Original article

Consumer attitudes on cough and cold: US (ACHOO) survey results

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Abstract

Objective:
The Attitudes of Consumers Toward Health, Cough, and Cold (ACHOO) survey was developed to better inform health care providers on the natural history and impact of common cold and cough, and related consumer experience and behaviors.

Research design and methods:
Randomly selected US Internet/mobile device users were invited to participate in an online survey (N = 3333) in October 2012. Response quotas modeled upon 2010 US Census data ensured a demographically representative sample. To reduce potential bias from the quota design, 75% of the completed surveys were randomly selected as the primary analysis pool.

Main outcome measures:
Survey questions assessed participant demographics, frequency and duration of cough/cold symptoms, impact of symptoms on daily life, treatment preferences, and knowledge about cough/cold pathophysiology.

Results:
In the past year, 84.6% of respondents had experienced at least one cold. Colds typically started with sore/scratchy throat (39.2%), nasal congestion (9.8%), and runny nose (9.3%) and lasted 3–7 days. Cough, the most common cold symptom (73.1%), had a delayed onset (typically 1–5 days after cold onset) and a long duration (4–6 days in 35.2%). Nasal congestion and cough were the most bothersome symptoms. Many respondents waited until symptoms were ‘bad enough’ (42.6%) or multiple symptoms were present (20.2%) before using nonprescription medications. Drivers of choice included effectiveness in relieving symptoms, safety, and past experience. Respondents rarely consulted clinicians regarding treatment, and more than three-quarters had never received instructions from a clinician on how to choose a nonprescription cough/cold medication. Misperceptions regarding etiology and treatment of the common cold were prevalent. The main limitation is potential recall bias, since respondents had to recall cough/cold episodes over the prior year.

Conclusions:
The ACHOO survey confirms that cold is a common, bothersome experience and that there are gaps in consumers’ knowledge of pathophysiology and appropriate management of cough/cold.

Introduction

It is estimated that up to 500 million episodes of acute viral upper respiratory tract infection (i.e. the common cold) occur in the United States each year with an associated cost estimated at $40 billion annually\(^1\). The common cold is a leading cause of absenteeism from work or school\(^2\) and is responsible for an estimated 110 million physician office visits and 6 million emergency department visits each year in the United States\(^3\). Well recognized symptoms of the common cold include sore throat, nasal congestion and obstruction, sneezing,
cough, headache, and fatigue. According to the National Institute of Allergy and Infectious Diseases, most people recover from colds within 10 days, but durations may be as short as 2 days or as long as 2 weeks. Approximately 30% of colds are accompanied by cough; cough, in turn, is one of the 10 most common diagnoses made during hospital outpatient department visits. The duration of cough may exceed that of other cold symptoms: acute cough illness (acute bronchitis) has been estimated to last about 18 days.

Few large-scale assessments have been made to quantify and characterize the frequency and time course of common cold symptoms in the general US population or to gauge their impact on daily life. Likewise, little is known regarding consumer knowledge about the common cold, behaviors that result when symptoms of the common cold emerge, consumer perceptions regarding the many over-the-counter (OTC) symptomatic treatments that are available, how such treatments are chosen, what prompts visits to health care providers, or whether there are differences in any of these parameters based on different patient characteristics.

The Attitudes of Consumers Toward Health, Cough, and Cold (ACHOO) survey was developed to assess some of these important questions to better inform health care providers on the patient experience during common cold and cough. The specific objectives of this survey were to: (1) identify demographics and basic health information regarding people with coughs/colds and/or those who make decisions regarding nonprescription cough/cold products, (2) delineate the symptoms and time course of illness associated with the common cold, (3) determine the impact of cough/cold symptoms on daily life, (4) assess consumers’ perceptions of and preferred attributes for nonprescription cough/cold medications, and (5) identify educational gaps regarding the common cold and treatment decisions.

Participants and methods

Survey administration

The survey was developed through collaboration between Pfizer Consumer Healthcare R&D leadership in the cough and cold therapeutic area (M.A.W.) and a steering committee of experts in the field of cough and the common cold (M.S.B.; P.V.D.; R.E.). The survey was fielded via the Internet through OpinionPlace in October 2012; data were collected online and via mobile devices. The survey instrument was approved by the steering committee and consisted of 36 questions (Supplemental Table 1). To avoid response bias, categorical answer choices were presented in random order to each participant. Where applicable, answer choices were limited to those selected in previous questions and were presented in the same order throughout the survey for each individual respondent. Additional post hoc analyses were performed following review of the primary data set.

