Survey on Self-medication with Antibiotics in Yerevan

Utilizing Professional Publication Framework

Liana Martirosyan, MD,
MPH candidate,
American University of Armenia

Primary advisor: Robert McLean, PhD
Secondary advisor: George Jakab, PhD

October 24, 2005

Table of Content

Executive Summary

Self-medication with antibiotics, by contributing to the rise of drug-resistant bacteria, is an important public health problem. Closing the eyes to the problem of antibiotic resistance leads not only to adverse medical consequences, but also high economic loss.

We surveyed the population of Yerevan to determine the prevalence of actual self-medication with antibiotics in the previous 12 months, intended self-medication and storage to investigate influence of socio-demographic factors on use of self-medication with antibiotics. Using the random digit dialing sampling technique 96 adults were randomly selected and interviewed using structured questionnaire.

The prevalence of actual self-medication is 12.5 % and prevalence of intended self-medication is 53.1 %. The most commonly used antibiotic for-self-medication was Ampicillin. The most common symptom for self-medication was influenza. The main source for obtaining antibiotics was "directly from pharmacy". Socio-demographic factors were not associated with neither actual nor intended self-medication with antibiotics. Intended use of self-medication with antibiotics was the strong predictor of actual self-medication, indicating that 53.1% of surveyed population is at risk of using self-medication with antibiotics.

Actions to reduce inappropriate use should target not only the prescribers but also the pharmacists and the general public. The results of this survey identified target population for implementation of intervention programs to reduce antibiotic resistance in Yerevan, and stressed the importance of population based educational programs to increase awareness of population on usage of antibiotics.

Brief Summary/Literature Review

The invention of antibiotics in the beginning of the 20th century resulted in significant increase of life expectancy. (Xu Q., 1987) However, extensive and widespread misuse of antibiotics has led to the emergence and spread of resistant bacteria throughout the world. (Lieberman, 2003)

Antibiotic resistance is an important public health problem (Sirinavin & Dowell, 2004; Dowell, 2004a; Dowell, 2004c). Antibiotic resistant strains of bacteria fail to respond to treatment, lead to increased mortality, longer duration of illnesses, and high economic loss (Choutet, 2003; Farrell, Morrissey, De Rubeis, Robbins, & Felmingham, 2003). Moreover, when bacteria become resistant to the inexpensive first-line antibiotics, it becomes necessary to use second- or third-line antibiotics, which are most costly and sometimes toxic as well (J Chemother. 2001; ,Wilkowske CJ.,1977). There is a strong evidence that resistance may be caused by inappropriate use of antibiotics (Dowell, 2004d; Dowell, 2004b; Dutta et al., 2002; Kataoka, Yoshida, & Sawada, 2000).

Although in some countries the spread of antibiotic resistant bacteria is reduced by implementation of national programs and improvement of antibiotic prescription practices, in many countries the level of resistance has increased (Cook PP, Catrou PG, Christie JD, Young PD, Polk RE., 2004). This is true for Pneumococcus (MMWR 1998;29:60), Fluoroquinolone-resistant Neisseria gonorrhoeae. (Chen D.K., McGeer A., de Azavedo J.C., Low D.E. New Engl. J. Med., 1999), Staphylococcus (Cunney R.J., McNamara E.B., Alansani N., Loo B., Smyth E.G., 1997), uropathogenic bacteria (Huyck M.M. Sahm D.F., Gilmore M.S.,1998), and anaerobic bacteria (Kristinsson K.G., 1999).

The emergence and spread of antibiotic resistant bacteria is also a major problem for Armenia. According to the microbiologic investigations conducted by the bacteriologic laboratory of Surb Grigor Lusavorich Medical Center, many bacteria, particularly causative

bacteria of diarrhea disease, and inflammation of urinary, respiratory, and reproductive tracts have become multiresistant (Orgusyan, D. V., Martirosyan, L. D., Gabrielyan E.S.,2003). The main causative pathogens, *Proteus mirabilis*, *Staph. epidermidis*, *Echerechia coli*, *Pseudomonas aeruginosa,* and *Staph. aureus*, show high resistance to 24 antibiotics used in this center. (Table 1, 2) (Orgusyan, D. V., Martirosyan, L. D., Gabrielyan E.S., 2003). No other data on antibiotic resistance are available in Armenia.

Considering similarities of antibiotic resistance revealed in above-mentioned center and throughout the world, it is reasonable to assume that findings from microbiologic laboratory of Surb Grigor Lusavorich hospital reflect the antibiotic resistance in Armenia. (J.M.Blondeau, Y.Yaschuk, and the Canadian multiresistant study group, 1997; Perilla, M., Ajello, G., Bopp, C., Elliott, J., Facklam, R., et al. 2000)

Antibiotic resistance is a biological phenomenon. Bacteria have an ability to mutate and acquire resistance genes from other organisms through conjugation. (Hartl and Jones, 1998, p. 308). Resistant bacteria can affect all members of a community regardless of age, gender or socioeconomic status, because these bacteria can be transmitted even by a simple touch (Montville R, Chen Y, Schaffner., 2002]

Resistance of bacteria to antibiotics can be accelerated by a variety of factors, which are poor antibiotic prescribing practices of physicians, inadequate infection control in hospitals, use of antibiotics in animal husbandry, and self-medication with antibiotics (del Rey Calero J, 2003]. The major part of the problem is connected with the inappropriate and indiscriminate antibiotic usage, when antibiotics are taken for too short time, at low doses or for the wrong disease. (Carey B, Cryan B., 2003; Richman PB, Garra G, Eskin B, Nashed AH, Cody R, 2001). There is a complex relationship between the utilization of antibiotics and the prevalence of drug-resistant bacteria (European Surveillance of Antibiotic Consumption, 2001).

Self-medication with antibiotics may lead to inappropriate use, i.e. not indicated use or inadequate dose, which is identified as a risk factor for antibiotic resistance (del Rey Calero J, 2003). Actual consumption of antibiotics by people may be the result of self-medication, using antibiotics bought directly over the counter, 'leftover' antibiotics from earlier treatment courses, or other sources (Cagri, Ermertcan, Hosgor-Limoncu, Ciceklioglu, & Eren, 2003; Moges, Genetu, & Mengistu, 2002).

The few studies describing the situation in Spain and in Greece, suggest a considerable over the counter use (Dominguez et al., 2002; Cardenosa et al., 2003). Campaigns to return unused medicine to the pharmacy indicate the availability of large quantities of unused antibiotics in the medicine cabinet at home. Studies in the US suggest that up to 25% of people have 'leftovers' of antibiotics at home with many intending to use them without consulting a doctor (Farrell & Jenkins, 2004; Felmingham, Farrell, Reinert, & Morrissey, 2004)

The problem of self-treatment is very important, because patients tend to use low doses of antibiotics or to take them for a short period of time and to interrupt treatment when they begin to feel better (del Rey Calero J, 2003). Low doses dramatically promote the emergence of antibiotic resistance, and interrupted treatment leads to longer periods of infectivity, which increase the number of infected people in the community and thus expose the population to the risk of transmission of resistant strains of bacteria (Florea NF, Nightingale CH., 2004).

The problem of self-medication with antibiotics is particularly important for Yerevan, because of unregulated sale of antibiotics over the counter, lack of knowledge among population, and unavailability of health care services in Armenia (PADCO, 2002). Unlike countries where prescribers are the main targets for the implementation of educational programs to improve antibiotic usage, in Armenia patients also can be conductive to the

problem of inappropriate antibiotic usage because of availability of antibiotics without prescription (Svensson E, Haaijer-Ruskamp FM, Lundborg CS., 2004; Adu-Sarkodie YA, 1997). There is no available data on the prevalence of self-medication with AB in Yerevan. This research aims to fill a gap in existing knowledge for the prevalence of self-medication with AB in Yerevan as it is one of the most important contributing factors to antibiotic resistance.

Study Objectives

A phone-based survey among Yerevan population has been conducted to determine the prevalence of self- medication with antibiotics and to identify the influence of age, gender, education, and income on use of self- medication with antibiotics.

In addition, the study assessed the practice of antibiotic storage at home, intended use of self-medication, reasons for self-medication, types of used antibiotics, and duration of treatment.

Research Questions

What is the prevalence of self- medication with antibiotics among adult general population in Yerevan?

Is there an association exists between age and use of self- medication with antibiotics?

Is there an association exists between gender and self- medication with antibiotics?

Is there an association exists between education and self- medication with antibiotics?

Is there an association exists between income and self- medication with antibiotics?

Methods and materials

Study design

A cross-sectional, observational study of the self-medication with antibiotics was performed in Yerevan, Armenia.

Sampling

Random digit dialing (RDD) technique was used for random selection of 115 random 4-digit numbers using Excel program. In comparison with a list-assisted RDD, the chosen methodology was unrestricted by the problem of missing people with unlisted or new numbers. Area codes were assigned to randomly generated numbers taking into consideration the total population living in a particular area. That is the biggest number of an area codes was assigned to Nor Nork community (e.g. 61, 63, 64, 66 area codes), because its population is the largest in Yerevan. Next to Nor Nork followed Arabkir community, than Kentron community, etc. Thus, the sample represented the appropriate number of households from different areas of Yerevan. Considering the possibility that there could be more than one eligible respondent in the household, random selection had been used to determine who should be interviewed. The interviewer used "Kish" technique. The selected respondent was the one whose birthday was the most recent.

