Some described the DH as initially
panicky or overcautious, but most participants thought
the government had handled the outbreak and media
coverage well. Most reported that they had heard of
Tamiflu® either in the news or on TV, and a few had
experience of friends or family taking it. Several thought
that it was a vaccination and, initially, one participant
thought that it was a strain of flu. When asked about the
sort of medications that would help with fever, cough,
cold, sore throat or flu-like symptoms and about the
benefits of antibiotics, some participants struggled to
answer, not knowing whether antibiotics would work or
not. When participants were asked if the campaign
message ‘antibiotics don’t help when you have coughs and
colds’ should continue to be used in public antibi-
otic campaigns, the majority of participants thought that
the message should continue to be used, as they agreed
with the message and it was appropriate unless you had
severe symptoms or pain. Four participants were not sure
whether it should be used, and two participants thought
that the message should not be used; one because it was
up to the doctor to decide if you needed antibiotics and
another thought antibiotics did help when you had
a cough or cold.

Ipsos survey results
All respondents
There were a similar number of respondents aged
15 years or older interviewed each year in weeks 3, 4 or 5
in England (2008, N=1706; 2009, N=1707; 2011,
N=1767). In 2011, there were 209 respondents with
children aged 0–4 years (table 1).

Between 2008 and 2011, there was progressive
improvement in the percentage of respondents providing
a scientifically acceptable answer to the question about
activity of antibiotics against coughs and colds (the
percentage understanding that antibiotics do not work
on most coughs and colds was 60% in 2008, 63% in 2009
and 69% in 2011) (table 1). There was little or no change
in people’s expectations for antibiotics for runny nose,
colds, sore throat or cough between 2008 and 2011, but
expectations that their GP or nurse would prescribe them
an antibiotic if they had flu increased significantly from
24% in 2008 to 26% in 2009 to 32% in 2011 (the increase
between 2009 and 2011 was significant, p=0.004). Between
2008 and 2011, there was little or no change in people
asking for antibiotics for any reason either for
themselves or for someone else in the past year (28% in
2008, 29% in 2009 and 26% in 2011). The change
between 2009 and 2011 was non-significant (p=0.20).

Between 2008 and 2011, there was little or no change
in people being prescribed any kind of antibiotic for
themselves in the past year in the UK (32% in 2008, 36%
in 2009 and 32% in 2011). The change between 2009 and
2011 was borderline significant (p=0.06).

In 2011, 8.9% of respondents reported that they or
someone in their household had had suspected or
confirmed swine flu (4.3% themselves, 4.7% someone
else) and 11% reported that they had been prescribed
Tamiflu® in the previous 2 years. People’s understanding
of Tamiflu® was poor (table 2). Although 71% stated
that they had heard of Tamiflu®, without prompting only
34% thought that it helped for influenza or swine flu or
was used as an antiviral agent; however, 20% reported
that it was a vaccine and 46% that it helped when you had
flu or was used as an antiviral agent (table 2).

Respondents with recent RTI
In the 2011 Ipsos survey, 58% of respondents reported
having a sore throat (25%), cold (37%), cough (26%) or
flu symptoms (14%) in the previous 6 months; 9%

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<thead>
<tr>
<th>Table 1</th>
<th>Public’s expectation for antibiotics before and after H1N1 influenza pandemic: based on comparable questions to adults 15 years and older asked in 2008, 2009 and 2011</th>
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<tr>
<td>2008 (N=1706) %*</td>
<td>2009 (N=1707) %*</td>
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<tr>
<td>Disagreed antibiotics work on most coughs and colds</td>
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<td>Expected GP/nurse to prescribe antibiotics if seeing him/her with</td>
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<td>Cold</td>
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<td>Sore throat</td>
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<td>Flu</td>
<td>24</td>
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<td>Asked GP/nurse for antibiotics in the past year</td>
<td>28</td>
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<tr>
<td>Prescribed any kind of antibiotic in past year in the UK</td>
<td>32</td>
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*CIs available from authors. GP, general practitioner.
reported that the swine flu outbreak or the media coverage of it had affected their actions a lot when they had their recent illness, 23% that it affected their actions a little and 66% that it had not affected their actions at all. The biggest behaviour change ('what they did for their most recent RTI and would not have done before the swine flu outbreak') was washing their hands more often (16%). The other actions that respondents reported were different to what they would have done before the H1N1 pandemic were taking care of themselves without contacting the doctor's surgery (13%) and contacting or visiting their doctor's surgery (9%). Only 0.6% stated that this time they had asked for antibiotics at the doctor's surgery when they would not have done so before the H1N1 pandemic and 1.4% asked for Tamiflu when they would not have done so before the pandemic.

