

Evaluation of Prescribing Antibiotics Used in Children Younger than 5 years with Acute Respiratory Infections

O. HERNÁNDEZ GARCÍA^{1*}, J. REYNOSO VÁZQUEZ²,
J.C. RUVALCABA LEDEZMA³ and A. CHEHUE ROMERO⁴

¹Student of the Master in Public Health (UAEH) Hidalgo State University, Mexico. Jurisdictional Coordinator of Epidemiological Surveillance (SSH) Ministry of Health, Hidalgo, Mexico.

²Master in Public Health, Research Professor of the Pharmaceutical Academic Area (ICSA-UAEH) Institute of Health Sciences- Autonomous Hidalgo State University, Hidalgo, Mexico.

³PhD in Public Health Sciences, full time research professor (ICSA-UAEH) Institute of Health Sciences- Autonomous Hidalgo State University, Hidalgo, Mexico.

⁴Master in Toxicology, Full time Research Professor of the Pharmaceutical Academic Area (ICSA-UAEH) Institute of Health Sciences, Autonomous Hidalgo State University, Hidalgo, Mexico

*Corresponding author E-mail: chehue_alex@yahoo.com

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ABSTRACT

Describing how the process of medical prescription of antibiotics as a primary demand for medical care in the world is addressed; and the inherent factors to that process in health systems from the perspective of public policies. A literature review of research was performed in order to allow establishing a critical analysis regarding the art of prescribing antibiotics in children under 5 with IRA's. There are works of research showing which and how antibiotics are used, but a few studies of drug - use in the medical units of primary care in Mexico have given evidence of the regulation or decrease in antibiotic prescription since most of the times do not contribute to relieve symptoms or the cure of the disease breaking the mandate of the OMS for the control of this disease and further; these publications focus their evaluation on the description of the problem without local intervention proposals adjusted to primary care to modify that behavior. It is clear that there is recognition of rational or irrational use of antibiotics, however these studies do not describe the installation of interdisciplinary committees to the interior of our country to carry out or execute the objectives of the APUA strengthening the medicine surveillance through the generation of public policies to watch how and what for they are used.

Key words: Antibiotics, Medical prescription, irrational or unreasonable use, Boys, Respiratory Infection, Public Policy.

INTRODUCTION

The prescription is the act of prescribe, the action and effect of ordering the dispensing of a drug with specific indications for its use, which is the result of a logical deductive process by which the prescriber concludes with guidance diagnoses and makes a therapeutic decision. Respiratory upper aerial via infection is the leading cause of disease

in Mexico; two out of three cases in the general population happens in pediatric patients; about one third part happen in children under 4 years old².

Antibiotics represent an alternative commonly used as part of treatment of bacterial infectious processes indemonstrable by laboratory tests. Many of the factors that influence in the decision to use an antibiotic empirically in acute

respiratory infections (ARIs) is knowing or not knowing the management guidelines standardized by International, National and State Organizations; situation that is poorly evaluated from inside health services, whose evaluation searches for the clinical assessment and diagnosis of therapeutic clinical correlation and the study of the indication-prescription of antibiotics in these conditions.

That way, the proper choice of an antibiotic requires to consider not only the characteristics of the disease, the patient and his environment; but in addition, factors that indirectly influence the decision (drug availability, suggestions of parents, medical safety in their diagnostic and therapeutic conclusion, whether or not a committee of drug monitoring for proper prescription). A judicious choice of antimicrobial therapy should also consider the characteristics of the host, infection site, local ecology, pharmacokinetics and pharmacodynamics of antibiotics chosen³

Studies on drugs usage have contributed with knowledge about how they are dispensed from their prescription methodology; however, most of these studies were made conducted at a hospital level considering the IRA's as one of the major problems in public health services from the perspective of management at that level; which ranks first as the reason for medical consultation in the primary level in the world⁴ (OP Health, 1995) they are also the leading cause of medical consultation by children under 5 years old around the world and represents 60% of all these in the first 2 years of life⁵

It is necessary to evaluate the medical prescription process of antibiotics in this population with IRA's and execute strategies, policies and standards that are set for the proper use of them; the World Health Organization (WHO) has established strategies to standardize antibiotics management in all countries. Since 1981, the Alliance Foundation for the Prudent Use of Antibiotics (APUA) promotes activities directed to stimulate surveillance studies that show the problems of using these compounds and disseminate knowledge about the rational use of antibiotics and problems that involve its use, leading an educational task at all society levels, where Mexico is a member.^{6,7}

Characterizing the problem of the forms they take such irrationality requires judicious observation of the context in which this clinical care to pediatric patients process develops, analyze which elements and diagnostic tools doctors consider to make the decision to prescribe antibiotics that are in his opinion the best choice, avoid associated complications (medical expenses and inputs, promote antimicrobial resistance, not help to heal the patient etc) and consider that antibiotics for this age group are not the first therapeutic choice in this type of infection; this are just some of the recommendations. The irrational use of antibiotics takes three forms: Excessive prescription, when antibiotics prescribed are unnecessary; inappropriate prescription, when the antibiotic is necessary but prescription is insufficient and incorrect prescription, when the antibiotic is not appropriate for the infection⁸

Among the factors contributing to the medicine incorrect use are: lack of theoretical knowledge and skills, inappropriate medicine and unethical promotion by pharmaceutical companies, profits from the sale of medicine, medicine availability without restrictions, overworked health staff, unaffordable medicines and lack of national drug policies⁹.