Since using RDD technique with appropriate area code assignment ensured randomization, the sample was representative for Yerevan. Procedures for recontacts, data collection forms, and disposition codes are described in Appendix 3. The RDD technique was considered appropriate for this research to be conducted in Yerevan, since more than 75% of Yerevan households have phones. In addition, response rate for another medical research conducted by AUA using RDD and phone interviews was 82% (Harutyunyan T, 1999).

Study Instrument

All participants were asked using the same questionnaire. Student investigator collected data during the phone interviews using a structured questionnaire during July-August 2005 period. A questionnaire for the survey was adapted from the questionnaire used in the survey

conducted by the department of Clinical Pharmacology of the University of Groningen, the Netherlands as a part of project "Self-medication with antibiotics and resistance levels in Europe" and funded by the European Commission. The original English and Dutch and the adapted Armenian versions of the questionnaire are included in the Appendix 3. The questionnaire was translated into Armenian language and pre-tested. Most of questions in the questionnaire were close-ended, and there were two open-ended questions.

The instrument included questions about use of antibiotics during last 12 months including current use, how antibiotics were obtained, storage of antibiotics at home, and intentional use of antibiotics. Information on the details of antibiotics used (name of the antibiotic, symptom or disease, and duration of use), as well as questions assessing socio-demographic status of respondents was included. In addition, the questionnaire included questions for the reason for not-contacting a doctor and the reason for particular antibiotic choice in case of self-medication. Antibacterials for systemic use (ATC class J01) such as Biseptol, Furadonin, were included in the analyses (WHO, 2002). Medicines, mistakenly reported as antibiotics, were excluded from the analyses.

Respondents were classified as actual self-medication users if they reported that they had taken antibiotics in the last 12 months without a prescription from a physician or dentist and prescribed users if antibiotics had been prescribed. Intended self-medication was defined as answering "yes" or "may be" to the question "In general, would you use antibiotics without contacting a doctor/hospital yourself?"

The phone interview questions were translated into the Armenian language and translated back from the Armenian language into English to ensure consistency

Sample Size Calculations

The sample size was determined by predicted assessment of the level of self-medication with antibiotics and response rate from the previous studies conducted in Yerevan using RDD.

To determine sample size, the following equation was used: n= Z*p*q/d, where p is the proportion of population using self-medication, q is proportion of population not using self-medication. Since there were no previously conducted studies on the level of self-medication with antibiotics in Yerevan, it was assumed, that 50% of population in Yerevan used self-medication with antibiotics, and the other 50 % did not. For 95% confidence interval type I error was a=0.05. Thus Z a=1.96 (2 sided). In case of choosing difference equal 10%, d=0.1

Therefore, the sample size was n= $1.96^{2}*0.5*0.5/0.1^{2}$=96. Taking into account the possibility of non-responses and assuming response rate to be 80%, the sample size was increased to 115 (96*0.2+96).

Study Population

The target population of this study was population of Yerevan. Inclusion criteria were age (all adults aged older than 18), non-medical background, and willingness to participate in the study. Exclusion criteria are unwillingness to participate in the study, medical background, and age less than 18. The rationale for including age above 18 years old was that the target population was Yerevan general population, and the study assessed the self-medication with antibiotics in all children (aged under 16) in the household as well. Therefore, there was no restriction for the age of participant unless he/she was under 18 years old.

Statistical Analysis

Descriptive statistical analysis was performed for all variables. Categorical variables were described by absolute frequencies and percentages. Logistic regression statistics was

performed to describe the relationship between use of self-medication with antibiotics (both actual and intended) and storage of antibiotics at home and socio-demographic factors. Multivariate logistic regression was also used to study the relation between intended self-medication, storage and actual self-medication in the last 12 months. Data were analyzed using SPSS for Windows (Version 11).

Ethical Considerations

The IRB of the American University of Armenia approved this study. All information provided by the respondents was held in strict confidence, and the study eliminated the possibility of future identification of the respondents. The text for oral consent form is presented in the Appendix 2.

There was no any physical risk for participants during this study, as the questionnaire was administered in phone interviews. The study posed no risk to participants, as questionnaire did not include any sensitive questions, and it took 4.7 minutes in average for participant to answer questions in phone-interview. There were no incentives for participation in the study. Participants did not benefit personally trough their participation in the study. However, the results of the survey identified target population for implementation of intervention programs to reduce antibiotic resistance in Yerevan, and in case of implementation of population based educational program, both target and general population of Yerevan will benefit.

Results

Response Rate

A total of 96 respondents were interviewed using the questionnaire. Response rate was calculated in two ways:

1) Response rate based on known eligible

Response rate=# of completed interviews/ eligible= # of completed interviews/ completed interviews+ partial interviews+ unavailable for duration + refused to participate=96/96+1+3+8=96/108 = **89%.**

2) Response rate based on known and unknown (estimated) eligible respondents

In order to calculate response rate based on unknown eligible people, we estimated the proportion of known eligible people among all answered calls. This proportion is used for approximating the number of cases with unknown status (unanswered calls, refused to screen, etc.)

Proportion of eligible=eligible/ all screened = completed interviews +partial interviews+ unavailable for duration +refused interview +other screened/ completed interviews +partial interviews+ unavailable for duration + refused interview +other screened + ineligible+ business number + refused screening

=96+1+3+8+2/96+1+3+8+2+5+9+4=110/128= **0.86.**

Response rate based on known and unknown (estimated) eligible respondents =# of completed interviews/ eligible=# of completed interviews/ completed interviews+ partial interviews+ unavailable for duration + refused to participate+ other screened +refused to screen (estimate) + busy number (estimate)+no answer (estimate).

Response rate= 96/96 +1+3+ 8+2 +4*0.86 +0*0.86 +11*0.86 =96/96 +14 +3.44+0+9.46=96/ 122.9= **78%.**

Descriptive Findings

The mean age of participants was 44 years, with range from 18 to 73 years. More than half of respondents had higher education (52%). Monthly average family income was almost evenly distributed across five outcomes: 22.9% reported more than 80,000 AMD, 15,6 % reported 60,000-79,999 AMD, 22,9 % 40,000-59,999 AMD, 19,8% 20,000-39,999AMD,

and only 12,5% reported less than 19,999 AMD as their monthly family income. 78% of respondents were females and 22 % males.

Prevalence of self-medication (actual and intended), and storage of antibiotics at home

58, 6% of surveyed population used antibiotics during last 12 months (both prescribed and self-medicated). Among those who used antibiotics during last 12 months, 60% used antibiotics without prescription.

Use of antibiotics during last 12months * self-medication Cross tabulation

			Self-medication		Total
			No	Yes	
Use of antibiotics during last 12months	No	Count	57	8	65
		% Within use of antibiotics during last 12months	87,7%	12,3%	100,0%
		% Within total self-medication	77,0%	40,0%	69,1%
	Yes	Count	17	12	29
		% Within use of antibiotics during last 12months	58,6%	41,4%	100,0%
		% Within total self-medication	23,0%	60,0%	30,9%
Total		Count	74	20	94
		% Within use of antibiotics during last 12months	78,7%	21,3%	100,0%
		% Within total self-medication	100,0%	100,0%	100,0%

Actual self-medication with antibiotics was observed among 12.5% of all respondents. Self-medication with antibiotics in children was observed in 9.4% of surveyed households. 21.9 % of respondents use self-medication with antibiotics either for themselves and /or their children. 30.2% of respondents stored antibiotics at home. More than half of respondents (53.1 %) told that they would use antibiotics without contacting a doctor.

Intended use of self-medication with antibiotics

	Frequency	Percent	Valid Percent	Cumulative Percent
No	45	46,9	46,9	46,9
Yes	51	53,1	53,1	100,0
Total	96	100,0	100,0	

Types of Antibiotics U sed for Self -medication and Duration of Use

Ampicillin was the most commonly antibiotic used for self-medication, representing 33,3 % of antibiotics used for self-medication, followed by Biseptol (16,7%). The mode duration of actual self-medication was 5 days, ranging from 1 to 24 days.

Symptoms for Self-medication and Sources

The most common reasons for self-medication were influenza, cough, and urinary tract infection (each 16.7%). The most commonly mentioned symptoms for intended self-medication with antibiotics were diahhroea (26%), followed by sore throat (21.9%), cough (20.8%), fever (20.8%), and bronchitis (19.8%). The main source for obtaining antibiotics for self-medication was "directly from pharmacy". Only in one case self-medication with antibiotic it was obtained from a friend.

The Effect of Socio -demographic Indicators

Age, gender, income, and the level of education were not associated significantly with actual self-medication or intended self-medication with antibiotics. Presence of chronic disease was not significantly associated with actual and intended self -medication, as well as with storage of antibiotics at home.

Associations between independent variables and outcome

The Relation between Intended Self-medication, Storage and Actual Self-medication

Storage of antibiotics at home was not significantly associated with use of self-medication with antibiotics. Intended use of self-medication with antibiotics was significantly associated with actual use of self-medication (odds ratio 7. 95% CI 1.4-36, p<0.05).