Survey participants

Survey participants were male or female Internet users aged ≥18 years who were recruited through real-time online promotions and directed to the secure website where the survey was hosted. They did not receive any compensation for participating. To ensure that the survey sample was demographically representative of the 2010 US Census, a multiphase sampling design was employed. The first phase included proportional quota sampling of 3333 individuals based on the following demographic characteristics: gender, age bands (18–24, 25–34, 35–44, 45–54, 55–64, and ≥65 years), educational attainment, employment status, household income, ethnicity, and census region (Northeast, Midwest, West, South). Potential respondents were excluded if they reported age <18 years or if their demographic quota had already been filled at the time of screening. To account for potential bias from the nonprobabilistic quota design and to ensure robust sampling estimates, a second phase was conducted in which 75% of the completed surveys were randomly selected to serve as the primary analysis pool. Weighted responses were used for statistical analyses.

Statistical analyses

The distribution of the dependent variable dictated the statistical method used. Characteristics reported at the interval or ratio level of measurement were reported with means, medians, standard deviations, standard errors, interquartile range (IQR = 75th percentile – 25th percentile), and/or 95% confidence intervals (CIs). All other sample characteristics were reported with frequencies, proportions, percentages, or odds ratios.

Original analyses, not reported here, included least squares regression, multinomial logistic regression, cumulative logistic regression, or chi-square test. FlexSort measurement methodology (M/A/R/C Research), which is comparable to the Q-methodology used in behavioral and marketing research, was used for question 27 (‘When you get sick with a cough/cold, when do you usually start taking nonprescription medicine?’) in order to avoid scale use bias. All analyses were weighted with the sampling weights and performed using SAS version 9.2 (TS2M3, SAS Institute, Cary, NC, USA).

*OpinionPlace is a registered trademark of United Sample Inc., Encino, CA, USA.

1M/A/R/C is a registered service mark of M/A/R/C Inc., Irving, TX, USA.
Results

Participant demographics

Demographic characteristics of the 75% of survey respondents who were randomly selected in the second phase to serve as the primary analysis pool are shown in Table 1. As determined by the sampling design, the study population was well balanced with regard to gender, age, and geographic area. Mean age was 46.4 years overall; 45.9 years for men, and 46.7 years for women. A majority of the respondents were white (76.1%), had completed at least some college-level courses (58.9%), were employed (58.9%), and earned <$100,000/year (66.3%). Most (88.9%) reported that they were in good, very good, or excellent health.

Primary survey results and prespecified analyses

Characteristics of cough and cold

Results of the survey confirmed that colds are a common experience: 84.7% of respondents had experienced at least one cold in the past year, and about 50% of the respondents reported that they had had at least two colds in that time period; median number in the past year was 1; IQR = 1 (Figure 1a). Among those respondents who had experienced a cold over the past year, the average number was 2.07 colds per year. Colds typically lasted 3–7 days (median: 5 days; IQR = 4 days) (Figure 1b). Increasing age was associated with fewer colds (Figure 1c).

According to respondents, the most common symptoms heralding the onset of a cold were sore throat (23.2%), scratchy throat (16.0%), nasal congestion (9.8%), and runny nose (9.3%) (Figure 2a). The most common symptom experienced during a cold was cough, as reported by 73.1% of the sample (Figure 2b). Onset of cough was typically delayed in relation to other cold symptoms, being present in only 15.3% at cold onset, but more commonly beginning 1–2 days (median: 5 days; IQR = 4 days) (Figure 1b). Increasing age was associated with fewer colds (Figure 1c).