In contrast, the H1N1 pandemic seems to have made parents of a young child more likely to contact or visit their doctor's surgery when their child has an RTI. Of 123 respondents with a child (0–4 years) who had a sore throat, cold, cough or flu symptoms in the last 6 months, the behaviours that they said occurred as a result of their child’s most recent illness and would not have occurred before the H1N1 pandemic included: contacting or visiting their doctor’s surgery (14%), taking care of themselves without contacting the GP (3.4%), asking for antibiotics in a cough or cold (7.4%), asking for Tamiflu (5%) and keeping their child at home (6.7%) (table 3).

Respondents with a recent RTI were more likely to have contacted their GP if they had experienced H1N1 influenza themselves (35% if they previously had suspected or confirmed H1N1 influenza vs 19% if they had not, p=0.004) (figure 2A). Respondents with a recent RTI were also more likely to have contacted their GP if they had been prescribed Tamiflu themselves (29% if they had previously been prescribed Tamiflu vs 5% if they had not, p=0.004) (figure 2B).
prescribed Tamiflu® vs 18% if they had not, $p=0.01$) (figure 2B).

Respondents with a recent RTI were also more likely to expect antibiotics from their GP for their recent illness if they had experienced H1N1 influenza themselves (20% if they previously had suspected or confirmed H1N1 influenza themselves vs 10% if they did not, $p=0.05$) (figure 2C).

**DISCUSSION**

**Principal findings**

Our results indicate that the pandemic flu line and the media coverage surrounding the H1N1 influenza pandemic probably had little or no affect on people’s expectation for an antibiotic or a consultation with their GP surgery for runny nose, cold, cough and sore throat. In contrast, we found that the public were now significantly more likely to expect antibiotics for flu-like symptoms, and some of this increase is probably due to the pandemic. The small subgroup of respondents who had experienced H1N1 influenza themselves (4.3%) were more likely to consult their surgery with their most recent RTI (35% vs 19%).

Parents managed their young children’s RTIs different from their own. Of respondents with a young child (aged 0–4 years) having a recent RTI, 3.4% reported that they took care of their child without contacting the GP surgery when they would not have done so before the H1N1 influenza pandemic, but 14% reported that they consulted the doctor’s surgery when they would not have done so before the H1N1 influenza pandemic.

Many of the general public did not know what Tamiflu® was. Only one-third thought that Tamiflu® helped for influenza or was used as an antiviral agent, 29% had not heard of Tamiflu®, 20% thought that it was a vaccine and 8% a flu-like illness.

**Strengths and limitations**

This was a large survey of the general population, repeating some of the questions asked before the 2009 H1N1 flu epidemic. The surveys used the same sampling methods. Respondents were recruited from throughout England by a leading market research company. The qualitative interview component informed the survey questions, enriched the data and suggested explanations for some of the quantitative findings. Recruitment for the qualitative interviews was based in areas of England with a high level of Tamiflu® dispensing. The qualitative interviews had recruitment problems with many potential interviewees not being at home when telephoned.

