



The Myth of Penicillin/Dexamethasone and Its Costs to the Health Care System of Iran

Alireza DADASHI¹, Seyed Behzad JAZAYERI^{2,3}, Abtin SHAHLAEI², Farnaz NAJMI-VARZANEH², *Vafa RAHIMI-MOVAGHAR²

1. Imam Reza Hospital, Ardesheb University of Medical Sciences, Tebran, Iran
2. Sina Trauma and Surgery Research Center, Tebran University of Medical Sciences, Tebran, Iran
3. Students' Scientific Research Center, Tebran University of Medical Sciences, Tebran, Iran

***Corresponding Author:** Email: v_rahimi@sina.tums.ac.ir

(Received 13 Dec 2014; accepted 22 Feb 2015)

Dear Editor-in-Chief

Arkvaz-Malekshahi is a small rural area situated in southwest of Iran with a population of 15,515 people. Although there are three private practice physicians in Arkvaz-Malekshahi, the main health care service is provided through a 24-hour clinic operated by the Ministry of Health, offering primary care and emergency services to patients.

As in other primary care units and ambulatory medical settings, acute upper respiratory infections are of the most common diagnoses year round (1). Common cold is a general term to describe a mild upper respiratory infection manifesting with coughs, sneezing, nasal discharge and nasal stuffiness (2). The diagnosis is usually clinical, often with the suggestion of the patient him/herself (2). There is no evidence for role of antibiotics in common cold as a treatment or prevention of a secondary bacterial infection in children or adults (3-5). Although mild cases of *Streptococcal* pharyngitis might be misdiagnosed with common cold in presenting symptoms and tonsil appearance on pharynx examination, the majority of exudative pharyngitis is viral in origin (2). Nevertheless, there is a general belief among residents of Arkvaz-Malekshahi, as well as other rural and urban inhabitants of Iran, that the ultimate treatment of common cold exclusively requires injection(s) of penicillin. Similar misunderstandings about antibiotics have been reported in Jordan

and New Zealand (6, 7). To demonstrate further the cost of non-prescribed or unindicated prescriptions of penicillin/dexamethasone in common cold a small study was conducted.

In a prospective study between December 29, 2013 and January 5, 2014, unnecessary penicillin/dexamethasone demands for patients diagnosed with common cold were recorded by the practicing physicians at the field. Total numbers of admission over the study period and average monthly visits were obtained using the computerized admission registry system. Medical service budget information was retrieved through the financial department of governmental health care system in Arkvaz-Malekshahi.

Overall, 1,082 patients were admitted to the clinic and 73 unnecessary penicillin and 45 dexamethasone requests were recorded. The average request of penicillin and dexamethasone per hundred patients was 6.7 (CI 95% 4.81-8.70) and 4.2 (CI 95% 2.47-6.4), respectively. In the last year an average of 3,983 admissions were recorded for the clinic. This number of admissions results in an estimate of 266.8 (CI 95% 191.1-346.5) and 167.2 (CI 95% 98.3-254.9) penicillin and dexamethasone non-prescribed or unindicated prescriptions, respectively in one month.

Based on average prices on pharmacies in the area and using a rough estimation of injection cost of

25,000 Rials (\$ 0.83) for dexamethasone and 15,000 Rials (\$ 0.50) for penicillin, an average of 4,180,000 Rials (\$ 139.3) and 4,002,000 Rials (\$ 133.4) is lost to unnecessary dexamethasone and penicillin injections, respectively.

This study was conducted to understand the cost of unnecessary penicillin/dexamethasone prescriptions for common cold in a small city of Iran. The results show that the total cost of penicillin and dexamethasone in one month, 8,182,000 Rials, (272.7 \$) is equal to 1.63% of the monthly budget, 500,000,000 Rials, (\$ 16,667) of medical services in Arkvaz-Malekshahi.

In personal experience of the authors and faculty in medical education, the misbelief of effectiveness of penicillin in treatment of common cold is rather a misunderstanding for prevention of rheumatic fever in *Streptococcal* spp. exudative pharyngitis. The overtreatment of children with penicillin with primary over diagnosis of clinical *Streptococcal* pharyngitis in the past years has led to the general “myth” that penicillin” treats common cold. Over the recent years, a change in this belief has had the patients ask for a simultaneous injection of penicillin and dexamethasone, which in turn may reflect overuse of corticosteroids in general practice. Although it might not be impossible to communicate with the patients and clarify the subject, rejecting the patients’ demands is not always practical. In our current observation, 1 out of every 6 patients who eagerly asked for administration of penicillin/dexamethasone ultimately accepted to receive symptomatic therapy instead. However, in some cases the same patients were seen in the clinic with non-prescribed penicillin/dexamethasone vials asking for injections, which is a further issue in the health care system of Iran.

In the US, 20 million days of absence from work and 22 million days of absence from school are due to common cold (8). Though a similar study is not available in Iran, the disability-adjusted life years (DALY) of upper respiratory infections are estimated about 9 DALYs per 100,000 of population in comparison to 5 DALYs per 100,000 in Sweden, according to world health organization reports in 2008 (9). In the developing economy of Iran, the additional cost of unnecessary prescrip-

tions is a major pitfall, which requires the attention of national health care policy makers.

Preventing the additional cost of unnecessary common cold prescriptions in Iran is a challenging task. Changing the belief and attitude of general population and physicians’ practice are necessary in decrease of antibiotics overuse. The media would play an important role in changing the attitude regarding the myth of penicillin and dexamethasone in treatment of common cold.

Acknowledgements

The authors declare that there is no conflict of interests.

References

1. McCaig LF, Burt CW (2004). *National hospital ambulatory medical care survey: 2002 emergency department summary*. ed. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
2. Heikkinen T, Järvinen A (2003). The common cold. *The Lancet*, 361:51-59.
3. Arroll B, Kenealy T (2005). Antibiotics for the common cold and acute purulent rhinitis. *Cochrane Database Syst Rev*, 3. doi: 10.1002/14651858.CD000247.pub
4. Rosenstein N, Phillips WR, Gerber MA, Marcy SM, Schwartz B, Dowell SF (1998). The common cold—principles of judicious use of antimicrobial agents. *Pediatrics*, 101:181-184.
5. Spurling GK, Del Mar CB, Dooley L, Foxlee R (2007). Delayed antibiotics for respiratory infections. *Cochrane Database Syst Rev*, 3. doi: 10.1002/14651858.CD004417.pub4
6. Norris P, Chamberlain K, Dew K, Gabe J, Hodgetts D, Madden H (2013). Public Beliefs about Antibiotics, Infection and Resistance: A Qualitative Study. *Antibiotics*, 2:465-476.
7. Shehadeh M, Suaifan G, Darwish RM, Wazaify M, Zaru L, Alja'fari S (2012). Knowledge, attitudes and behavior regarding antibiotics use and misuse among adults in the community of Jordan. A pilot study. *Saudi Pharm J*, 20:125-33.
8. Bertino JS (2002). Cost burden of viral respiratory infections: issues for formulary decision makers. *Am J Med*, 112:42-49.
9. Mathers C, Fat DM, Boerma JT (2008). *The global burden of disease: 2004 update*. ed. World Health Organization.