Treatment of cough and cold

Patients differ on when they start symptomatic treatment for their cough and cold. While 36.1% of those surveyed reported beginning OTC treatments at the first sign of cough/cold, 42.6% of participants wait until cold symptoms ‘get bad enough’ (i.e. to cause distress) and another 20.2% wait until they have more than one symptom before beginning treatment (Table 2). A positive past experience was the most influential factor resulting in use of a specific OTC cough/cold medication for symptom

Table 1. Second phase survey respondent demographic characteristics.

| Characteristic                      | n (%) | (N = 2505) |
|-------------------------------------|-------|------------|
| Gender                              |       |            |
| Male                                | 1163  | (46.4)     |
| Female                              | 1342  | (53.6)     |
| Age, y                              |       |            |
| 18–24                               | 281   | (11.2)     |
| 25–34                               | 452   | (18.0)     |
| 35–44                               | 438   | (17.5)     |
| 45–54                               | 480   | (19.2)     |
| 55–64                               | 426   | (17.0)     |
| ≥65                                 | 427   | (17.0)     |
| Mean (SE)                           | 46.4  | (0.4)      |
| Race                                |       |            |
| White                               | 1906  | (76.1)     |
| African or African-American         | 257   | (10.3)     |
| Hispanic                            | 206   | (8.2)      |
| Asian                               | 121   | (4.8)      |
| Other                               | 47    | (1.9)      |
| Prefer not to answer                | 47    | (1.9)      |
| Highest educational level attained  |       |            |
| No schooling                        | 10    | (0.4)      |
| Some high school                    | 65    | (2.6)      |
| High school graduate                | 956   | (38.2)     |
| Some college                        | 568   | (22.7)     |
| Associate degree                    | 240   | (9.6)      |
| Bachelor’s degree                   | 451   | (18.0)     |
| Master’s degree                     | 215   | (8.6)      |
| Professional/doctorate degree       | 0     |            |
| Employment status                   |       |            |
| Employed                            | 1475  | (58.9)     |
| Homemaker                           | 255   | (10.2)     |
| Student                             | 119   | (4.8)      |
| Retired                             | 445   | (17.8)     |
| Unemployed                          | 211   | (8.4)      |
| Annual household income             |       |            |
| <$20,000                            | 284   | (11.3)     |
| $20,000–$49,999                     | 671   | (26.8)     |
| $50,000–$99,999                     | 705   | (28.1)     |
| $100,000–$149,999                   | 430   | (17.2)     |
| $150,000                             | 162   | (6.5)      |
| Prefer not to answer                | 252   | (10.1)     |
| Geographic area (n = 2469)          |       |            |
| Northeast                           | 447   | (18.1)     |
| Midwest                             | 524   | (21.2)     |
| South                               | 916   | (37.1)     |
| West                                | 582   | (23.6)     |
| General health status               |       |            |
| Excellent                           | 401   | (16.0)     |
| Very good                           | 1008  | (40.2)     |
| Good                                | 818   | (32.7)     |
| Fair                                | 225   | (9.0)      |
| Poor                                | 45    | (1.8)      |
| Very poor                           | 9     | (0.4)      |

*Percentages are based on weighted responses.
| Respondents were allowed to choose all that applied; 2584 responses were provided for race.
| Other race = American Indian or Alaskan native, India subcontinent, Native Hawaiian, or Pacific Islander.
Figure 1. Reported frequency (a) and typical duration (b) of colds in the past year. (c) Average number of colds by age (years). SE, standard error.
Figure 2. (a) Hallmark symptoms of the onset of common cold. (b) Overall incidence of symptoms typical of common cold. (c) Most bothersome symptoms. *Percentages are the sum of ‘bothers me a fair amount’ and ‘bothers me very much’ responses.
Table 2. Reasons for starting treatment with nonprescription cough/cold medication*.

| Reason for treatment                                      | n (%) |
|-----------------------------------------------------------|-------|
| When you get sick with a cough/cold, when do you usually start taking nonprescription medicine? | 1068 (42.6) |
| When my general cold symptoms get bad enough             |       |
| At first sign of illness                                  | 904 (36.1) |
| When I have more than one symptom                         | 506 (20.2) |
| I do not take nonprescription medicine                     | 204 (8.1) |
| Only when I need to do certain things during the day       | 204 (8.1) |
| Only when I need to do certain things during the night     | 187 (7.5) |
| Some other time (please specify)                          | 31 (1.3) |

*Respondents were asked to check all that applied, so more than one answer per respondent was allowed.
†Most of the ‘other’ responses were ‘at bedtime’ or ‘to help me sleep’.