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**Figure 2** (A) Whether respondent contacted or visited their local practice for their most recent respiratory tract infection (RTI) by personal experience of swine flu. Group sizes are 51 (‘Yes myself’), 53 (‘Yes someone else in the household’) and 873 (‘No’). (B) Whether respondent contacted or visited their local practice for their most recent RTI, by whether prescribed Tamiflu® in the past 2 years. Group sizes are 116 (‘Yes’) and 863 (‘No’). (C) Respondents’ expectations for antibiotics for their most recent RTI by their personal experience of swine flu. Group sizes are 51 (‘Yes myself’), 53 (‘Yes someone else in the household’) and 873 (‘No’). Figures show percentage and 95% CI.
However, research of this nature relies on consenting participants, raising the possibility of a biased sample. However, the purpose of qualitative interviews was mainly to enrich and explain our larger quantitative findings. The questionnaire survey asked respondents to recall their most recent RTI in the previous 6 months and what actions they took on that occasion. This will be subject to some recall bias. Just over 4% of our respondents reported that they had personally had suspected or confirmed swine flu. Almost 800,000 (CI 375 to 1,644,000) cases of ILI due to H1N1 were estimated to have occurred in England in 2009, this equates to 1.5% (CI 0.7% to 3.2%) of the population. Our percentage includes respondents with suspected influenza, and therefore, it is not surprising that it is higher; furthermore, Evans et al do not include patients who did not consult a health professional with ILI and they observed that consultations were much lower in the second phase of the pandemic. They were also asked if the ‘swine flu outbreak’ had affected what they did on that occasion and what actions they took which they would not have done before the outbreak. This is a hypothetical question that may have been difficult to answer. However, the reported lack of change in behaviour to what they would have done before the swine flu outbreak (a question asked only in 2011) is consistent with the lack of change in the public’s expectation for antibiotics for respiratory symptoms we found in 2008, 2009 and 2011. The Tamiflu questions were asked in a separate week to reduce response bias, which may have occurred to previous questions in the survey about their experience of flu and use of Tamiflu for it. This prevented any response bias but meant that we were unable to relate the public’s knowledge about Tamiflu to any of the other responses.

Comparison with other published work

Teasdale and Yardley discussed the government advice for managing the H1N1 influenza pandemic with members of the public in focus groups during the pandemic in late 2009. They found that the participants did not feel that they could distinguish normal cough and cold symptoms from flu-like symptoms. One year later, our interview respondents did not report this as a problem and did not think that their RTI symptoms were due to influenza. In the study by Teasdale and Yardley, participants felt underqualified to self-diagnose and self-care at home and reported that they would need to seek advice to determine if they needed treatment. In our questionnaire survey, 12% stayed at home, 13% self-cared for their recent episode of RTI without contacting their GP and 9% reported that they had contacted their doctor’s surgery when they would not have done so before the H1N1 influenza pandemic. The greater ability of our participants to distinguish normal cough and cold symptoms from flu-like symptoms compared with those in the study by Teasdale and Yardley, probably reflect that Teasdale and Yardley enrolled participants at the height of the pandemic when there was still considerable uncertainty about the likely severity of the pandemic. Our interview participants reported that they felt the pandemic had not been as severe as was initially anticipated.

We found that adults with a child reported a much higher level of GP consulting with regard to their child’s most recent RTI than did all respondents with regard to their most recent RTI. Butler et al found that parents were much more likely to report accepting self-management advice for themselves because they ‘know how they are feeling’ but were less able to assess illness severity in their children.

Interpretation of the results

The lack of change in the public’s consultation behaviour may be explained by our qualitative findings that people thought that the H1N1 influenza pandemic was not as serious as expected or, as it had not affected them directly, it did not concern them and they did not perceive a connection between their usual coughs, colds and sore throat and the H1N1 pandemic influenza. Rubin et al found that about 80% of a random sample of members of the public across the UK telephoned during the pandemic were satisfied with the amount of information available from the government about the influenza pandemic and that people’s worries about catching H1N1 pandemic influenza decreased during the winter of 2010. We found that those who had suspected or confirmed H1N1 influenza themselves were more likely than others to contact their GP surgery. Our findings support the Leventhal model of health-related behaviour, which suggests that personal experience is associated with a higher perceived risk, which in turn is associated with help-seeking behaviour (eg, consulting their GP surgery when they have an RTI). Moore et al found that patients who had been prescribed an antibiotic for cough in the previous 2 years were over twice as likely to consult for a similar illness and that a delayed antibiotic prescription strategy reduced re-consultation by 78% in this group. Previous attendance with cough and other RTI also predicted re-consultation, so consulting behaviour as well as personal experience of illness influence help-seeking behaviour.
The two largest changes in reported behaviour with their most recent RTI, which they said they would not have done before the pandemic flu, were washing their hands more often and staying at home. This is consistent with the advice of the influenza pandemic media campaign. A survey in a service station lavatory in England also showed that the media had an impact on hand-washing with rates increasing during the time in which H1N1 influenza featured prominently in blogs and in the news.24