Relationship between actual self-medication (outcome), intended self-medication and storage of antibiotics at home

Variables	Sig.	OR	95% CI for OR	
			Lower	Upper
Storage	.463	.599	.152	2.359
Intended use	.020	7.017	1.365	36.080

The Reasons for not contacting a Physician and Particular Antibiotic Choice

Among all users of self-medication with antibiotics 73.7% answered the question "why did you use self-medication and did not visit a doctor?" providing that they had sufficient knowledge about antibiotics, and they knew that antibiotics would help. The same 73.7% of self-medication users reported that they used self-medication, because they had not serious health problems, and only in serious cases they visit a doctor. Only in two cases lack of financial recourses and unavailability of health care services were mentioned as reasons for not contacting a doctor and use of self-medication.

The most frequent answers while answering the question "Why did you choose particular antibiotic for self-medication?" were "Doctors prescribed this antibiotic in the past"(10.5%) and "Pharmacists advised the antibiotic in the pharmacy"(5.3%). The most common comment at the end of interview among non-users was that they usually try to avoid usage of any drug.

Discussion

Intended self-medication has a much higher prevalence than actual self-medication with antibiotics, indicating that population at risk in Yerevan is much larger than those who have actually used self-medication with antibiotics in the last 12 months. In comparison with European countries, intended self-medication in Yerevan is higher than in any surveyed European country and is comparable only with Lithuania, Romania and Slovakia (L. Grigoryan, F. M. Haaijer-Ruskamp, J.G. M. Burgerhof, et al., 2005).

Unlike the results of studies conducted in US and Europe, availability of antibiotics at home did not increase the risk of self-medication among Yerevan general population (Larson E, Lin SX, Gomez-Duarte C, 2003). People know that they can buy antibiotics from pharmacy as needed, and there is no necessity to keep antibiotics at home. As some respondents told, they did not keep antibiotics at home, because of expiry dates, and because there are pharmacies near their living places. The storage of antibiotics at home is not important predictor of self-medication in Armenia because of unregulated sale of antibiotics in pharmacies and availability of antibiotics without prescription. The latter explains the most frequent source of obtaining antibiotics for self-medication: "directly from pharmacy". In European countries, where antibiotics are not available over the counter, most of people use for self-medication "left-over" antibiotics from previous prescriptions available at home (L. Grigoryan, F. M. Haaijer-Ruskamp, J.G. M. Burgerhof, et al., 2005).

The most important intervention to reduce self-medication with antibiotics in Yerevan, and therefore to contribute to resistance reduction is legislative changes banning unregulated sale of antibiotics over the counter. The possible disadvantage of such change is that health services in Yerevan are not available for some people and the only health care for such people is self-care. However, savings related to decreased visits to physicians can be expected only if the self-medication is appropriate. From the societal perspective, self-medication is considered as a detrimental trend, which can bring to unforeseen expenditures (Sihvo S. et al, 2000).

Although unregulated sale of antibiotic is an important factor contributing to self-medication with antibiotics, in countries with mandatory supervision over the purchase of antibiotics, e.g. in United States, people save "leftover" antibiotics and use self-medication with antibiotics for cough and sore throat (Richman P, Garra G, Eskin B, Nashed A, Cody R,

2001). Therefore, legislative changes are important but not sufficient intervention strategy to reduce self-medication with antibiotics.

People have insufficient knowledge and wrong perception on antibiotic usage, consequently informationaland educational actions to improve the knowledge of general population about antibiotics are critical for reducing imprudent use of antibiotics.

Given that there was no difference between people of different ages, income, gender and educational status in regard to use of self-medication with antibiotics, the educational program to increase knowledge on antibiotic use should be implemented for general population. Educational program to improve knowledge on antibiotic usage is extremely important, since perceived knowledge on antibiotics and misconception of antibiotic usage appeared to be the most important reason for not contacting a doctor and use of self-medication. In contrast, poor access to health care facilities and high cost of health services did not play important role for use of self-medication in this study.

Since many of self-medication users mentioned that they used self-medication repeating previous physician's prescriptions, it is recommended that physicians while prescribing antibiotics should explain patients that the same antibiotics may not help in the future even for the similar disease/complain. Another target should be pharmacists, because in many cases they advise customers and influence their antibiotic choice. In Armenia pharmacists working in pharmacies are not licensed to prescribe antibiotics, and they should be prohibited to consult patients and give advices on antibiotic choice.

The results of this study are limited to self-reported data, and as with all self-reported data, this study also contains potential for recall bias, and underreporting or over reporting. To discourage underreporting of self-medication, the questions about antibiotic use were formulated in a neutral way, where the source of the antibiotic could be chosen from six predefined sources.

An important strength of our study was random selection of participants, which ensured representativeness of sample for Yerevan and high response rate, which minimized selection bias. The use of the instrument used in the survey of self-medication with antibiotics in European countries enabled comparability with the European situation.

The results of our study are in line with other similar studies indicating that actions to reduce inappropriate use of antibiotics should target not only prescribers but also the general population and pharmacists.

References

Adu-Sarkodie YA, *Int J STD AIDS*. 1997 Jul;8(7):456-8, Antimicrobial self medication in patients atte nding a sexually transmitted diseases clinic.

Carey B, Cryan B, *Ir Med J.* 2003 Feb; 96(2): 43-4, 46, Antibiotic misuse in the community-- a contributor to resistance?

Cagri, B. A., Ermertcan, S., Hosgor-Limoncu, M., Ciceklioglu, M., & Eren, S. *Int.J.Antimicrob.Agents*, 2003, 21, 63-66, Rational antibiotic use and academic staff.

Center for Disease Control and Prevention. Fluoroquinolone-resistant *Neisseria gonorrhoeae.* MMWR 1998;29:60

Cook PP, Catrou PG, Christie JD, Young PD, Polk RE.J 2004 *Antimicrob Chemo ther*. May;53(5):853-9. Epub 2004 Mar 24, Reduction in broad-spectrum antimicrobial use associated with no improvement in hospital antibiogram.

Chen D.K., McGeer A., de Azavedo J.C., Low D.E. *New Engl. J. Med*., 1999; 341:233

Cunney R.J., McNamara E.B., Alansani N., Loo B., Smyth E.G. *J. Clin Pathol.*, 1997;50:1010

Del Rey Calero J, An R *Acad Nac Med* (Madr). 2003; 120(1): 97-113; discussion 113-9, Development of resistance and antibiotic consumption

Dominguez, A., Salleras, L., Cardenosa, N., Ciruela, P., Carmona, G., Martinez, A. et al. (2002). The epidemiology of invasive Streptococcus pneumoniae disease in Catalonia (Spain). A hospital-based study. *Vaccine, 20,* 2989-2994.

Dutta, S., Rajendran, K., Roy, S., Chatterjee, A., Dutta, P., Nair, G. B. et al. (2002). Shifting serotypes, plasmid profile analysis and antimicrobial resistance pattern of *Shigellae* strains isolated from Kolkata, India during 1995-2000. *Epidemiol.Infect., 129,* 235-243.

European Surveillance of Antibiotic Consumption (ESAC). Projec t description. Antwerp, Belgium: University of Antwerp, Medical Microbiology, 2001. Available at: http://esac-www.uia.ac.be/esac/ESAC_project.htm.].

Farrell, D. J. & Jenkins, S. G. (2004). Distribution across the USA of macrolide resistance and macrolide resistance mechanisms among Streptococcus pneumoniae isolates collected from patients with respirator y tract infections: PROTEKT US 2001-2002. *J.Antimicrob.Chemother*., 54 Suppl 1, I17-I22.

Florea NF, Nightingale CH., *Diagn Microbiol Infect Dis*. 2004 Jun;49(2):105-8, Review of the pharmacodynamics of antibiotic use in animal food production.

Grigoryan L., Haaijer-Ruskamp F. M., Burgerhof J.G. M., et al, Under Peer Review, 2005, Self-medication with antibiotics in the general population: a survey in nineteen European countries.

Hartl, Daniel, H. and Jones, Elizabeth, W. (1998), *Genetics, Principles and Analysis* Fourth Edition.

Harutyunyan, T. *Breast Self-examination Practice in Yerevan women: Cross-sectional KAP survey* Master of Public Health Program thesis projects Vol. 1 of 4. AUA, College of Health Sciences Unpublished manuscript, 1999

Huyck M.M. Sahm D.F., Gilmore M.S. *Emerg. Infect. Dis.*, 1998; 4:239

J.M.Blondeau, Y.Yaschuk, and the Canadian multiresistant study group. (1997). Canadian Multicoated Susceptibility Study, with the focus on Cephalosporins, from 15 Canadian Medical Centers, *Antimicrobial Agents and Chemotherapy*, December, p.2773-2775.

J Chemother. 2001 Nov; 13 Spec No 1(1): 84-8, Microbial epidemiology patterns of surgical infection pathogens

Kataoka, Y., Yoshida, T., & Sawada, T. (2000). A 10-year survey of antimicrobial susceptibility of streptococcus suis isolates from swine in Japan. *J.Vet.Med.Sci.*, 62, 1053-1057.

