A survey of patient behaviours and beliefs regarding antibiotic self-medication for respiratory tract infections in Poland

Magdalena Muras¹, Jacek Krajewski², Marek Nocun¹, Maciek Godycki-Cwirko¹

Abstract

Introduction: Self-medication can contribute to the inappropriate use of antibiotics in respiratory tract infections (RTI). This phenomenon has not been well described, particularly in Poland. The aim of our study was to describe the prevalence of antibiotic self-medication for RTI, to explore factors influencing antibiotic use without prescription, and to determine the available sources of such antibiotics.

Material and methods: A self-administered questionnaire completed by patients presenting to family medicine clinics at Lodz and Wroclaw from 1st March to 15th May 2010.

Results: A total of 891 patients in ten clinics completed the survey (response rate, 89.1%). Overall, 41.4% (n = 369) of patients reported self-medication with an antibiotic for RTI. The most common reason for antibiotic self-medication was a belief that antibiotics treat the majority of infections, including influenza and influenza-like illnesses (43.9%; n = 162). The predominant sources of antibiotics for self-medication were antibiotics from previous prescriptions stored by the patient at home (73.7%, n = 272), those received from a pharmacy without prescription (13.5%; n = 50), or from family members and friends (12.7%; n = 47).

Conclusions: Antibiotic self-medication for RTI was common in this population. This may be due to the belief that the antibiotics treat the majority of infections. A recommendation to either ask patients to return unused antibiotics to the physician’s office or to dispense antibiotics in the exact amount which is necessary for an individual course, as well as the targeted education of pharmacy personnel and the general population, appear to be justified.

Key words: antibiotics, self-treatment, respiratory tract infections, available sources of antibiotics.

Introduction

The increase in resistance to antimicrobial drugs represents an important clinical and social problem [1, 2]. Many patients presenting to family medicine clinics have already started self-medication with antimicrobial agents [3]. Self-medication, defined as the administration of a therapeutic agent without a physician’s prescription, can contribute to the inappropriate use of antibiotics without clinical indication. The most common reasons for self-medication in Europe are ‘sore throat’ and bronchitis [4, 5].

Symptoms of the common cold usually resolve within 7 to 10 days (with some symptoms possibly lasting for up to 3 weeks) without treatment [6, 7].
Nevertheless, coryzal symptoms, cough or fever may prompt patients to make therapeutic decisions without a consultation with a health care professional [3]. Self-medication is related to the overuse of antimicrobial drugs [8, 9].

Due to possible complications as well as growing bacterial resistance, antimicrobial therapy should be used only upon a physician’s recommendation [10, 11] and if feasible following microbiology tests, particularly when streptococcal pharyngitis is suspected [12, 13]. Previous studies have revealed that self-medication with antibiotics is commonly encountered both in the United States (US) and in Europe, predominantly in cases of common cold and upper respiratory tract infections [4, 14]. Using unnecessary or inappropriate antibiotics can cause adverse effects, and lead to increasing numbers of drug-related adverse events, particularly allergic reactions [16]. The prevalence of self-medication is high in eastern and southern Europe (28.6%; n = 255) were 30–45 years old (including 24.8%; n = 153 urban, vs. 37.1%; n = 102 rural) or 46–60 years old (35.4%; n = 315) (including 36.9%; n = 227 urban, vs. 32.0%; n = 88 rural). The age group of 18–29 years old was smaller (18.3%; n = 163) (including 17.4%; n = 107 vs. 20.4%; n = 56 urban participants vs. rural, respectively). The age group above 60 years old (17.7%; n = 158) was the smallest (including 20.9%; n = 129 vs. 10.5%; n = 29 urban patients vs. rural, respectively). Female participants predominated both in the urban and rural groups (64.4%; n = 397 vs. 69.1%; n = 190, respectively).

A total of 369 participants (41.4%) reported taking antibiotics without consulting a physician. This was more common in rural areas, at 171 (62.2%) of 275 respondents in comparison to 198 (32.1%) of 616 from urban areas (p < 0.001; Figure 1). In both groups, the great majority of respondents acquired this antibiotic as tablets left over from previously used packs kept in their home medical kits, or, less often, from friends and family members. In addition, respondents from rural areas more frequently purchased antibiotics from a pharmacy without a prescription (Table I). The majority of persons who used antibiotics without consulting a physician agreed that the antibiotics were not effective against all respiratory tract infections. However, as many as 43.9% (n = 162) of respondents from this group believed that antibiotics were effective in the treatment of influenza and influenza-like illnesses. Conversely, the majority of 522 persons who reported not taking antibiotics without a physician’s recommendation believed that the antibiotics were not effective either in the treatment of influenza or other infections. In addition, a significantly higher percentage of participants in this