Table 3. Reasons for choice of nonprescription cough/cold medication*.

| Reason for choice                                      | n (%) |
|--------------------------------------------------------|-------|
| I use what has worked for me before                     | 1559 (62.2) |
| I use what I have on hand                              | 724 (28.9) |
| I choose at the pharmacy (on my own)                   | 677 (27.0) |
| Health care provider recommendation                    | 535 (21.4) |
| Pharmacist recommendation                              | 384 (15.3) |
| Friend/co-worker                                        | 308 (12.3) |
| Lowest price                                           | 268 (10.7) |
| Mom used it/parents gave it to me                      | 265 (10.6) |
| Have a coupon                                          | 177 (7.1) |
| I try new products                                     | 143 (5.7) |
| Recent advertisement                                   | 131 (5.2) |
| Read about it online                                   | 108 (4.3) |
| Highest price                                          | 29 (1.1) |
| Other reason†                                          | 105 (4.2) |

*Respondents were asked to check all that applied, so more than one answer per respondent was allowed.
†Other reasons most frequently included variations of: ‘I don’t use OTC medications’, ‘I choose a medication based on the symptoms I have’, ‘I prefer natural or homeopathic remedies’, ‘I choose based on compatibility with chronic conditions (heart disease, diabetes, etc)’, and ‘medication recommended by my wife’.

Factors influencing consumer choice of OTC cough/cold products

In order to understand which product attributes influence consumer choice when attempting to garner relief from cough/cold, participants were asked to rate a variety of characteristics on a 5 point scale ranging from ‘not very important at all’ to ‘extremely important’. In this regard, the most important features influencing consumer choice of OTC cough/cold medication included ‘how well it makes me feel’, past experience, and lack of side effects (Figure 4). A higher level of education was positively related to choosing a nonprescription cough/cold remedy based on its active ingredients (Figure 5). Respondents preferred products that treat specific individual symptoms (66.2%) over those that target multiple symptoms (32.6%). In queries that directly assessed the use of cough syrups, ‘how well it works’, ‘how fast it works’, and ‘how long it works’ were considered ‘important’/‘very important’ by 92.4%, 88.2%, and 86.6%, respectively (data not shown). Over two-thirds (69.5%) of respondents rated ‘soothability’ as an ‘important’ or ‘very important’ attribute of a cough syrup in terms of making a product choice. Of those surveyed, 53.7% considered the cost of cough syrup and 45.3% considered its taste to be ‘important’ or ‘very important’ in their decision on which product to obtain. Thickness of the cough syrup was considered ‘important’ or ‘very important’ by 19.4% of participants.

Participants’ knowledge of cough/cold pathophysiology

Survey results revealed a lack of respondent knowledge pertaining to the biology and pathophysiology of the common cold. In terms of causes of the common cold, with respondents allowed to choose as many causes as they believed to be true, 69.6% correctly recognized that colds are a viral illness, over one-third of respondents thought that colds resulted from bacterial infection or from a weak immune system, while 7.5% were unsure of the cause. Nearly 15% attributed cough/cold to cold weather exposure. Overall, 26.9% falsely believed that antibiotics are important for treating the common cold. There was a lack of consensus as to whether the common cold could be prevented in most cases, with 21.7% either disagreeing or strongly disagreeing, 35.0% neither...
agreeing nor disagreeing, and 43.3% agreeing or strongly agreeing that prevention was possible. Most of the survey participants had an interest in obtaining more education about the common cold and its treatment, with ~95% stating they considered such information as ‘somewhat’ or ‘very important’.

**Post hoc analyses: cough/cold characteristics associated with increased duration of cold**

Following an initial review of the data, several post hoc analyses were conducted to explore additional key relationships in the data. Cold duration increased with duration of cough (Figure 6) and the number of cold symptoms...
(Figure 7), but exhibited a negative relationship with perceived health status (i.e. those with better health status had shorter colds; Figure 8).

**Discussion**

Despite the common cold being among the most frequent ailments encountered in clinical practice today, there are limited data on people’s perspectives regarding the common cold experience or its impact. The Attitudes of Consumers Toward Health, Cough, and Cold (ACHOO) investigation is one of the largest US population-based surveys undertaken in an attempt to define the epidemiology and natural history of the common cold and cough in adults. In our survey population, most people indicated having 1–2 colds per year, lasting from 3 to 7 days.