Kristinsson K.G. *Clin. Microb. Infect.,* 1999;5:4S43

Larson E, Lin SX, Gomez-Duarte C. Antibiotic use in Hispanic households, New York City. *Emerging Infectious Diseases.* 2003;9(9):1096-1102.

Lieberman, J. M. (2003). Appropriate antibiotic use and why it is important: the challenges of bacterial resistance. *Pediatr.Infect.Dis.J.,* 22, 1143- 1151.

McDermott PF, Walker RD, White DG., *Int J Toxicol.* 2003 Mar-Apr;22(2):135-43, Antimicrobials: modes of action and mechanisms of resistance

Orgusyan, D. V., Martirosyan, L. D., Gabrielyan E.S. (2003). Microorganisms' resistance to antimicrobial drugs on the example of a multiprofile hospital, *Medical science of Armenia,* XLIII #2, p.26-30

PADKO report #86, 2002 retrieved on October 6, from http://www.padco.am/reports/86.html

Project: Self-medication with antibiotics and resistance levels in Europe , retrieved on October, 6 from

http://europa.eu.int/comm/health/ph_threats/com/mic_res/am_sar_project_en.htm

Perilla, M., Ajello, G., Bopp, C., Elliott, J., Facklam, R., et al. (2000) *Manual for the Laboratory Identification and Antimicrobial Susceptibility testing of Bacterial Pathogens of Public Health Importance in the Developing World* . Retrieved February 20, 2004, from

http://www.who.int/csr/resources/publications/drugresist/en/IAKRmanual.pdf

Richman PB, Garra G, Eskin B, Nashed AH, Cody R, *Am J Emerg Med. 2001 Jan;19(1):57-60,* Oral antibiotic use without consulting a physician: a survey of ED patients.

Svensson E, Haaijer-Ruskamp FM, Lundborg CS., *Scand J Infect Dis.* 2004;36(6-7):450-2., Self-medication with antibiotics in a Swedish general population.

Sirinavin, S. and S. F. Dowell. "Antimicrobial resistance in countries with limited resources: unique challenges and limited alternatives." *Semin.Pediatr.Infect.Dis* . 15.2 (2004): 94-98.

Sihvo S, Klaukka T, Martikainen J, Hemminki E. Frequency of daily over-the-counter drug use and potential clinically significant over-the counter-prescription drug interactions in Finnish adult population. *European Journal of Clinical Pharmacology* 2000; 56:495–9.

Xu Q, *Popul Res*. 1987) Apr; 4(2): 32-40, An analysis on life expectancy of the world population and trend of increase in China's life expectanc y.

Wilkowske CJ., *Mayo Clin Proc.* 1977 Oct; 52(10):616-24, The Penicillins

WHO Collaborating Centre for Drug Statistics Methodology. ATC index with DDDs 2002. WHO, 2002

Tables
Table 1
The mean indicators of antibiotic resistance/sensitivity to all antibiotics used in "Emergency"
Medical Center

Microorganisms	% Resistant	% Sensitive
Proteus mirabilis	82.3	13.5
Staph. epidermidis	63.8	25.3
Staph aureus	64.4	23.1
Pseud. aeruginosa	81.6	13.3
Escherichia coli	65.1	23.9

Source: Medical science of Armenia, XLIII #2, p.26-30

Table 2

The mean antibacterial activity of antibiotics to Proteus mirabilis, Staph aureus, Staph. epidermidis, Pseud. aeruginosa, Escherichia coli

Antibiotic name	% Resistant	% Sensitive
Amikacin	48.4	40.2
Azithromycin	81.2	10.0
Ampicillin	90.7	4.0
Gentamicin	74.4	22.5
Clindamycin	83.0	6.5
Oxacillin	92.3	6.2
Rifampin	77.2	20.2
Tobramycin	70.5	25.1
Chloramphenicol	73.3	16.4
Vancomycin	98.6	1.4
Nitrofurantoin	79.9	13.0
Imipenem	29.6	61.8
Penicillin G	98.7	1.3
Tetracycline	81.3	8.9
Trimethoprim	96.9	2.0
Ciprofloxacin	46.6	31.1
Cefotaxime	54.2	13.3
Carbenicillin	84.9	11.0
Cephalothin	70.7	25.7
Erythromycin	76.2	4.5
Ceftazidime	50.0	41.9
Ceftriaxone	50.4	24.7
Norfloxacin	60.3	34.5
Ofloxacin	20.0	40.0

Source: Medical science of Armenia, XLIII #2, p.26-30

Appendices

Appendix 1
Sampling procedures

Procedures for recontacts, data collection forms, and disposition codes

Procedures for recontacts

1 .We will make a maximum of 10 attempts to reach a number.

2. We will not le t the phone ring more than five times. If after five times there is no answer, we will treat this call as no response (see item 4 and 5).

3. On busy numbers, we will call the number a maximum three times 30 minutes apart.

4. For no response calls, we will call back three times 30 minutes apart.

5. If after three callbacks, the line is still busy or there is no answer, we will replace the phone number increasing the last digit of a phone number by one.

6. If there is no eligible person in the household, we will replace the number increasing the last digit of a phone number by one.

7. If the number is out of service, temporarily does not work, or business phone number, we will replace the number increasing the last digit of a phone number by one.

8. If the call has been interrupted during the interview we will call back and continue the interview.

Data collection forms

All call attempts and their outcomes will be registered on an Interviewer Report Form (IRF) according to disposition codes mentioned on IRF. Interviewer Report Form and description of deposition codes are provided below.

Interviewer Report Form

Respondent ID _____

Number to dial _____

Pre-respondent selection

Disposition	Code	Final	Replaced 77
Nonresidential (business)	22	]	]
Temporary disconnect	23	]	]
Other nonworking number	24	]	]
Refused screening	33	]	]
No answer	34	]	]
Busy number	35	]	]

Disposition	Code	Outcome	Replaced 77
Non-Armenian speaking household	36		
Other not screened	30		
Post-respondent selection			
Disposition	**Code**	Outcome	Replaced 77
Partial interview	11		
Completed interview	12		--------------
Refused interview	3		--------------
Unavailable for duration	13		
Ineligible	14		
Other screened	15		

Disposition Codes

Pre-respondent-selection

Non-residential (code # 22)
We will assign this code when the telephone number reaches no residence, i.e. business, professional office, etc. This is a final disposition. In this case, we will replace telephone number adding one to the last digit of the phone number.

Temporary disconnect (code # 23)
We will assign this code when the number dialed is temporarily disconnected. It is pending disposition or final after ten attempts during data collection period. In this case, we will replace telephone number swapping third and fourth digits.

Other nonworking number (code # 24)
This disposition includes all other nonworking numbers such as not in service, permanently disconnected ("the number you are dialing does not exist"), or not yet connected. This is a final disposition. In this case, we will replace telephone number swapping third and fourth digits.

Refused screening (code # 33)
No one in the household is willing to give the information to select a respondent. This is a final disposition. In this case, we will replace telephone number adding one to the last digit.

No answer (code # 34)
Use this code if no answer (NA when no one picks up the phone: do not keep more than five hooters). This is a pending disposition or final after ten attempts during data collection period. In this case, we will replace telephone number adding one to the last digit.

Busy number (code # 35)
We will use this code when phone shows busy after ten attempts with one-day interval. This disposition becomes final after ten attempts during data collection period.

Non-Armenian speaking households (code #36)
If no one in this household speaks Armenian, then this is a final disposition, and we will replace telephone number adding one to the last digit.

Other not screened (code #30)

We will use this code in some other situation that is not covered above. It can be pending or final disposition.

Post-respondent-selection

Partial interview (code #11)
Respondent terminated the interview part-way through it. In this case, we will replace telephone number adding one to the last digit.

Completed interview (code#12)
We have completed an interview with selected respondent. This is final disposition. It requires no replacement.

Refused interview (code #3)
Selected respondent refuses to be interviewed or refuses to finish the entire interview. This is a final disposition. We will not replace this number.

Unavailable on duration (code #13)
Respondent is selected but is sick or on vacation deaf or cannot speak Armenian therefore is unavailable for the interview for the duration of this study. This is final disposition. In this case, we will replace telephone number adding one to the last digit.

Ineligible (code #14)
We will choose this disposition when there is no one currently living in the household who meets selection criteria. This is a final disposition. In this case, we will replace telephone number adding one to the last digit.

Other screened (code # 15)
Some other situation that is not covered by the above codes is assigned here. It is pending or final disposition.

Appendix 2
TEXT FOR ORAL CONSENT FORM

Dear friend,

I am a second year MPH student at AUA. The MPH department conducts study that looks at the use of antibiotics. We are going to conduct a phone interview using a questionnaire about your use of antibiotics (e.g. penicillin). This questionnaire focuses on you, the user.

The purpose of this questionnaire is to find out how people in Yerevan get their antibiotics and for which diseases they use them.

The overall objective of the study is to contribute to the best antibiotic use in Yerevan possible, based on information about actual antibiotic use.

You have been chosen at random to take part in this survey. We drew a sample of 116 phone numbers of residents in Yerevan aged between 18 and 65 years based on random digit dialing technique. We greatly appreciate you answering the questions.

The information you provide us will be confidential. We do not need your name. Your phone number will be will be removed from any records or databases after completion of the study. The data will only be used for this study and no individual will be identifiable in the analysis. The results will only be used for medical research. There will be no monetary benefits for you if you participate in this project.