The increased expectation for antibiotics to treat flu-like symptoms may be explained by the lack of understanding of the difference between antiviral agents (active against viral infections) and antibiotics (active against bacterial infections). Only 46% of respondents in our 2011 survey correctly identified Tamiflu® as treatment for influenza or an antiviral, although, encouragingly, only 7% thought that it was an antibiotic. A third thought Tamiflu® was a vaccine; such misunderstandings may be relevant to poor uptake of H1N1 vaccine. In the event of another influenza outbreak (which may be of a different strain but will inevitably be called swine flu again by the media and public), a targeted public health campaign might be needed to correct the view that taking Tamiflu® is protective against future influenza.

Implications for policy makers
This year's European Antibiotic Awareness Day public campaign messages in England do not need to be changed as a result of the H1N1 influenza pandemic. Parents need more guidance about which symptoms should trigger a consultation for their young children and a plan made about rapid reassessment should they feel it necessary. Patient leaflets for use during a discussion during the consultation need to be readily accessible; short cuts to suitable materials are available on the DH website.25 The lack of understanding that Tamiflu® is an antiviral agent specifically for the treatment of acute influenza should be addressed in both vaccination information and during influenza epidemics. These findings should also inform antimicrobial stewardship programmes, such as toolkits for community medicine managers and primary care.26

Implications for clinicians in primary care
Expectations for a consultation or antibiotics when ing an RTI are similar now to what they were before the H1N1 influenza pandemic. Therefore, primary care clinicians' advice to patients does not need to be adapted in the light of the pandemic. Those patients who had suspected or confirmed H1N1 influenza and parents with young children may, however, need more intensive explanation and reassurance. Some patients may confuse previous consumption of Tamiflu® with influenza vaccination and not understand the difference between antiviral and antibiotic agents.

Author affiliations
1Health Protection Agency, Primary Care Unit, Department of Microbiology, Gloucestershire Royal Hospital, Gloucester, UK
2Applied Research Centre in Health and Lifestyles Interventions, Coventry University, Coventry, UK
3Institute of Primary Care and Public Health, School of Medicine, Cardiff University, Cardiff, UK
4Statistics Unit, Centre for Infections, Health Protection Agency, London, UK

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Contributors CM designed the study. CCB, TN, AH and DF contributed to the refinement of the study. PJ and LA undertook the qualitative interviews and analysis. All authors contributed to the design of the qualitative and quantitative questionnaires. TN undertook the analysis of the quantitative questionnaire. CM wrote the paper. All authors contributed to drafting and have seen and approved the final version of the manuscript.

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Appendix 1: Schedules for qualitative interviews after initial screening questions to check that individuals have had at least one of RTI symptoms listed in pre-selection questionnaire

1. Current episode of illness
   a. Tell me about the symptoms that led you *(If looking after someone, that led the person you are looking after)* to visit the pharmacy/ GP?
   b. How long have/had you/ they had these symptoms?
   c. What do you think caused your/their symptoms? *(e.g. bacteria, virus, other; what label do they give to their illness)*
   d. What triggered you/their relative to visit the pharmacy /GP?
      - why did you do this instead of leaving to resolve/visiting a GP or GP practice nurse? *(Related to duration of symptoms/type of symptoms/what think caused them?)*
   e. For those who hadn’t visited GP: Did you seek advice from any other health professional e.g. NHS direct or pharmacist? If yes, how did this affect what you did (i.e. visiting GP etc/leaving to resolve/buying OTC remedy)? *(did this change their understanding about symptoms/their cause/most appropriate management?)*