To the best of our knowledge, the only other large \( (N = 4051) \), nationally representative survey on cough/cold epidemiology was conducted over a decade ago (November 2000–February 2001). That random digit-dial, computer-assisted telephone survey reported a similar yearly average of viral respiratory tract infections in adults \( (2.2) \). The ACHOO survey results are also consistent with the average annual number of respiratory tract illnesses \( (2.3) \) observed by Gwaltney et al. during a 3 year prospective evaluation of young adult workers \( (N = 468) \) from Charlottesville, Virginia, USA, during the mid-1960s, thus validating the robustness of the data collected within this survey.
Our survey indicates that sore/scratchy throat, nasal congestion, and runny nose are the symptoms that herald the onset of cold. Cough was the single most commonly reported symptom associated with the common cold. The onset of cough was somewhat delayed compared to other symptoms but lasted longer in comparison. This presentation is consistent with the investigation of Gwaltney et al. that found the most common initial symptoms (days 1–3) were rhinorrhea, sneezing, and sore throat. Furthermore, when present, cough tended to be more persistent, often lasting 9 days. While only 6.2% of our respondents reported sneezing as a sign of an impending cold, this symptom eventually emerged in over half (57.4%) of participants surveyed.

The ACHOO survey revealed that, based on participant recollection over the previous year, nearly 70% of respondents estimated their colds to last from 1–6 days. Information obtained from prospective studies of cold symptoms suggests that this duration may be somewhat conservative. For example, Arruda et al. prospectively evaluated 346 persons with fresh autumn colds for the presence and severity of symptoms and the extent to
which symptoms interfered with daily activities. The symptoms reported initially as well as those rated most bothersome are consistent with the ACHOO survey findings. Of note, however, the median duration of cold symptoms found via prospective assessment was notably longer (11 days) than our survey results found on retrospective assessment (1–6 days).

Similarly, there is evidence that people may also underestimate the time course of cold-associated cough. Despite being the most commonly cited symptom present during a cold in our survey, only 7.2% of respondents reported that their cough lasted longer than 12 days. In contrast, a nationwide Japanese survey (N = 1000) that initially identified persons with cough and followed them found that the mean duration of cough was 3.8 weeks. Furthermore, in a systematic review of the literature focusing on the natural history of undifferentiated acute respiratory tract infection with cough in otherwise healthy adults, Ebell et al. found that the duration of ‘any cough’ in 19 evaluated prospective cohort and randomized controlled studies was a mean of 17.8 days (range, 15.3–28.6 days). Ebell et al. also performed an assessment of acute cough illness using the Georgia Poll, a random digit-dialing survey of 493 Georgia, USA, residents aged 18 years and older, and found that community-dwelling residents expected acute cough illness to resolve in 6.5–9.2 days, i.e. considerably less time than was determined from their systematic review. Misaligned expectations for timing of cough’s resolution with actual duration of cough may lead to increased office visits and requests for antibiotics. Ebell et al. called on physicians to educate their patients “that it is normal to still be coughing 2 or even 3 weeks after onset, and that they should only seek care if they are worsening or if an alarm symptom, such as high fever, bloody or rusty sputum, or shortness of breath, occurs.”

Given that more than 200 viruses are believed to cause the common cold, it is understandable that there is currently no universal treatment targeting the underlying etiology. Rather, management of this self-limited illness largely consists of symptomatic therapy to reduce the discomfort and overall impact of cold. Respondents to the ACHOO survey indicated strong consumer preferences with regard to OTC cold products and cough syrups. Effectiveness in relieving symptoms was the most important driver of choice, yet consumers tended to rely on their own past experience, using products that have worked well for them in the past rather than selecting a new product matched to their current symptoms. Those participants with higher levels of education were more likely to select OTC products based on ingredients.

Results of the ACHOO survey suggest that there are opportunities to improve communication between health care providers and their patients regarding cough/cold. Despite the fact that 95% of respondents felt it was somewhat or very important to receive education about colds and their treatment, few respondents had actively sought advice from a health care provider regarding the symptomatic management of cough/cold. Of those health care providers who were consulted, less than half of them offered recommendations for OTC medications that may have provided symptomatic relief. Furthermore, the majority of recommendations received did not specify a brand. These findings suggest that communication improvements, from both the patient’s and the health care provider’s perspective, are needed. Initiating a dialog regarding symptomatic options for cough/cold episodes and providing specific recommendations for treatment will aid patients in making self-care decisions.