We appreciate your participation in this study and your responses are highly valuable to us. It will take about 10 minutes to answer our questions.

It is your decision whether or not to be in this study. You can easily stop being in this study at any time. There would be no consequences for you if you withdraw from the study.

If you feel something we ask you about is too sensitive, please tell me and we can either move on the next question or discontinue the interview. If at any time during the interview you wish to stop, please inform me and we will not continue. Would you be willing to participate?

If you need more information about the study or the questionnaire, please do not hesitate to contact us. If you believe you have not been treated fairly you should contact Dr. Michael Thompson at 512592 or Dr. Yelena Amirkhanyan at 512568.

TEXT FOR ORAL CONSENT FORM IN ARMENIAN

Ð³ ñ· »ÍÇ ÁÝÏ »ñ,

°ë ² Ù»ñÇÏ Û³ Ý Ð³ Ù³ Éë³ ñ³ ÝÇ Ð³ Ýñ³ ÛÇÝ ² éáÕç³ à³ ÑáõÃÛ³ Ý ´³ ÅÝÇ 2-ñ¹ ï ³ ñí³ áõë³ ÝáÕ »Ù: Ð³ Ýñ³ ÛÇÝ ² éáÕç³ à³ ÑáõÃÛ³ Ý ´³ ÅÇÝÁ ³ Ýó ¿ Ï³ óÝáõÙ Ñ»ï ³ ½áï áõÃÛáõÝ` ³ Ýí ÇµÇáï ÇÝ»ñ û· ï ³ · áñÍ Ù³ Ý í »ñ³ µ»ñÛ ÉØ»Ýù ó³ ÝÏ³ ÝáõÙ »Ýù Ñ»é³ Ëáëáí Ñ³ ñó ½ñáõÛó ³ ÝóÏ³ óÝ»É Ó»ñ Ñ»ï ó»ÝïñáÝ³ Ýí ÇµÇáï ÇÝ»ñ�` ûñÇÝ³ Ï à»ÝóÇÝÝ û· ï ³ · áñÍ áÕ í ñ³ :²Ûë Ñ³ ñó ß³ ñÏ »Ý ñ³ Ï »Ýñ ñ³ Ý³ ÝáõÙ ¿ Ó»ñ, ³ Ùë»Ýù Ý û· ï ³ · áñÍ áÕ í ñ³ :

²Ûë Ñ³ ñó ß³ ñÇ Ýà³ ï ÏÝ ¿ Ñ³ Ûï ³ Ý³ »ñ»É» ÇÝ³ »ñ¿ Ù³ »ñ»Í»» ¿ °ñ¨³ ÝÇ µÝ³ ÏãáõÃÛ³ Ó»éù µ»ñáÙ³ Ýï ÇµÇáï ÇÏ»ñ ¨ Ñ³ ï Ï³ à»ë áñ ÑÇí ³ Ý¹áõÃÛ»»ñÇ Ñ³ Ù³ ñ ¿ Ýñ³ Ýù û· ï ³ · áñÍ áõÙ:

Ð»ï ³ ½áï áõÃÛ³ Ý ÑÇٳ ³ Ý ËÝ¹Çñ¿ ¿ Ý³ »ï »É³ Ý ÇµÇáï ÇÏÝ»ñó ×Çßï û· ï ³ · áñÍ Ù³ Ý Ç °ñ¨³ ÝáõÙ` ÑÇÙÝ »Ïáí Ó»ñ ï ³ Í ³ ï ³ ëÏ³ ÝÝ»ñó í ñ³ :

¸áõù ÁÝï í »É»·ù Ù³ ëÝ³ Ïó»Éáõ ³ Ûë Ñ³ ñóÙ³ ÝÇ ³ ï ³ Ý³ Ï³ Ý ñ»Ý` ³ ï ³ Ý³ Ï³ Ý ÅÝ»ñ³ ñ¹ ë»Éáõ ÙÇçáóáí: Ø»Ý Ï³ ï ³ ñ»É»Ýù Ñ³ ñóÙ³ Ý 116 °ñ¨³ ÝÇ Ñ»é³ Ëáë³ Ù³ Ý ñÝ»ñÇÇ µ³ Õï ³ óÍ Ñ ÇÝï ñáõÃÛ³ ûñ, ¨ Ù³ ëÝ³ ÏóÇ ï ³ ñÇÙ³ ³ »ï ù ¿ 18 µ³ ñÓñ ¨ 65 ó³ Ýñ ÉÇÝ»ñ:Ø»Ýù ³ ï Ï· Ý³ ï »Ýù Ñ³ ñó»ñ³ ï ³ Í ëÉ³ Ý»Éáõ Ó»ñ Ñ³ Ù³ ó ÙÝáõÃÛ³ Ý:

Ò»ñ Ï³ÕÙáÇ ï ñ³ Ù³ ¹ñ³ Í ÇÝÝ³ ÝÙ³ óÇ Ý· ³ Õï ÝÇ Ï³ Ý³ ÓÇ Ç: Ø»Ýù ³ »Ýù áõ½áõÙ ÇÙ³ Ý³ ÉÓ»ñ ³ ÝáõÝÁ:Ò»ñ Ñ»é Ëáë Ñ³ Ù³ ñÁ Ï áÝÝ³ óí Ç µ Ý· ³ Ýª³ ÝóáõÝ»ñçó ¨ ï íÛ³ Ý»ñÇ µ³ ½· Ý»Ýóó` Ñ»ï ³ ½áï áõÃÛ³ Ý í ñ³ »Ý»ñ³ »Ñ³ ß³ áí í³ ß³ µ»É:Ò»ñ ï í Ç ï íÛ»Ýñ Ïû· ï ³ · áñÍ í»Ý ÙÇ³ ÛÝ ³ Ýóï áõÃÛ³ Ý Ñ³ Ù³ ñ, ¨ Ó»ñ ÝÓÝ³ ñ³ Ý í³ í ÇÇ¿ Ç³ ÑÝ³ ñ³ í ÇÝ Ù³ ½· Ý³ ñ¹ µÅßÏ ³ ÏÝ Ñ»ï ³ ½áï áõÃÛ³ Ý Ý³ ï ³ ÉÇ: Ø³ ëÝ³ ÏóÉÝ ¹»ùáõÙ Ý³ Ë ï »í³ ÝÇ ³ »Ý áÝ· ¹ñ³ Ù¹ÇÝ³ ÛÝ ³ ñ· ¨»ñ:

Ø»Ýù µ³ ñÓñ »Ýù· Ý³ ï ³ áÙ Ó»ñ Ù³ ëÝ³ Ï óáõÙáõÃÛ³ ,¨ Ó»ñ ³ ï ³ ëÉ³ ÝÝ»ñÁ Ëçëï ³ ñÅ»³ í³ ñ»Ý Ù»½³ Ù³ Ý ñ:Ð³ ñó ½ñáõÛóÁ Ïï ¨Ç 10 ñá³ »:

³ Ó»ñ áñ³ ßÝ³ ÝÙ³ Ý¿ Ù³ ëÝ³ Ï óÝ»ï ³ ½áï áõÃÛ³ ÝÁ, Ã» á´³: ³ áñ Ï³ ñáÕ »ù ¹áõñë· ³ É Ñ»ï ³ ½áï áõÃÛ³ ÝÇÇ óó ó³ Ýñ³ å³ Ñ³ Ý³ Ï³ Ý í Ç: Ð»ï ³ ½áï áõÃÛ³ ÝÁ Ù³ ëÝ³ Ïó»Éáõ Ññ³ Å ñí»Éáõ ¹»ùáõÙ ¹áõ áõ áÕ Ç Ï»ñ ³ »ù áÕ Ç:

»Ã» ¹áõù ½· ³ ù, áñ ÇÙ ï í ³ ñóÁ ½· ³ Û³ Ý ¿, Ï ³ Ù ¹áù ³ »ù ó³ ÝÏ³ Ý³ ³ ï ³ ëÉ³ Ý»ÉÇ ï »Õ»Ï³ óí»É ³ ÝóÝ áñ³ ÝÏ³ ÝñÝ³ Ï³ ÝÝ³ ÝñóÝ, Ï³ Ù Ï³ Ý³ óÝ³ ÝÝ»ñÁ: °Ã» ã³ ñ½»Ý· ³ ï ß³ ñÝáõÙ³ »ù ÇÝñó ½· ³ ñáõÃ¿áõ` ó³ Ýñ ó³ Ýñ³ Ý³ Ï³ Ý³ Ïó»Éáõ, ¨ Ù»ñ Ï³ Ý³ ÝÝ»ñ³ ÝÝ:â»ù ó³ ÝÏ³ ÝáõÙ Ù»ñ ½³ Ï»É:

°Ã» Ï ó³ ÝÏ³ Ý³ ù Ñ³ ñ óáõñ½Ç³ ï »Õ»Ï³ óí áõÃÛ»ñ ëï ³ Ý³ É»ñÇ ³ ½áï áõÃÛ³ Ý Ù³ ëÇÝ, Ï³ Ù ¹áñ Ï Ïó³ ÝÏ³ Ý³ ù ÷Ý»É»ÝÇ»³ ½áï áõÃÛ³ Ý áñÝ ¿ Ù»ÏÇ Ñ»ï , ³ à³ ³ Ý³ Û³ Ý ¹ÇÙ»Ýÿ ³ ½áï áõÃÛ³ Ý³ ï ³ ëÉ³ Ý³ ï áñ³ ÝÝÇÇ

¸ -ñ Ø³ ÛùÉ ÂáÙ÷ëáÝ, Ñ»é 21-25-25
¸ -ñ ºÉ»Ý³ ²ÙÇñË³ ÝÛ³ Ý, Ñ»é 51-25-92

Study on the use of antibiotics in Yerevan

QUESTIONNAIRE

ID number………….