**Figure 1. Patients’ answers to the question “Have you ever taken antibiotics without your physician’s recommendation?”** Data presented as percentage of answers related to populations of patients from urban (n = 616) and rural (n = 275) areas. Error bars represent 95% confidence interval (CI). RTI – respiratory tract infections; **p < 0.001 vs. urban area.
23.7% of rural inhabitants did so (while in a Spanish

findings of a US study indicated that the main source of  
macy without a physician’s prescription [22]. Also, the  

a pharmacy without a prescription, while as many as  

for acute RTI has been reported in south-eastern  

Poland, including some rural areas [20, 21].

in the rural population of Poland, a factor that has  

in the rural environment. This latter  

from Lithuania indicated that the use of antibiotics  

No difference was  

from a pharmacy or friends  

home, which were subsequently used by as  

In our study, 43.9% of patients who used antibiotics  

knowledge about antibiotic therapy use was incom-  

It should be emphasized that the respondents’  

In conclusion, many patients use antibiotic self-  

Med Sci 5, October / 2013

856

Discussion

In Poland, antibiotics are prescribed very often  

for respiratory tract infections. Previous studies have  

revealed that in Lodz, approximately 72% of adult  

patients who presented with symptoms typical for  

a lower respiratory tract infection received an anti-

bolic [18, 19]. Even more frequent use of antibiotics  

for acute RTI has been reported in south-eastern  

Poland, including some rural areas [20, 21].

Data from our study confirmed frequent use of  

antibiotics without a physician’s recommendation,  

especially in the rural environment. This latter  

finding may be related to a lower level of education  

in the rural population of Poland, a factor that has  

been associated with more frequent antibiotic self-

medication [17].

Our findings differ from those of a recent multi-

center European study, in which no difference was  
noted in the use of antibiotics without a physician’s  

consultation between inhabitants of urban and  
rural areas [4]. In contrast, the results of a study  

from Lithuania indicated that the use of antibiotics  

without a prescription was 1.61-fold more frequent  

in rural than urban populations [9]. Published  

medical research on this topic relates mostly to the  
general population. According to a Spanish survey,  
41% of participants had taken antibiotics (over the  
past 6 months) which had been acquired from a  
pharmacy without a physician’s prescription [22]. Also, the  
findings of a US study indicated that the main source of  
self-medication with antibiotics were antibiotics  
kept at home, which were subsequently used by as  
many as 17% of patients [14]. In the population of  
Malta, as many as 19% of persons reported self-trea-
tment with antibiotics [23]. In contrast, according to  
data from the northern part of Israel, almost 25% of  
survey respondents kept antibiotics at home, but only  
17% would use them without a physician’s consulta-
tion [24]. In our study we found that 4.1% of respon-
dents from urban areas acquired their antibiotics from  
a pharmacy without a prescription, while as many as  
23.7% of rural inhabitants did so (while in a Spanish  

study, conducted in a general population, about 32.1%  
of participants did so) [25].

It should be emphasized that the respondents’  
knowledge about antibiotic therapy use was incom-
plete. Similarly, the results of a European survey [26]  
dicated that as many as 53% of respondents gave  
an incorrect answer to the question ‘do antibiotics  
treat the majority of infections’?”, and 47% of them expressed the opinion  
that antibiotics were effective against cold and flu.  
In our study, 43.9% of patients who used antibiotics  
without a physician’s recommendation believed that  
antibiotics treated influenza and influenza-like infec-
tions. Data from our study and most other surveys  
indicate the need for conducting further studies in  
this field, as well as for educating patients about  
adverse effects and harmful consequences of inap-
propriately applied antimicrobial therapy.

In conclusion, many patients use antibiotic self-
medication for RTI. This may be due to the common  
belief that antibiotics treat the majority of infec-
tions. A recommendation to either ask patients to  
return unused antibiotics to the physician’s office  
or to dispense antibiotics in the exact amount  
which is necessary for an individual course, as well  
as the targeted education of pharmacy personnel  
and the general population, appear to be justified.

| Urban area, n (%) | Rural area, n (%) |
|------------------|------------------|
| Home             | Home             |
| 162 (83.1)       | 110 (62.1)*      |
| From family/friends | From a pharmacy without a prescription |
| 22 (11.3)        | 25 (14.1)        |
| 8 (4.1)          | 42 (23.7)*       |
| Other            | Other            |
| 3 (1.5)          | 0 (0)            |

*p < 0.0001

Table I. Sources of antibiotics used without a physician’s prescription

| Age [years] | Self-treatment with antibiotics n (%) | Treatment with antibiotics with GP’s recommendation n (%) |
|------------|-------------------------------------|--------------------------------------------------------|
| 18-29      | 58 (35.6)                           | 105 (64.4)                                            |
| 30-45      | 125 (49.0)                           | 130 (51.0)                                            |
| 46-60      | 143 (45.4)                           | 172 (54.6)                                            |
| > 60       | 43 (27.2)                            | 115 (72.8)                                            |

Does your family physician prescribe antibiotics?...