2. Treatment/ help seeking
   a. For those visiting pharmacy. Have you bought or are you buying an OTC remedy for this illness?
   b. For those visiting pharmacy. What effects do/ did you expect this/these things to have?
c. *For those visiting pharmacy.* What do you think would happen / would have happened if you did not take this OTC remedy?
   - how long do you think this would have lasted?

d. *For Those visiting GP:* What were your expectations of the GP appointment?
   e.g. advice, whether they would get a prescription

e. *For Those visiting GP:* Were you given a prescription? If so, for what?

f. *For Those visiting GP and caring for someone.* Would you mind telling me if they were given a prescription by the GP/GP practice nurse? *(identify whether antibiotics)*

g. *For Those visiting GP:* What effects do/ did you expect this prescription to have?

h. *For Those visiting GP:* What do you think would happen / would have happened if you did not take this prescription?
   - how long do you think this would have lasted?

i. Before coming here, *(seeing your GP)* did you consider seeing a GP/GP practice nurse *(taking an OTC remedy)* or another course of action?
   - if yes, what was this?
   - did you do this? Why/why not?

j. All: How would your illness have to be different for you to do something else?
   - what would make you more likely to go to a GP or GP practice nurse/ less likely to try an alternative? *(prompt- duration of symptoms/ or severity/ nature of symptoms/belief about the cause of illness and most appropriate treatment)*

3. **Previous similar episodes and help seeking**

   a. Can you remember another time before the swine flu outbreak last summer when you had a fever, cough, cold, sore throat or other flu-like symptoms?
b. What did you do then?

c. (If went to GP/GP practice nurse on that occasion) Why did you do that instead of what you did today? (duration of symptoms/ or severity/ nature of symptoms/belief about the cause of illness and most appropriate treatment?)

d. What were the advantages of doing that instead of taking an OTC remedy (what you did today)?

e. For those visiting pharmacy. What were the disadvantages of doing that instead of taking on OTC remedy?

f. All: Do you think the swine flu outbreak last year has changed your decisions about your care for this current illness?

   Probe – about whether to visit GP/GP practice nurse or use OTC remedy

4. Medication expectation - All

   a. What sorts of medication can you think of that might help with fever, cough, cold, sore throat or other flu-like symptoms?

      - how do you think they might help?

      - how do you think they work?

   b. (anything else?) - if necessary repeat, follow up prompts as before

   c. Do you think there are any benefits/advantages of taking antibiotics for this illness?

   d. Do you think there any drawbacks/ disadvantages of taking antibiotics?

   e. Have you heard of Tamiflu©/ oseltamivir?

      (if yes) - can you remember where?

      - how do you think this might help?

      - how do you think this works? (probe: is antiviral, a vaccine, antibiotic?)

      - if you wanted it, how would you get hold of it?
5. Swine flu
   a. Has your thinking about taking medications for these kinds of symptoms that you 
      had recently changed over the past year or so?  *ONLY IF NOT COVERED ABOVE*
      i. (if yes) how?
   b. What sort of medications do you think would be helpful/unhelpful for swine flu?
   c. What are your views on how the swine flu was handled by the Department of 
      Health?
   d. Do you think the message “Antibiotics don’t help when you have coughs or colds” 
      should still be used following the swine flu?

6. Other help seeking
   a. Had you used NHS Direct before the swine flu outbreak?
   b. Have you or anyone you know phoned NHS direct or the National Pandemic Flu 
      Service in the past year?
   c. We are trying to encourage people not to seek antibiotics for coughs, colds, sore 
      throats and flu - what sort of health campaigns would persuade you/other people 
      not to do this?
   d. How do you think we can improve the use of antibiotics?
Appendix 2: Ipsos MORI (Capibus) Questionnaire 21st – 27th January 2011 in England

Sample: All adults in England aged 15+

Highlighted questions also asked in 2008 and 2009 surveys

The following questions are sponsored by the Health Protection Agency and concern antibiotics prescribed by a doctor, dentist or nurse, in this country or abroad. Antibiotics can be in the form of pills or tablets, liquids, creams, ointments, powders, drops or sprays.