1. **Have you yourself taken any antibiotics in the last 12 months (including current use)?** ? **Yes** ? **No** ? **Don't remember**

1A. If YES**, can you tell us the name of the antibiotic(s), the reason (symptoms, disease) for taking them and for how long they were taken?   Could you then indicate how you obtained them ?**

Name of antibiotic (attached list)	What were the antibiotics used for	Number of days used	Prescribed by a doctor, dentist or hospital	Prescribed by a nurse	Without prescription, directly from a pharmacy or store ***	Leftovers from previous prescription(s) available at home	From antibiotics intended for relative or friend	Other source
1.			?	?	?	?	?	?
2.			?	?	?	?	?	?
3.			?	?	?	?	?	?
4.			?	?	?	?	?	?
5.			?	?	?	?	?	?
6.			?	?	?	?	?	?
7.			?	?	?	?	?	?

***If these were obtained while you were abroad please write

"abroad" in the box

If other source, please specify

....

....

2. Are there children aged less than 16 years in your household?

? Yes ⟶ *Go to the question # 3*

? No ⟶ *Go to the question # 4*

3. Have the children aged less than 16 years taken antibiotics in the past 12 months (including current use)? ? **Yes** ? **No** ? **Don't remember**

3A. If YES**, can you tell us the name of the antibiotic(s), the reason (symptoms, disease) for taking them and for how long they were taken? Could you the n indicate how you obtained them ?**

	Name of antibiotic (attached list)	What were the antibiotics used for	Number of days used	Prescribed by a doctor, dentist or hospital	Prescribed by a nurse	Without prescription, directly from a pharmacy or store ***	Leftovers from previous prescription(s) available at home	From antibiotics intended for relative or friend	Other source
Child 1	1.			?	?	?	?	?	?
	2.			?	?	?	?	?	?
Child 2	1.			?	?	?	?	?	?
	2.			?	?	?	?	?	?
Child 3	1.			?	?	?	?	?	?
	2.			?	?	?	?	?	?

If other source, please specify ---

30

3B. Could you tell us why you decided to use self-medication with antibiotics without consulting a physician?

3C. Could you tell us what was the reason for particular antibiotic choice?

----

4.   Do you presently have antibiotics at home? (excluding currently used)   ? **Yes**   ? **No**   ? **Don't remember**

4A.   If YES**, can you specify which antibiotic(s) you have and how you obtained them?**

Name of antibiotic (attached list)	Prescribed by a doctor, dentist or hospital	Prescribed by a nurse	Without prescription, directly from a pharmacy or store in your own country	Without prescription, from abroad	From antibiotics intended for relative or friend	Other source
1.	?	?	?	?	?	?
2.	?	?	?	?	?	?
3.	?	?	?	?	?	?
4.	?	?	?	?	?	?

If other source, please specify

_____

5. In general, would you use antibiotics without contacting a doctor/nurse/hospital for yourself ? Yes ? May be ? No ? Don't know

 ---children aged less than16 years   ? Yes ? May be ? No   ? Don't know

5A.   **If YES or MAY BE**, please tell us for which symptoms/ disease you would use antibiotics without contacting the   doctor/hospital for yourself or children at your home

	Runny nose/cold	Cough	Bronchitis	Sore throat	Sinusitis	Fever	Flu	Ear infections	Toothache	Diarrhea	Urinary tract infections	Other infections/ diseases
Myself	?	?	?	?	?	?	?	?	?	?	?	?
Children (less than 16 years)	?	?	?	?	?	?	?	?	?	?	?	?

If other infections/diseases, please specify
To finish, we would like to ask a few questions about your background:

----

6.   **What is your gender?**

? **male**   ? **female**

7.   **What is your age?   Years**   ----------------

 8. May we ask your level of education?

? **Secondary school, 8 years**

? **Secondary school, 10 years**

? **College, technicum**

? **University, institute**

? **Postdiploma training**

? **Other please specify--------------------------**

9.What is your current family income?
less than 19,999 dram
20,000 - 39.999 dram
40,000 - 59,999 dram
60,000 - 79, 999 dram
more than 80,000 dram
Refused to answer

10.   Do you have any of the following diseases (listed below)?   ? Yes   ? No   ? Don't know

10A.   **If YES**, please cross the boxe(s) for the disease(s) concerned

? asthma   ? diabetes   ? chronic osteomyelitis (bone infection)

        ? chronic bronchitis   ? endocarditis (heart infection)   ? peptic ulcer disease

        ? emphysema   ? tuberculosis (TB)   ? chronic pyelonephritis (chronic kidney problem)

        ? prostatitis (prostate infection)   ? cancer

        ? cystic fibrosis   ? chronic urinary tract infections

11   Please tell me any further comment that you have below.---

Ð³Ï³µÇáï ÇÏÝ»ñÇ û· ï ç³· áñÍÙ³Ý í »ñ³ µ»ñ�û³É Ñ»ï ³½áï áõÃÙáõÝ °ñ¨³Ý ù³Õ³ ùáõÙ

Ð³ ñó³ ß³ ñ

Ñ»ñÃ³ï ³ÝÑ³Ù³ ñ…

1. ¸áõ ÇÝùÝ»ñ¹ û· ï ³· áñÍ»É »ù Ñ³ï³µÇÏÏÝ»ñ í »ñçÇÝ 12 ³ÙÇëëÝ»ñ »ÝÃ³óùáõÙ⁇³ûá⁇áã⁇ã»Ù ÑÇßáõÙ

1A. °Ã»³ûá, ËÝ¹ñáûÙ »Ù ³ë»ù Ã»ÇÝãù Ñ³ï³µÇÏ ÇÏ »ù û· ï ³· áñÍ»É, ÇÝãáÇ Ñ³ Ù³ ñ »ù û· ï ³· áñÍ»É ³ûÝ, ÇÝã ÑÇïÇ ³ÝáÃ³Ý ¿ Ù ÇÝãÇÇ Çõ ¨ ³ÝÝ»Ý ù ûÝ »ù û· ï ³· áñÍ»É ³ûÝ: Ü»ù Ýá¿¨ Ã» ÇÝãáã»ë »ù Óñ»ù µ»ñ»ûÝ Ñ³ïáµÇÏÇÏ Ç:

Ð³ïáµÇÏÏÇÇÇ ³ÝÇ ³ÝÝáÙáÁ	ÆÝã ÑÇï ³ÝÇáÃ³Ý Ñ³Ù³ ñ »ù û· ï ³· áñÍ»É	ø³ÇÝÇ õ¨Ý	ÜÇ³ÝÇÏÇ »É¿ µÅÍÇÇÙÇÏÇ¹áÙÇÇÇÇ	ÜÇ³ÝÇÏÇ »É¿ µ³áÅ ûÝ³ç ÏáÛÇÇÇ	³éÝ³á ÝÇ³ÝÇÏ³Ý¹ ÝÕ³Çï ÝÇÇ	ÜÇ Ëáñ¹ µ³áÅ³áÝÝ»ñÇÇÇ ÝÝÇÇÇ³óÇ¹ ÝÕ»éÇÇ	Ç »ñáÇ »É¿ µ³ñ»ÝÇÇÇ ÏÇÇ ÏÇ³Ù ÁÝ»ñÇÝ¹áÇÇ	³ÙÇÇ ³ÕµÝÇÇáñÇÇ³óÇÇ
1.			?	?	?	?	?	?
2.			?	?	?	?	?	?
3.			?	?	?	?	?	?
4.			?	?	?	?	?	?
5.			?	?	?	?	?	?
6.			?	?	?	?	?	?
7.			?	?	?	?	?	?

