



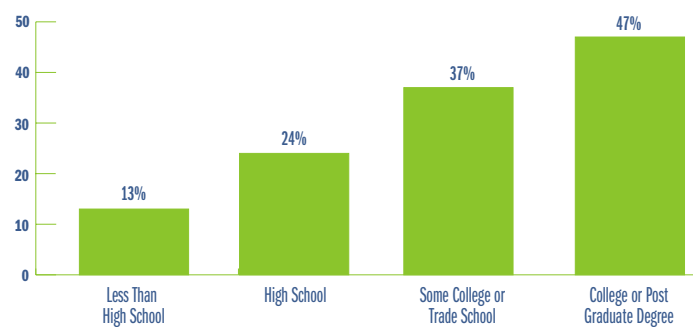
September 2003

# ANTIBIOTIC MISUSE

Antibiotics are becoming less effective, and in some cases ineffective, against bacterial infections (referred to as “antibiotic resistance”). The 2002-03 Los Angeles County Health Survey (LACHS) provides important new data about the public’s knowledge and practices concerning antibiotics—powerful medications that are being widely used and misused, leading to increases in antibiotic resistant disease. Fewer than one-in-three adults reported correctly that antibiotics are used to treat bacterial infections, and nearly half (46%) of adults reported that they call their doctor for antibiotics when they have a cold or the flu—viral infections for which antibiotics are not effective. These findings highlight the need to educate all adults about the appropriate use of antibiotics.

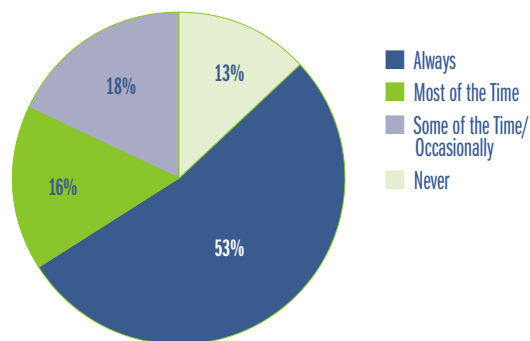
Overall, only 32% of adults correctly reported that antibiotics are used for bacterial infections (but not for viral infections); the percentage responding correctly increased with education level (Figure 1).

**FIGURE 1** Knowledge of Appropriate Uses of Antibiotics\* by Educational Level, 2002-03



\* For bacterial but not for viral infections

**FIGURE 2** Do Adults Take All of their Antibiotics as Prescribed? 2002-03



- Knowledge was higher among U.S. born (42%) than non-U.S. born (18%) adults, and was higher among respondents who answered the questions in English (38%) as compared to Spanish (15%) (Table 1).
- Nearly half (47%) of adults reported that they do not take their antibiotics until they are gone, as prescribed. (Figure 2)
- Adults with a regular source of care were more likely to finish prescribed antibiotics than those without a regular source of care (Figure 3).
- 28% of adults in the County reported that they obtain antibiotics from friends and family members.

Adults who responded correctly that antibiotics are effective for bacterial (but not viral) infections (“high knowledge” group) were more likely to report

**TABLE**  
**1**

**Antibiotics Practices by Selected Cultural and Linguistic Characteristics, 2002–03**

	High Knowledge about Antibiotics' Effectiveness	Get Antibiotics from Family and/or Friends	Always Take Antibiotics Until All Gone
	Percent	Percent	Percent
<b>Los Angeles County</b>	32%	28%	53%
<b>Race/Ethnicity</b>			
Latino	22%	36%	44%
White	47%	14%	68%
African American	27%	28%	58%
Asian/Pacific Islander	24%	40%	36%
<b>Language of Interview</b>			
English	38%	22%	59%
Spanish	15%	43%	40%
Other*	—†	48%	—†
<b>Among Latinos Only</b>			
<b>Acculturation</b>			
Low Acculturation	15%	41%	41%
High Acculturation	31%	29%	48%
<b>Place of Birth</b>			
Non-U.S. Born	17%	39%	43%
U.S. Born	33%	30%	46%
<b>Years in U.S. (Non-U.S. Born only)</b>			
Less than 10 Years	12%	58%	31%
10 or more Years	18%	33%	47%

\* Includes Mandarin, Cantonese, Korean and Vietnamese  
† For purposes of confidentiality, results with cell sizes less than 5 are not reported

■ Adults in the “high knowledge” group were less likely to report getting antibiotics from friends and family members than adults in the “low knowledge” group (16% vs. 33%).