Nearly two-thirds of respondents in the ACHOO survey reported that they more often preferred a product that addressed an individual symptom (66.2%) instead of one that targeted multiple symptoms (32.6%). In contrast, a recently published survey assessing the experience and impact of the common cold in six countries (Brazil, China, Germany, India, Russia, and the US; N = 3109) during the 2011/2012 cold and flu season found that multisymptom cold treatments were used more often overall (66%) than single-symptom treatments; China (88%), Brazil (76%), and India (74%) had the highest rates of multisymptom product use, Germany (29%) had the lowest. This is perhaps reflective of the finding that 73% of overall respondents relied on their physician or pharmacist to provide advice and information on cold and flu, ranging from a high of 95% in India to a low of only 41% in the US.

Likewise, health care providers lack appropriate guidelines and evidence from randomized, controlled trials on which to base recommendations. Currently, there are a fairly limited number of active ingredients (anti-inflammatories/analgesics, antihistamines, decongestants, expectorants, and antitussives) used in OTC cough/cold products, but they are sold in a wide variety of brands that may contain single or multiple ingredients. Some individual brands offer multiple formulations (e.g. daytime versus nighttime, regular versus extra strength, and formulations with different ingredients targeting different symptoms). Most of the active ingredients are ‘generally recognized as safe and effective’ by the US Food and Drug Administration when used in accordance with the labeling directions. The most recent American College of Chest Physicians guidelines on management of cough and the common cold, which were published in 2006, recommend first-generation antihistamine/decongestant preparations, with best available evidence supporting brompheniramine and pseudoephedrine for acute cough associated with the common cold. Although pseudoephedrine is still technically classified as an OTC (nonprescription) drug, it is now available only ‘behind the counter’ in US pharmacies, where it may be purchased in limited supply by consumers as part of a strategy to deter its misuse in the synthesis of methamphetamine.
Thus, there is still a need for development of new or improved OTC cough/cold products. In the meantime, perhaps the most reasonable strategy is to educate patients regarding how to read OTC labeling and how to match active ingredients to their current symptoms. Part of this education should be focused on avoiding the concurrent use of more than one product with the same active ingredient (e.g. acetaminophen), a practice that can lead to inadvertently exceeding the maximum recommended daily dose and increased risk of toxicity. Careful review of product labels of each symptomatic treatment used can help minimize this potential. Additionally, patients with certain medical conditions, such as hypertension, should be counseled that oral decongestants may worsen their condition and encouraged to check with their health care provider to make sure that the OTC medication they plan to use is safe for their individual circumstance.

The current survey also reveals gaps in public knowledge about the common cold that may contribute to inappropriate antibiotic requests and/or usage. About one-third of respondents believed that the common cold was a result of a bacterial infection, and approximately one-quarter thought antibiotics were an appropriate treatment option for the common cold. These findings are consistent with results from Ebell and colleagues’ Georgia poll, in which 34.1% of respondents believed antibiotics were always helpful. They are also consistent with the findings of the previous large US survey in which 39% of adults who sought medical attention for viral respiratory infections received an antibiotic prescription. Antibiotics are ineffective for treatment of viral respiratory infections, do not decrease the rate of return visits, can have significant side effects, and their overuse contributes to development of antibiotic resistance and excessive health care costs. Yet, the Healthcare Effectiveness Data and Information Set measures for 2011 indicate that antibiotics were inappropriately prescribed more than 75% of the time for acute bronchitis in adults. The US Centers for Disease Control and Prevention (CDC) recommends antibiotics only for adults with acute pharyngitis who have tested positive via rapid antigen test for group A beta hemolytic streptococcus; for those with a clinical diagnosis of acute bacterial rhinosinusitis with symptoms lasting ≥7 days and associated with exam findings including maxillary facial/tooth pain, especially if it is unilateral, and nasal secretions characterized as purulent; or for those in whom pertussis is suspected and confirmed by appropriate diagnostic testing. Most other upper respiratory infections and 90% of acute cough illnesses are of viral origin and should not be treated with antibiotic. To reduce antibiotic use, the CDC encourages physicians to educate patients about the risks of antibiotic resistance, refer to acute cough illness (acute bronchitis) as a ‘chest cold’, identify and validate patient concerns, answer any patient questions, and recommend specific symptomatic therapies.