- When needed 243 (65.3) 442 (87.4)*
- Too often 40 (10.8) 34 (6.7)*
- Too seldom 42 (11.3) 20 (4.0)*
- When asked 47 (12.6) 10 (2.0)*

Are antibiotics effective against flu and flu-like diseases?

- Yes 162 (43.9) 170 (32.6)**
- No 125 (33.9) 203 (38.9)

Are antibiotics effective against all infections?

- Yes 110 (29.8) 61 (11.7)**
- No 154 (41.7) 277 (53.1)**

I don’t know/other 82 (22.2) 149 (28.5)

*p < 0.05, **p < 0.001, ***p < 0.0001

Table II. Patients’ age and opinion about prescribing and effectiveness of antibiotic therapy
Acknowledgments

The authors wish to thank the family physicians and their teams involved in data collection and Dr. Andrew Stewardson for reviewing the manuscript.

References

1. Lipsitch M, Samore MH. Antimicrobial use and antimicrobial resistance: a population perspective. Emerg Infect Dis 2002; 8: 347-54.
2. Harbarth S, Samore MH. Antimicrobial resistance determinants and future control. Emerg Infect Dis 2005; 11: 794-801.
3. Vanden Eng J, Marcus R, Hadler JL, et al. Consumer attitudes and use of antibiotics. Emerg Infect Dis 2003; 9: 1128-35.
4. Grigoryan L, Haaier-Ruskamp FM, Burgerhof JG, et al. Self-medication with antimicrobial drugs in Europe. Emerg Infect Dis 2006; 12: 452-9.
5. Grigoryan L, Burgerhof JG, Degener JE, et al. Determinants of self-medication with antibiotics in Europe: the impact of beliefs, country wealth and the healthcare system. J Antimicrob Chemother 2008; 61: 1172-9.
6. Gwaltney JM Jr, Hendley JO, Simon G, Jordan WS Jr. Rhinovirus infections in an industrial population. II. Characteristics of illness and antibody response. JAMA 1967; 202: 494-500.
7. Gwaltney JM. The common cold. In: Mandell GL, Bennett JE, Dolin R, editors. Principles and practices of infectious diseases. 5th ed. New York: Churchill Livingstone; 2000. p. 651-6.
8. Al-Bakri AG, Bustanji Y, Yousef AM. Community consumption of antibacterial drugs within the Jordanian population: sources, patterns and appropriateness. Int J Antimicrob Agents 2005; 26: 389-95.
9. Berzanskyte A, Valinteliene R, Haaier-Ruskamp FM, Gurevicius R, Grigoryan L. Self-medication with antibiotics in Lithuania. Int J Occup Med Environ Health 2006; 19: 246-53.
10. Thomas IK, Forrest A, Bhavnani SM, et al. Pharmacodynamic evaluation of factors associated with the development of bacterial resistance in acutely ill patients during therapy. Antimicrob Agents Chemother 1998; 42: 521-7.
11. Guillermot D, Carbon C, Balkau B, et al. Low dosage and long treatment duration of beta-lactam: risk factors for carriage of penicillin-resistant Streptococcus pneumoniae. JAMA 1998; 279: 365-70.
12. Chiappini E, Regoli M, Bonsignori F, et al. Analysis of different recommendations from international guidelines for the management of acute pharyngitis in adults and children. Clin Ther 2011; 33: 48-58.
13. Hryniewicz W, Ozorowski T, Radzikowski A, et al. Recommendations for Management of Community-Acquired Respiratory Tract Infections - 2010. National Medicines Institute, Warsaw, Poland http://www.antybiotyki.edu.pl/pdf/RekomendacjeA4_2009.pdf
14. Richman RB, Garra G, Eskim B, Nashed AH, Cody R. Oral antibiotic use without consulting a physician: a survey of ED patients. Am J Emerg Med 2001; 19: 57-60.
15. Gleckman RA, Czachor JS. Antibiotic side effects. Semin Respir Crit Care Med 2000; 21: 53-60.
16. Shehab N, Patel PR, Srinivasan A, Budnitz DS. Emergency department visits for antibiotic-associated adverse events. Clin Infect Dis 2008; 47: 735-43.
17. Grigoryan L, Burgerhof JG, Haaier-Ruskamp FM, et al. Is self-medication with antibiotics in Europe driven by prescribed use? J Antimicrob Chemother 2007; 59: 152-6.