

Background

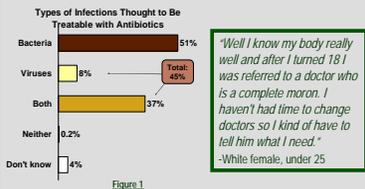
Antibiotic resistance is a growing problem which threatens the ability of health care providers to provide effective treatments for infectious diseases. Numerous patient (and clinician) behaviors have been documented as contributing to the development of resistance, including obtainment of antibiotics from sources other than health care providers, the practice of stopping antibiotic prescriptions early, and pressuring of health care providers to prescribe antibiotics for conditions for which they are inappropriate^{1,2}. The purpose of this research was to gain a better understanding of the beliefs and risk factors associated with such behaviors, and to identify ways in which clinicians can use this information to more effectively discourage inappropriate antibiotic use patterns in their patients.

Methods

In September through November of 2006, a sample of 919 English speaking U.S. adults who had taken antibiotics within the last 12 months was interviewed by telephone. Respondents answered questions about their practices, experiences, and beliefs concerning antibiotic use. Responses were weighted to reflect the U.S. population by gender, ethnicity, and age based upon the U.S. Census Bureau's 2005 Population Estimates, and regression analysis was carried out to determine associations between variables. All differences noted between segments are significant at the 95% confidence level.

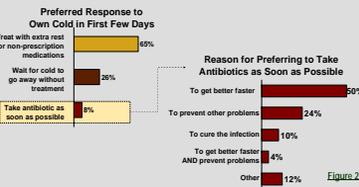
Results

While many patients believe that they "know what they need" to treat illnesses, patient knowledge on basic issues related to antibiotic use is often quite low. 10% of respondents identified Tylenol, Ribadissin, or both of these as antibiotics, and an additional 4% named other non-antibiotic drugs as antibiotics at some point in the survey. Additionally, nearly half of respondents reported a belief that antibiotics are useful for treating infections of viral origin. (See Figure 1).

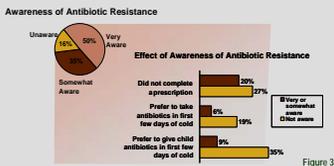


Results

More specifically, 8% of respondents stated that antibiotics are their first choice of treatment during the first 3 days of a cold, and a belief that antibiotics can treat viral illnesses was associated with this preference; respondents who held this belief had an 11% chance of preferring antibiotic treatment, compared to 5% of those who knew that antibiotics were only effective against bacterial infections. 13% of parents preferred to give their children antibiotics right away, and for this group, the effect of believing that antibiotics can treat viral infections was even stronger. The proportion that expressed a preference for antibiotic treatment remained constant at 5% for those who displayed correct knowledge, but a full 21% of those who believed that antibiotics can treat viruses preferred antibiotic treatment for their children in the first 3 days of a cold. Figure 2 illustrates cold treatment preferences, and summarizes the reasons respondents gave for preferring antibiotics.



Treatment preference for an early stage cold was also positively affected by having knowledge about antibiotic resistance, a factor which also reduced the likelihood that a respondent would report stopping a prescription early without consulting a health care provider. (See Figure 3). Behavioral effects did not differ significantly between respondents who reported being "very aware" of resistance and those who reported being "somewhat aware" of it. Positive behavioral effects were also not reduced among those who had erroneous beliefs, such as that it is the human body, rather than the bacterium, which acquires resistance to antibiotics.



Results

Several demographic factors are of interest with regards to treatment preferences for colds as well. Marked differences exist between predictors for preferring antibiotic treatment for oneself and preferring it for one's children, as shown by Figure 4.

Predictors for Preferring Antibiotic Treatment During First Three Days of One's Own Cold		Predictors for Preferring Antibiotic Treatment During First Three Days of One's Child's Cold	
Respondent in excellent or good health	5%	Respondent age 25 and over	10%
Medical transportation provided by self or other household member	15%	White/Caucasian ethnicity	41%
Income \$15,000 or over	7%	Hispanic, African American, or other ethnicity	24%
Some education beyond high school	14%	Child age 4 and over	4%
White/Caucasian or Hispanic ethnicity	14%	Child under 4	18%
Residence less than 30 minutes from health care provider	7%		
		White/Caucasian or other ethnicity	15%
		African American or other ethnicity	19%
		Residence more than 30 minutes from health care provider	1%
			15%

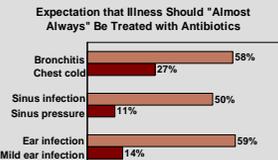
"It's common knowledge that antibiotics help you to get over a cold or a virus faster."
 -White Female, 35-44 years old

More targeted research will be needed to understand the drivers behind some of these demographic differences, although the data does raise some interesting preliminary information for further consideration. In some cases, circumstances such as poor health or difficulty in getting to a health care provider may motivate people to feel that an extra level of caution is indicated. The same is likely true for parents of young children and particularly young parents—though the strength of the association between antibiotic preference for a child's cold and young parental age is perhaps unexpected. In other cases, the data may indicate that some population segments are not being reached by the educational messaging regarding antibiotic use that has been carried out to date.

"I didn't really think I could quit smoking to give me enough time to get better by not smoking. I just chose to take antibiotics over quitting smoking."
 -Hispanic Male, 25-34 years old

Results

Reported expectations for antibiotics were also strongly affected by the terminology used to communicate diagnosis, an effect that has been previously noted for bronchitis³. Figure 5 illustrates this effect for three conditions.



Conclusions and Implications for Clinical Practice

These results suggest potential communication strategies that health care providers can use to reduce expectations for antibiotics by patients presenting with infections of likely viral origin. By understanding potential gaps in patient knowledge and communicating diagnosis in ways that patients find less threatening, clinicians may more effectively negotiate encounters in which patients exert pressure to prescribe an unnecessary antibiotic. Specifically, the results indicate that the following practices may be useful:

- Remember that patients may not have sophisticated understanding of what antibiotics can do, and take this into account when talking with patients who have requested unnecessary antibiotics. For example, a statement like "you have a virus, so you don't need an antibiotic today" might not be accepted as a logical argument to the 45% of survey respondents who said that antibiotics can treat viruses.
- It is important to remember that patients usually have specific reasons for their preferences. Since the most common reason given for preferring antibiotics for a cold was "to get better faster," it may be worth emphasizing the fact that antibiotics cannot help this happen.
- Similarly, when giving a patient a prescription, it may be helpful to make sure the patient understands what type of medication he or she is receiving.

Conclusions and Implications for Clinical Practice

- Survey results show that having any level of knowledge about antibiotic resistance does indeed lead to lower rates of patient antibiotic requests and other undesirable behaviors. It is worth the time to explain to patients how resistance develops, and how this could directly affect them.
- Communicating diagnosis in terminology that patients find less threatening may substantially reduce expectation of receiving an antibiotic.
- While the demographic data requires further study, some of the preliminary findings may be of use to clinicians. For example, young parents may particularly benefit from some extra reassurances regarding reasons for not prescribing an antibiotic.

References Cited

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