The ACHOO survey is one of the largest nationally representative surveys ever conducted on cold/cough epidemiology and consumer preferences and provides an update to older surveys. Along with its sample size, another strength of this survey is that steps were taken to minimize potential bias (e.g. randomizing the order of categorical answer choices). Its main limitation is that the survey was subject to respondent recall bias; prospective studies suggest that ACHOO survey participants may have underestimated the duration of cold and cough symptoms. Another limitation is that we did not collect demographic information pertaining to number of children in the household, which may have influenced the total number of colds. An early study of families in Cleveland, Ohio, USA, determined that individual family members tend to have a similar incidence of respiratory viruses within a given year and over a 5-year span, even after controlling for sex of parents, age of children, and year of observation. This is likely attributable to the spread of respiratory infections within a home (although hereditary and environmental factors cannot be ruled out). Although not reported here, correlations of cough/cold symptoms with their impact on quality of life also would be of interest. Indeed, these data are currently under analysis, and such findings and their interpretation will be the focus of a future manuscript.

Conclusion

The ACHOO survey results indicate that cold is indeed a common and bothersome experience that affects most adults in the US population for a few days to a few weeks out of every year. The survey results reported here describe gaps in general knowledge about the pathophysiology and appropriate management of cough and cold. It also reveals that affected persons infrequently consult health care providers for treatment recommendations related to cough/cold. When patients do ask for such recommendations, they receive them less than half of the time. These findings indicate a need for health care providers to pre-emptively offer patients information about the etiology, natural history, and appropriate management of cough/cold. Better consumer education could potentially improve symptom management, reduce office visits and requests for inappropriate antibiotics, and reduce the impact of cough/cold on people’s daily lives.

Transparency

Declaration of funding

This survey was developed through collaboration between Pfizer Consumer Healthcare R&D leadership in the cough and cold
therapeutic area and a steering committee comprising the following experts in the field of cough and the common cold: M.S.B.; P.V.D.; and R.E. The steering committee members participated in all aspects of survey question development and implementation, including approval of the final survey. They also actively participated in the analysis and interpretation of the data and contributed recommendations for areas of additional investigation and analysis. The survey was implemented by M/A/R/C Research and funded by Pfizer Consumer Healthcare. M.S.B., P.V.D., and R.E. received an honorarium from Pfizer in connection with the development of this manuscript.

Declaration of financial/other relationships
M.S.B. has disclosed that at the time of manuscript development he was a consultant for Allergan Inc., Amedra Pharmaceuticals, Bausch & Lomb Inc., GlaxoSmithKline, JDP Therapeutics Inc., Meda Pharmaceuticals Inc., Merck and Co. Inc., Pfizer Inc., PMD Healthcare, Procter & Gamble, Sanofi, Sunovion Pharmaceuticals Inc., Vectura, and Zarbee’s Naturals. He was also a speaker for AstraZeneca, Bausch & Lomb Inc., Genentech, GlaxoSmithKline, Meda Pharmaceuticals Inc., Merck and Co. Inc., Mylan Inc., Nestlé, Sunovion Pharmaceuticals Inc., and Takeda Pharmaceutical Co. He is also a Pfizer stockholder. P.V.D. has disclosed that he is a consultant for Novartis Corp., Pfizer Inc., and Reckitt Benckiser Group. He is also a speaker for Boehringer-Ingelheim GmbH. R.E. has disclosed that he is a consultant for Bayer, Novartis Corp., Pfizer Inc., and Procter & Gamble. M.A.W. has disclosed that he is an employee of Pfizer.

CMRO peer reviewer 1 has disclosed that he has received grants from DuPont and Janssen, and has been a consultant to Pfizer, GSK, and Janssen. CMRO peer reviewer 2 has no relevant financial or other relationships to disclose.

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Previous presentation: Attitudes of Consumers Toward Health, Cough, and Cold (ACHOO): US Cough and Cold Survey. Presented at: American Cough Conference (ACC), 7–8 June 2013, New York, NY, USA.

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