°Ã» ³ÛÉ ³ÕµÝáñÇÇ³óÇ, ³å³ Ù³Ýñ³Ù³ÙëÝ»ù

_____

_____

34

2. Ò»ñ ï ³ÝÁ ³ åñáôÙ »Ý 16 ï ³ ñ»Ï ³ ÝÇó ÷áùñ »ñ»Ë ³ Ý»ñ

? ³ Ûá ⟶ · Ý³ ó»ù Ñ³ ñó # 3

? áã ⟶ · Ý³ ó»ù Ñ³ ñó # 4

3. Ò»ñ ï ³ ÝÁ ³ åñáÕ 16 ï ³ ñ»Ï ³ ÝÇó ÷áùñ »ñ»Ë ³ ÝÇó Ù»ÏÁ ëï ³ ó»É¿ Ñ³ ï ³ µÇáï ÇÏÝ»ñ í »ñçÇÝ 12 ³ ÙÇëë»ñÇ ÁÝÃ³ óùáôÙ Ý»ñÏ³ û· ï ³ · áñÍ áôÙ Ý»ñ³ é³ É ? ³ Ûá ? áã ? ã»Ù ÑÇß³ôÙ

3A. °Ã» ³ Ûá, ËÝ¹ñáôÙ »Ù ³ ë»ù Ã» ÇÝã Ñ³ ï ³ µÇáï ÇÏ »ù û· ï ³ · áñÍ »É, ÇÝãÇ Ñ³ Ù³ ñ »ù û· ï ³ · áñÍ »É, ÇÝã ÑÇ ³ Ý¹áõ³ Ý Ï ³ Ù · ³ Ý· ¨ ù³ ÝÇ ûñ »ù û· ï ³ · áñÍ »É ³ÝÁ: Üß»ù Ý³ Û³ Ã» ÇÝãå»ë »ù Ó»ù µ»ñ»É Ñ³ ï ³ µÇáï ÇÏÁ:

Ð³ Ï ³ µÇáï ÇÏÇ ³ Ýí ³ ÝáõÙÁ	ÆÝã ÑÇ ³ Ý¹áõ³ Ý Ñ³ Ù³ ñ »ù û· ï ³ · áñÍ »É	ø³ ÝÇ ûñ	Üß³ Ý Ï í »¿ µÅßÏ Ï áõÙÇó	Üß³ Ý Ï í »¿ µáõÅ ùÝááó Ï áõÙÇó	³ é³ Ýó Ýß³ Ý³ Ï í ³ Ýù ³ Ýó û· ï ³ ÝÇ ÝÇÏÇ áõÝ Ï áõÙÇó ³ é³ É »Ù	Ü³ Ë áñ¹ áõ³ Ýç »Ù û· ï ³ · áñÍ »É ÇÝó û· ³ Ý³ ï ³ Ù Çó Ï ³ Ù ÝááÇ	³ Õµ ³ ññÇó
1.			?	?	?	?	?	?
2.			?	?	?	?	?	?
3.			?	?	?	?	?	?
4.			?	?	?	?	?	?
5.			?	?	?	?	?	?
6.			?	?	?	?	?	?
7.			?	?	?	?	?	?

°Ã» ³ Û¿ ³ Õµ áñÍ áñ, ³ å³ Ù³ Ýñ³ Ù³ ëÝ»ù

35

3B. ÊÝ¹ñáõÙ »Ù ³ë³ ó»ù Ã» ÇÝãáõ ¹áõ áñáß»óÇù û· ï ³· áñÍ»É ÇÝùÝ³ µáõÅáõÙ ¨ ã¹ÇÙ»óÇù µÅßÏÇ

3C. ²ë³ ó»ù ËÝ¹ñ»Ù Ã» ÇÝãáõ ²Ýï ñ»óÇù Ñ³ï Ç³å»ë ³Û¹ Ñ³ï ³µÇ±ÇÝ

----

4. Ü»ñÏ³ ÛáõÙ¦ ¹áõ áíÝ»ù Ñ³ Ï³µÇ ÇÝ»ñ ï ³ÝÁ ? ³Ûá ? áã ? ã»Ù ÑÇßáõÙ

4A. ºÃ» ³Ûá, ³ ë³ ó»ù Ã» ÇÝã Ñ³ Ï³µÇ Ïï áÛù»ù ̈ ÇÝãå»ë »ù Ó»ù µ³ñ»É ³ÝÝ

Ð³ï³µÇ ÇÝÇÇÝç ³Ýí ³ÝáÙÁ	Üß³ Ý³Ï í »¿ µÅßÏ Ï áÕÙóó	Üß³ Ý³Ï í »¿ µáõ ̊ ùñáÉ áÕÙóó	³é Ýó Ýß³ Ý³ÏÙ³Ý ¹õ³ï ÝÇó	³é Ýó Ýß³ Ý³ÏÙ³Ý ³ñ í »ñÏ ñÇ	í »ñóí »¿ µ³ñ»Ï³ ÙÇó Ï³ Ù Ñ³Ï »ñÏó	³Ù ³ Õµ³õñÇó
1.	?	?	?	?	?	?
2.	?	?	?	?	?	?
3.	?	?	?	?	?	?
4.	?	?	?	?	?	?

ºÃ» ³Ù ³ Õµ³õñÇó, ³ å ³ Ù³ Ýñ³Ù³ëÝ»ù

----

5. ÀÝ¹Ñ Ý³õñ ³ éÙ³ Ùµ, ¹áõ Ïõ· ï ³· áñÍ»ù Ñ³ Ï³µÇ ÇÝ ³ é³ Ýó µÅßÏÇ Ñ»ï Ë³ññ¹³ ÏóÉáõÉáõ ? ³Ûá ? ÑÝ³ ñ í áñ¿ ? áã ? ã· Çï »Ù

--- ÇëÏ 16 ï ³ ñ»Ï³ Ýó ÷õñ »ñ»Ë³ Ý»ñÇ Ñ³ Ù³ ñ ? ³Ûá ? ÑÝ³ ñ í áñ¿ ? áã ? ã· Çï »Ù

5A. °Ã» ³Ûá, Ï ³Ù ÑÝ³ñ³ í áñ ¿, ³ ë³ ó»ù ËÝ¹ñ»Ù Ã» áñ ÑÇí ³ Ý¹áÃÛáÝÝ»ñÇ Ï ³ Ù · ³ Ý. ³ ï Ý»ñÇ Å³ Ù³ Ï ³ Ý Ï û. ï ³ · áñÍ »ù
Ñ³ Ï ³ µÇáí ÇÝ ³ é³ Ýó µÅßÏ Ç Ñ»ï Ë áñÑñ¹ ³ Ï ó»Éáô

	Ûñë³ Ï áôÃÏáôÝ	Ñ³ ½	µñáÝËÇï	Ï áÍ á ñ¹ ó³ ñ	Ñ³ ÛÛ áñ Û³ Ý Ëáé áá Ç µ áñ µ áù ³ù	ç»ñÏ áá õ Ã Û áô Ý	· ñ Çå	³ Ï ³ ÝÕ Ç µ áñ µ áù áÝ Ù	³ ï ³ ÙÝ³ ó³ í	Ëáô Ï	ÙÇ ½ áõÕ ÇÇ µ áñ µ áù áÝ Ù	Other infections/ diseases
ÆÝùë	?	?	?	?	?	?	?	?	?	?	?	?
16 ï ³ ñ ÷ áôñ »ñ»Ë³ Ûñ Ñ³ Ù³ ñ	?	?	?	?	?	?	?	?	?	?	?	?

6.   ÆÝã ë»éÇ »ù å³ ï Ï ³ ÝáôÙ

        ? ³ ñ³ Ï ³ Ý   ? ç. ³ Ï ³ Ý

7.   ÆÝã ï ³ ñÇÇáÇ »ù   î ³ ñÇÇÝ»ñ   _____

 8. â¾Çù ³ ëÇ ÇÝã Ï ñÃáôÏáôÃÛáÝ áôÝ»ù

? ¸åñáó 8 ï ³ ñÇ

? ¸åñáó 10 ï ³ ñÇ

? î »ËÇÏ áôÙ

? Ð³ Ù³ Éë³ ñ³ Ý, ÇôÝëï Çï áôï

? Ð»ï ¹åñáóÛ³ Ï³Ý Ï ñÃáôÃÛáôÝ

? ²ÛÉ, Ù³ Ýñ³ Ù³ ëÝ»ù------------------------

9 àñÝ ¿ Ó»ñ ÁÝï ³ ÝÇùÇ ÙÇÇÇÝ ³ Ùë»Ï ³ Ý »Ï ³ Ùáõ Á

19,999 ¹ñ³ ÙÇó ùÇã
20,000 - 39.999 ¹ñ³ Ù
40,000 - 59,999 ¹ñ³ Ù
60,000 - 79, 999 ¹ñ³ Ù
80,000 ¹ñ³ ÙÇó ³ í »É
Ðñ³ Å³ ñí »ó å³ ï ³ ëË³ Ý»É

10. ¸ áõ áõÝ»ù ³ Ûë ÑÇí Ý¹áõÃÛáõÝÝ»ñÇó áñ¨ ¿ Ù»Ï Á   ? ³ Ûá ? áã ? ã· Çï »Ù

10A.