Antibiotics are prescribed for infections, such as those for the throat, skin, chest, ear, and urinary tract (e.g. cystitis / water infection). Antifungals, which are prescribed for things like athlete’s foot, thrush or ringworm, are not included.

1. Would you expect your GP/nurse to prescribe antibiotics if you went to see him/her with.......?

   A. Sore throat
   B. Cold
   C. Cough
   D. Flu
   E. Runny nose

   Code: Yes; No; I wouldn’t go to a GP/nurse for this
2. In the past year, have you asked your GP or nurse for antibiotics either for yourself or for someone else?
   Code: Yes; No; Don’t know

3. If ‘YES’ at 2 - What happened the last time you asked?
   A. They prescribed antibiotics without discussion about my/their illness
   B. They prescribed antibiotics after some discussion about my/their illness
   C. They refused to prescribe me/them antibiotics
   D. Other please specify

4. Have YOU YOURSELF been PRESCRIBED any kind of antibiotic in the past year?
   IF NECESSARY: Include any form of antibiotic e.g. pills, creams liquids, but do not include antifungals.
   A. Yes, prescribed within UK
   B. Yes, prescribed outside of UK
   C. No
   D. Can’t remember
   E. Don’t know?

5a. If ‘YES’ at 4A or 4B - Did you keep any left-over antibiotics? By left-over we mean if you didn’t finish all the antibiotics given to you by the doctor or pharmacy.
   1. Yes, there were some left over and I kept them
   2. No, there were some left over but I didn’t keep them
   3. I was prescribed for standby use/ to use or take later
4. I finished the antibiotics/there were none left over.
5. I have not yet completed the course
6. Can’t remember

5b. If ‘YES’ at 4a.1 - **Why did you keep them?**

Please give the original reason for keeping them when you stopped taking them.

1. For possible future use
2. Intended to dispose of or return sometime in the future
3. No particular reason
4. Other (please specify)

6. **Please tell me which, if any, of the following apply to you. In the past year…….?**

1. Have you been offered by a doctor, nurse or dentist an antibiotic prescription to be cashed in at the pharmacy ONLY if you felt no better, or felt worse after several days
2. Have you been offered by a doctor, nurse or dentist the opportunity to return to the surgery to pick up an antibiotic prescription ONLY if you felt no better, or felt worse after several days.
3. Have you been advised by a doctor, nurse or dentist about other remedies for cough and cold symptoms instead of being given an antibiotic prescription.

6a. If ‘ YES’ at 5.1 - When you were offered by a doctor, nurse or dentist an antibiotic prescription to be cashed in or collected at the pharmacy did you actually collect the antibiotics from the pharmacy?

  Code: Yes; No; Don’t know
6b. If ‘YES ‘at 5a Did you take at least some of the antibiotics prescribed?
Code: Yes; No; Don’t know

6c. If ‘Yes’ at 5.2 - When you were offered by a doctor, nurse or dentist the opportunity to return to the surgery to pick up an antibiotic prescription did you return to the surgery **AND** then collect the antibiotics from the pharmacy?
Code: Yes; No; Don’t know

6d. If ‘Yes’ at 5.2 - Did you take at least some of the antibiotics?
Code: Yes; No; Don’t know

7. The following are statements some people have made regarding antibiotics.
Taking your answer from this card please tell me if you agree or disagree with the following?
Code: Strongly agree; Agree; Disagree; Strongly disagree

**STATEMENTS**

A. Antibiotics work on most coughs and colds
B. Antibiotics can kill bacteria
C. Antibiotics can kill viruses
D. Resistance to antibiotics is a problem in British hospitals
E. Antibiotic resistant bacteria could infect me or my family
F. Resistance to antibiotics could be a problem in the community
G. Most coughs and colds get better on their own without antibiotics.