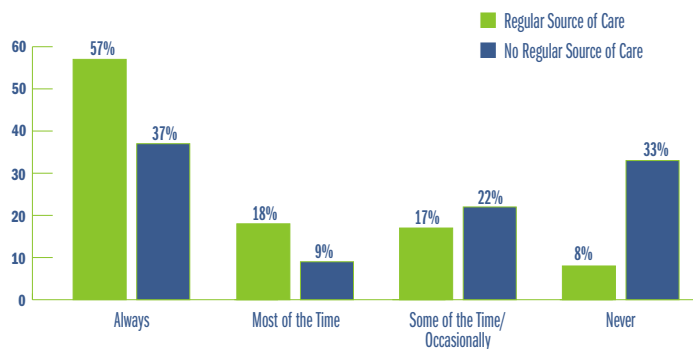
**Antibiotic Resistant Disease**

Antibiotic resistance has become a global public health problem. Since the discovery of antibiotics in the 1940s, their widespread use has promoted bacterial resistance. As a result, patients with antibiotic-resistant infections are likely to experience longer and more costly hospital stays, requiring treatment with more powerful antibiotics that may cause additional and more severe side effects.<sup>1</sup> Furthermore, newer and stronger antibiotics take time and are costly to develop.<sup>2</sup>

While antibiotics should be used to treat bacterial infections, they are not effective against viral infections like the common cold, most sore throats, and influenza (or “the flu”). The U.S. Centers for

appropriate antibiotic use practices than adults who responded incorrectly (“low knowledge” group) (Figure 4).

**FIGURE**  
**3** **Percentage of Adults Taking All of Their Prescribed Antibiotics by Regular Source of Care, 2002–03**



■ Adults in the “high knowledge” group were more likely to finish prescribed antibiotics (63%) than those in the “low knowledge” group (48%).

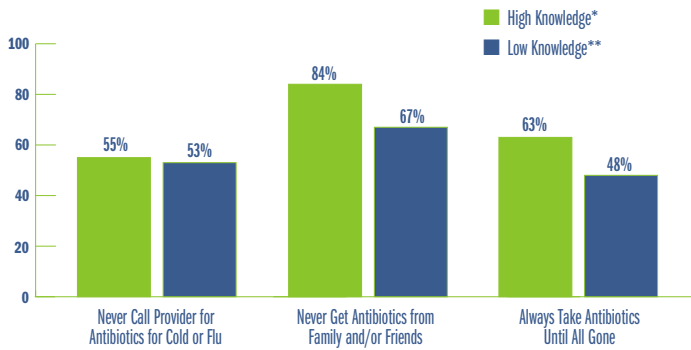
Disease Control and Prevention (CDC) estimates that tens of millions of antibiotics courses are dispensed unnecessarily every year.<sup>3</sup> In part, this may be feeding the perceptions among patients that antibiotics are effective against colds or the flu, as was found in several studies conducted in primary care settings.<sup>4–6</sup>

Outpatient antibiotic prescriptions have declined nationwide in the last decade, suggesting a promising trend in reducing their inappropriate use.<sup>7,8</sup> However,

1. Cosgrove SE, Carmeli Y. The impact of antimicrobial resistance on health and economic outcomes. *Clin Infect Dis* 2003;36:1433-1437.
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4. Braun BL, Fowles JB, Solberg L, Kind E, Healey M, Anderson R. Patient beliefs about the characteristics, causes, and care of the common cold: an update. *J Fam Pract*. 2000 Feb;49(2):153-6.
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8. Steinman MA, Gonzales R, Linder JA, Landefeld CS. Changing Use of Antibiotics in Community-Based Outpatient Practice, 1991–1999. *Ann Intern Med*. 2003 Apr 1;138(7):525-33.

**FIGURE 4**

**Positive Antibiotic Use Practices by Knowledge of Antibiotics' Effectiveness, 2002-03**



\* Adults who correctly reported that antibiotics are effective for treating bacterial infections  
 \*\* Adults who incorrectly reported that antibiotics are effective for treating viral infections, both bacterial and viral infections, or did not know

incorrect use of antibiotics, even when properly prescribed, is also problematic. Such misuse occurs when the patient fails to consume ALL of the medication as prescribed, saves a partial course for later use, and/or shares antibiotics with others—all practices that promote antibiotic resistance.

**What Can be Done?**

**Public Education**

Widespread misconceptions about which illnesses can be appropriately treated with antibiotics points to the critical need for education. This education should occur in healthcare providers' offices and pharmacies—places where people receive their medications. Efforts in L.A. County and nationally to improve antibiotic use practices are highlighted on this page.