? ³ ëÃÙ³   ? ¹Ç³ µ»ï   ? Ëñáݳ Ïáíñ³ Ïï

   ? Ëñáݳ ÏµñáÝËÇï   ? ¿Ý¹³ ³ ñ¹Çï   ? 12 Ù³ ï Ýáó ³ Õáõ Ëáó

   ? ¿ÙÝÇ½»Ù³   ? ï áÙ»ñ¹ áõÊÙá½   ? Ëñáݳ ÏÇ åÇ·ÉáÝ»ñ¹ Çï

   ? åñáëï ³ ï Çï   ? áõéáõóù   ? Ëñáݳ ÏÇ ÙÇ½áõÕÇ»ñ¹ ÇÝÇ Ý Çñ»å

11   ²ï Ý³ ñï --

Enquête
gebruik van antibiotica in Nederland
Rijksuniversiteit Groningen
Klinische Farmacologie

ID nummer

ENQUÊTE

ID nummer

1. Hebt u zelf antibiotica gebruikt in het afgelopen jaar (inclusief huidig gebruik)? ☐ Ja   ☐ Nee (ga naar vraag 2)   ☐ Weet niet (ga naar vraag 2)

1A. **ZO JA**, vermeldt dan zo mogelijk de namen van de antibiotica, de redenen (klachten, ziekte) waarom u ze gebruikt(e) en voor hoelang.
  Geef vervolgens aan hoe u de medicijnen hebt gekregen door alle bijbehorende vakjes aan te kruisen.
  In de bijlage treft u een lijst van de meest gebruikte antibiotica, die u ter ondersteuning kunt gebruiken. Als u wel een antibioticum hebt geslikt, maar de naam niet meer weet, geeft u dit in de betreffende kolom aan met 'Weet niet'.

Naam van het antibioticum (zie lijst aan het eind)	Waarvoor werden de antibiotica gebruikt	Aantal dagen van gebruik	Op recept van een dokter, tandarts of ziekenhuis	Op recept van een verpleeg-kundige	Zonder recept direct van een apotheek, drogist of andere winkel ***	Overgebleven medicijnen van een vroegere kuur die u nog in huis had	Zonder recept van Internet	Gekregen van familie of vriend van oorspronkelijk voor hen bedoelde antibiotica	Andere bron
1.			☐	☐	☐	☐	☐	☐	☐
2.			☐	☐	☐	☐	☐	☐	☐
3.			☐	☐	☐	☐	☐	☐	☐
4.			☐	☐	☐	☐	☐	☐	☐
5.			☐	☐	☐	☐	☐	☐	☐
6.			☐	☐	☐	☐	☐	☐	☐
7.			☐	☐	☐	☐	☐	☐	☐

*** Als dit in het buitenland is gebeurd, schrijf a.u.b 'buitenland' in het vak.

Als u een andere bron hebt aangegeven, welke is dat?

----

2. Bevinden zich in uw huishouden kinderen van jonger dan zestien jaar?

☐ Ja ▸ *Ga naar vraag 3*

☐ Nee ▸ *Ga naar vraag 4*

3. Hebben deze kinderen (jonger dan 16 jaar) antibiotica gebruikt in het afgelopen jaar (inclusief huidig gebruik)? ☐ Ja ☐ Nee ☐ Weet niet

3A **ZO JA**, vermeldt dan zo mogelijk de namen van de antibiotica, de redenen (klachten, ziekte) waarom de kinderen ze gebruikten en voor hoelang. Geef vervolgens aan hoe de kinderen de medicijnen hebben gekregen door alle bijbehorende vakjes aan te kruisen. In de bijlage treft u een lijst van de meest gebruikte antibiotica, die u ter ondersteuning kunt gebruiken. Als de kinderen een antibioticum hebben geslikt, maar u de naam niet meer weet, geeft u dit in de betreffende kolom aan met 'Weet niet'.

	Naam van het antibioticum (zie lijst aan het eind)	Waarvoor werden de antibiotica gebruikt	Aantal dagen van gebruik	Op recept van een dokter, tandarts of ziekenhuis	Op recept van een verpleeg-kundige	Zonder recept direct van apotheek of winkel***	Overgebleven medicijnen van een vroegere kuur die u nog in huis heeft	Zonder recept van Internet	Gekregen van familie of vriend van oorspronkelijk voor hen bedoelde antibiotica	Andere bron
Kind 1	1.			☐	☐	☐	☐	☐	☐	☐
	2.			☐	☐	☐	☐	☐	☐	☐
Kind 2	1.			☐	☐	☐	☐	☐	☐	☐
	2.			☐	☐	☐	☐	☐	☐	☐
Kind 3	1.			☐	☐	☐	☐	☐	☐	☐
	2.			☐	☐	☐	☐	☐	☐	☐

*** Als dit in het buitenland is gebeurd, schrijf a.u.b 'buitenland' in het vak.

Als u een andere bron hebt aangegeven, welke is dat?

Als een kind meer dan 2 antibiotica heeft gebruikt of als meer dan 3 kinderen antibiotica hebben gebruikt, kunt u dat op de laatste pagina invullen.

4. Hebt u op dit moment antibiotica in huis (inclusief gebruik op dit moment)?   ☐ Ja   ☐ Nee (ga naar vraag 5)   ☐ Weet niet (ga naar vraag 5)

4A. ZO JA, kunt u aangeven welke antibiotica u in huis hebt? In de bijlage treft u een lijst van de meest gebruikte antibiotica in uw land aan. Lees deze lijst door. Geef per antibioticum aan hoe u het hebt gekregen door het bijbehorende vakje(s) aan te kruisen. U kunt meerdere vakjes aankruisen.

Naam van het antibioticum (zie lijst aan het eind)	Op recept van uw dokter, tandarts of ziekenhuis	Op recept van een verpleeg-kundige	Zonder recept direct van een apotheek, drogist of winkel in eigen land	Zonder recept uit het buitenland	Zonder recept van Internet	Gekregen van familie of vriend van oorspronkelijk voor hen bedoelde antibiotica	Andere bron
1.	☐	☐	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐	☐	☐

Als u een andere bron hebt aangegeven, welke is dat?

_____

5. Zou u in het algemeen antibiotica gebruiken zonder een dokter, verpleegkundige of ziekenhuis te raadplegen?

voor uzelf   ☐ Ja   ☐ Nee   ☐ Misschien   ☐ Weet niet

voor uw kinderen (jonger dan 16 jaar)?   ☐ Ja   ☐ Nee   ☐ Misschien   ☐ Weet niet

5A. *ZO JA of MISSCHIEN*, geeft u dan aan voor welke symptomen of ziektes u antibiotica zou gebruiken zonder dokter of ziekenhuis te raadplegen voor uzelf of thuiswonende kinderen door de juiste vakjes aan te kruisen (kruis a.u.b. alle vakjes aan die van toepassing zijn).

	Verkouden	Hoesten	Bronchitis	Keelpijn	Bijholteontsteking	Koorts	Griep	Oorontsteking	Kiespijn	Diarree	Urineweg-infectie	Andere infecties/ziektes

mijzelf	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
kinderen	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Als u andere infecties of ziektes hebt genoemd, kunt u aangeven welke dat zijn?

Hier volgen ter afronding nog enkele vragen over uw achtergrond:

_____

6.   Wat is uw geslacht?   ☐man   ☐vrouw

7.   Wat is uw leeftijd?   —————— Jaar

8.   Wat is uw hoogst genoten opleiding? *Kruis het betreffende vakje aan.*

☐ Basisschool niet afgemaakt

☐ Basisschool afgemaakt

☐ Lager beroepsonderwijs of algemeen vormend onderwijs

☐ Middelbaar beroepsonderwijs of middelbaar en hoger algemeen vormend onderwijs

☐ Hoger beroepsonderwijs of universiteit

9.   Wat is uw huidige bezigheid of beroep?   _____

10.   Hebt u één van de onderstaande ziektes?   ☐Ja   ☐Nee   ☐Weet niet

10A   *ZO JA*, kruis dan het betreffende vakje of de betreffende vakjes aan:

☐ astma   ☐ suikerziekte   ☐ chronische osteomyelitis (botontsteking)
    ☐ chronische bronchitis   ☐ endocarditis (hartinfectie)   ☐ maagzweer
    ☐ longemfyseem   ☐ tuberculose   ☐ chronische nier- of nierbekkenontsteking
    ☐ HIV   ☐ prostaatontsteking   ☐ kanker
☐ cystische fibrose   ☐ chronische urineweginfectie

Graag willen wij met een aantal mensen via een rechtstreeks gesprek meer te weten komen over de achtergrond van hun antwoorden en hun mening over antibiotica. We willen u dan ook vragen deel te nemen aan een kort interview. Het interview duurt ongeveer een half uur. Als u toestemt, nemen wij contact met u op om een afspraak te maken. U bent volledig vrij om met ja of nee op deze vraag te antwoorden.

11.   Wilt u ons in de volgende fase van het onderzoek helpen d oor deel te nemen aan een kort interview?

☐ Ja, ik ben bereid deel te nemen aan het interview

☐ Nee, ik ben niet bereid deel te nemen aan het interview

Alleen als u ja hebt geantwoord, vul dan hier uw naam, adres en telefoonnummer in zodat wij contact met u kunnen opnemen:

Naam   --

Adres   --

Telefoon   --

Als u op de hoogte wilt blijven van de resultaten van dit onderzoek, die beschikbaar komen aan het eind van het jaar, kruis dan dit vakje aan ☐ en geef uw naam en adres:

Naam en adres:...

Als u verder nog opmerkingen heeft, wilt u die dan alstublieft hier opschrijven

```
+--------------------------------------------------------------------+
|                                                                    |
|                                                                    |
|                                                                    |
|                                                                    |
+--------------------------------------------------------------------+
```

Hartelijk dank voor uw medewerking **en** voor uw tijd en moeite.

List of journals where this paper might be published

1. *Emerging Infectious Diseases*
2. *Antimicrobial Agents and Chemotherapy*
3. *International Journal of Antimicrobial Agents*