8. Based on what you know about antibiotics, how much of a problem, if at all, do you think the side-effects of antibiotics are?
A. Not a problem at all
B. A bit of a problem
C. A moderate problem
D. A major problem

9. SHOW CARD - Of the symptoms shown on this card which, if any, do you believe will get better more quickly with antibiotics?
   1. Cough with clear phlegm
   2. Cough with yellow phlegm
   3. Cough with green phlegm
   4. Runny nose with clear mucus
   5. Runny nose with yellow mucus
   6. Runny nose with green mucus
   7. A fever
   8. None of these
   9. DK

There was then a gap in the interview and participants were asked questions about an unrelated topic before being asked the following:

The next set of questions is about what you do when you have a possible infection and the medicines which are prescribed for treating these infections.

We want to find out how you take care of a cough, cold, flu or sore throat.

10. Have you had a sore throat, cold, cough or flu symptoms in the last 6 months?
1. Yes – Sore Throat
2. Yes – Cold
3. Yes – Cough
4. Yes – Flu
5. No

10a. If ‘YES’ at 10:1-4 - Thinking of your most recent illness with sore throat, cold, cough or flu symptoms in the last 6 months which of these symptoms did you have at that time?
   1. Sore Throat
   2. Cold
   3. Cough
   4. Flu

11. If ‘YES’ at 10:1-4 -Thinking about this most recent illness with <put in what they replied in10A> how did these symptoms affect your general health?
   1. I was severely affected
   2. I was moderately affected
   3. I was mildly affected
   4. I was not affected at all

12. If ‘YES’ at 10:1-4 - Thinking of this most recent illness with < put in what they replied in 10A>, which of the following actions, if any, did you take as a result?
   A. I contacted or visited my local doctor’s surgery to talk to a GP or nurse
B. I took left-over antibiotics I had at home which were prescribed for a previous illness
C. I took extra rest
D. I took treatment to relieve my symptoms which didn't need a prescription e.g. paracetamol or other pain relief
E. I used alternative medicines e.g. honey and lemon tea or herbal remedies
F. I asked for advice at the pharmacy
G. I Telephoned NHS Direct or used their website
H. I Visited a NHS walk-in centre
I. I don't remember
J. Other (please specify)

13. If ‘YES’ at 12:A - Why did you visit or contact your doctor’s surgery for this most recent illness with <put in what they replied in 10A>?
   A. The symptoms were severe
   B. After several days the symptoms hadn't improved
   C. My friend and family suggested I went
   D. Because I already have another medical condition
   E. I was worried about infecting other people I know who may get very ill (eg children, elderly, sick)
   F. I needed a sick/fit note
   G. I usually go to my GP with these symptoms
   H. I don’t remember
   I. Other (please specify)
14. If ‘YES’ at 12:A - What did you expect from your contact/visit to the doctor’s surgery for this most recent illness with <put in what they replied in 10A>?

A. To be prescribed antibiotics
B. To be prescribed Tamiflu© (Oseltamivir)
C. To be prescribed other treatment to relieve/reduce the symptoms
D. Advice about how to look after the symptoms
E. To rule out a more serious illness
F. Information about the how long the illness was likely to last
G. A referral to hospital/specialist
H. A sick/ fit note for work
I. Something else
J. I don’t remember

15a. If ‘YES’ at 10:1-4 - Which of these statements on this card best describes, how if at all, the swine flu outbreak or the media coverage of it affected what you did when you had your recent illness with <as in 10A>?

1. Affected my actions a lot?
2. Affected my actions a little
3. Did not affect my actions at all

15b. If ‘YES’ at 15a:1-2 - What did you do that you otherwise would not have done before the swine flu outbreak?

**before** the swine flu outbreak?

A. I Contacted/visited a GP or nurse at the doctors surgery
B. I Asked for antibiotics at the doctors surgery
C. I Asked for Tamiflu© at the doctors surgery
D. I Took care of myself without contacting the GP
K. I Telephoned NHS Direct or used their website
L. I Visited a NHS walk –in centre
E. I Contacted/ visited pharmacy.
F. I Stayed at home
G. I Washed my hands more often
H. None of these
I. Other (please specify)

16. ASK ALL ADULTS WITH CHILDREN AGED 0-4

Has your child or children under the age of 5 had a sore throat, cold, cough or flu symptoms in the last six months?