Findings from the LACHS suggest that knowledge improves antibiotic use practices. Those adults who correctly reported that antibiotics were effective for treating bacterial infections were more likely to report positive practices such as finishing prescribed antibiotics, and less likely to report negative practices such as getting antibiotics from friends and family members.

In addition, there is a need for culturally and linguistically appropriate education. Findings from the survey suggest that foreign-born Latinos and non-English speaking respondents had lower levels of knowledge about antibiotics and were less likely to finish prescribed antibiotics. In addition, slightly higher percentages of adults who were foreign born and non-English speaking obtained antibiotics from friends and family members (as opposed to a doctor) (Table 1). (Twenty-eight percent of adult respondents in the survey preferred to interview in a non-English language, which corresponds to approximately 1.9

**on the web**

**Los Angeles Antibiotic Resistance Education Advocates (LA AREA)** is a community education project aimed at promoting the appropriate use of antibiotics by collaborating with clinics, health centers, health plans, schools, agencies, and community members. LA AREA is a project of the Acute Communicable Disease Control Program, Los Angeles County Department of Health Services (213-240-7941).  
<http://lapublichealth.org/acd/antibio.htm>

**Alliance Working for Antibiotic Resistance Education (AWARE)** is a project of the California Medical Association Foundation that has initiated a long-term statewide effort to promote the appropriate use of antibiotics. AWARE is a partnership that includes physician organizations, healthcare providers, health systems, health plans, public health agencies, consumer and community based health organizations, federal, state and local government representatives and the pharmaceutical industry.  
<http://www.aware.md>

**The Centers for Disease Control and Prevention (CDC)** since 1995 has promoted appropriate antibiotic use to reduce antimicrobial resistance. CDC has funded counties and states to develop, implement and evaluate local campaigns. A new national media campaign will be launched in September 2003.  
<http://www.cdc.gov/getsmart/>

**Antibiotic Resistance Information Corner** appears in *The Public's Health*—an L.A. County newsletter for healthcare providers. Recent information included trends in antibiotic treatment, resistant disease, prescribing, and educational interventions.  
<http://lapublichealth.org/acd/antibioArchive.htm>

million adults.) State and County outreach efforts have been directed to ethnically diverse communities with education materials primarily available in English and Spanish. In addition, LA Care Health Plan and California AWARE (see “on the web” above) have developed educational materials in ten non-English languages. Efforts are needed both nationally and locally to improve the availability of linguistically and culturally appropriate educational materials.

**Medical Provider Education**

Educational interventions aimed at physicians and patients have been shown to reduce prescription rates.<sup>9-11</sup> Such interventions may work by changing attitudes towards antibiotics, for example, among parents of

9. Belongia EA, Sullivan BJ, Chyou P, Madagame E, Reed KD, Schwartz B. A community intervention trial to promote judicious antibiotic use and reduce penicillin-resistant *Streptococcus pneumoniae* carriage in children. *Pediatrics* 2001;108:575-583.  
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young children,<sup>12</sup> or be aimed at improving physician-patient communication. Patients often expect to be prescribed antibiotics and this pressure can be difficult for physicians to ignore. However, studies have shown that communication by the physician influences patient satisfaction more than the receipt of an antibiotic,<sup>13,14</sup> particularly when patients are told by their physician to contact them if symptoms do not improve. These findings suggest that clearly explained diagnoses and

courses of treatment may result in reduced demand for, and prescription of, medically unwarranted antibiotics.

12. Taylor JA, Kwan-Gett TC, McMahon EM. Effectiveness of an educational intervention in modifying parental attitudes about antibiotic usage in children. *Pediatrics*. 2003 May;111(5 Pt 1):e548-54.
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**Note: Data for this report were based on a randomly-selected subsample of 1,028 respondents.**

The Los Angeles County Health Survey is a periodic, population-based telephone survey that collects information on sociodemographic characteristics, health status, health behaviors, and access to health services among adults and children in the county. The 2002-2003 survey collected information on a random sample of 8,167 adults and 5,995 children. Interviews were offered in English, Spanish, Cantonese, Mandarin, Korean, and Vietnamese. The most recent survey was supported by grants from First 5 LA, the California Department of Health Services through grants to the Family Health, Tobacco Control and Prevention, and Alcohol and Drug Programs, and the Public Health Response and Bioterrorism Preparedness federal grant. The survey was conducted for the Los Angeles County Department of Health Services between October 2002 and March 2003 by Field Research Corporation.

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**For additional information about the  
L.A. Survey: [www.lapublichealth.org/ha](http://www.lapublichealth.org/ha)**