1. Yes – Sore Throat
2. Yes – Cold
3. Yes – Cough
4. Yes – Flu
5. No

16a. If ‘YES’ at 16:1-4 - Thinking of their MOST RECENT illness with sore throat, cold, cough or flu symptoms in the last 6 months which of these symptoms did they have?

1. Sore Throat
2. Cold
3. Cough
4. Flu
17a. If ‘YES’ at 16:1-4 - Thinking of that child’s most recent illness with <put answer in 16A response sore throat, cold, cough or flu> symptoms which of the following actions did you take as a result.

A. I Contacted or visited my local doctor’s surgery to talk to a GP or nurse
B. I Gave them left-over antibiotics I had at home which were prescribed for a previous illness
C. I Encouraged extra rest
D. I Gave them treatment to relieve the symptoms which didn’t need a prescription e.g. paracetamol or other pain relief
E. I used alternative medicines eg honey and lemon tea or herbal remedies
F. I Asked for advice at the pharmacy
G. I Telephoned NHS Direct or used their website
H. I Visited a NHS walk –in centre
I. Other (please specify)
J. None of these

17b. If ‘YES’ at 16:1-4 - Which of these statements on this card best describes, how if at all, the swine flu outbreak or the media coverage of it affected what you did when your child had this most recent illness with <as in 16A>

1. Affected my actions a lot
2. Affected my actions a little
3. Did not affect my actions at all

17c. If ‘YES’ at 17b:1-2 - What did you do that you otherwise would not have done before the swine flu outbreak?
A. Gave them left-over antibiotics I already had at home from a previous illness
B. Contacted/visited a GP or nurse at the doctors surgery
C. Asked for antibiotics at the doctors surgery
D. Asked for Tamiflu® at the doctors surgery
E. Took care of them without contacting the GP surgery
F. Telephoned NHS or used their website
G. Visited a NHS walk-in centre
H. Contacted/visited the pharmacy.
I. Kept them at home
J. Washed their hands more often
K. None of these
L. Other (please specify)

The following set of questions is about Swine Flu.

18. If you were to become infected with swine flu, how do you think the symptoms would affect your general health, if at all?
   1. I would be severely affected
   2. I would be moderately affected
   3. I would be mildly affected
   4. I would not be affected at all

19. Have you or anyone in your household had suspected or confirmed swine flu?
   1. Yes myself
2. Yes someone else in the household
3. No

20. How likely do you think you are to catch swine flu this year?
    If respondent has already had swine flu still ask respondent how likely they are to get it again this year.
    A. Very likely
    B. quite likely
    C. neither likely or unlikely
    D. quite unlikely
    E. Very unlikely

21. Tamiflu© is the antiviral given for the treatment of influenza and swine flu. Have YOU YOURSELF been PRESCRIBED Tamiflu© in the last two years?
    1. Yes
    2. No

A week later (28th January – 3rd February 2011) a separate group of respondents were asked if they had heard of Tamiflu© and what they thought it was.

1. Have you heard of Tamiflu©?
   A. YES
   B. NO
   C. DK

1a. If yes at 1 - What do you think it is?
A. Tamiflu® is an antibiotic
B. Tamiflu® is an antiviral
C. Tamiflu® is a vaccine
D. Tamiflu® helps if you have a cough or cold.
E. Tamiflu® helps if you have swine flu or influenza / flu.
F. Tamiflu® is a flu-like illness
G. Other (please specify)

1b. On this card are things some people have said about Tamiflu®. Please tell me which of these do think is true? Allow Don’t know
   A. Tamiflu® is an antibiotic
   B. Tamiflu® is an antiviral
   C. Tamiflu® is a vaccine
   D. Tamiflu® helps if you have a cough or cold.
   E. Tamiflu® helps if you have swine flu or influenza / flu.
   F. Tamiflu® is a flu-like illness