In the therapeutic approach of the IRA's is the use of antibiotics under certain well-established diagnostic criteria, although it has been proved that excessive and inappropriate use of antimicrobials (especially in upper respiratory tract infections) stimulates the appearance or increasing of bacterial resistance, besides causing high costs to health institutions, patient's families and higher waste of medicines¹⁰ so, this are a few of the many reasons that makes so many in process of developing countries have a breakthrough in the development of policies and evaluation in the pharmaceutical control; Allowing the emerging adoption of rational behavior thereof.

Among the action programs aimed at children under 5 years old in Mexico for monitoring morbidity and mortality emphasizes the study of deaths from complications IRA's like pneumonia; using as a study strategy verbal autopsy which aims to identify opportunity areas in medical care access, diagnosis, therapeutic management and

detection of risk factors that contribute to these patients death, over complications inherent in the process of health care. Inappropriate intervention of the people in health services related to diagnosis and wrong treatments can also occur: the overuse of antibiotics. Reducing antibiotic prescription is the second objective of the overall program for the control of the IRA of the WHO⁸.

In Mexico, it was not until the Official Gazette (DOF) published the agreement of the guidelines for selling and dispensing antibiotics based on the legal basis of the 4th article of the Constitution of the Mexican United States, the General Health Law and the Internal Regulations of the Ministry of Health and based on the severity of the consequences of self-prescribing observed in the epidemic of influenza AH1N1, the problem of high consumption and sales associated with self-prescribing and inappropriate dispensing.

Aim

This article refers to a literature review that allows describing the process of prescription and dispenses of antibiotics and discusses the main demand for medical care in the world, as inherent factors to the prescription process in health systems from the perspective of public policy.

MATERIAL AND METHODS

An analysis of the literature found in primary information sources indexed in the search engines available online for official publications by the World Health Organization (WHO) and the Pan American Health Organization (PAHO) was made. This analysis was performed to review the approach that the authors provide to the art of medical prescription of antibiotics in children with IRA's for therapeutic management in outpatient and inpatient health care settings where patients are treated.

Research publications related to the prescription of antibiotics in children less than 5 years with acute respiratory infections were analyzed in order to know the usefulness of these drugs related to medical factors associated with prescription process, its development and the approximation to its implementation according to public policy. These publications were obtained from official institutional

guidelines and regulations of interest, compliance with international and national obligations, and also magazine publications indexed in Pub Med, Elsevier, Scielo, México's Public Health, BIREME bases and Spanish and English publications.

RESULTS

For this analysis 8 published articles were reviewed these were extracted from indexed journals available online as well as international and institutional publications from Mexico. From these items, 80% reports the need to establish, apply or modify the regulatory policy on prescription (most of them international) and the development of guidelines related to good medical prescription practices based on clinical situation, knowledge of the types of IRA's and judicious choice of the physician should be used at the decisive moment of its use (considering the knowledge of the results of irrational use in all its forms), 20% mention factors related to a bad prescription, prescription time based on the clinical course and diagnostic conclusion.

In 6 articles the thematic content of the need to assess the usefulness of these drugs was identified, one with a focus on primary health care at the primary care level (indication-prescription studies in media Extra hospital), another article describes what the impact on educational interventions for doctors and strengthen the adherence to the rules established for rational use (statistically demonstrating the benefits related); the other one, considers the costs generated in international studies for health systems and the irrational use of national strategies that can or not modify this behavior.

The national documents reviewed were closer to the model of clinical practice guidelines, standards of interest and official national observance, because more than half of the articles reviewed mentioned that standardization strategy for managing the IRA's is based on standardized definitions and strategies with universal domain, not local.

Only a foreign publication points out the need to make a deeper review in indicating studies-prescription based on qualitative studies and the

lack of recognition of the study of determinants of antibiotic use in Mexico and the cost associated with the process of prescribing .

One article statistically tested the signs and symptoms presented by patients are a predictor factor for prescription and characterizes the type of respiratory infection where antibiotic was prescribed and analyzes the educational impact on doctors.

There are a few publications that prove the control of this activity or proposals of intervention in improving these processes; further, that public policy focuses on access and/or purchase of this drug, but not the supervision and proper use in health systems, according to Martínez-García *et al.* have reported that 48.6% of episodes of ARI's in 13 rural communities in Mexico were treated with antibiotics.

The recommendation presented in most literature reviews related to appropriate medical prescription practices is to have management guidelines and assessment strategies in the use of antibiotics in children with IRA's.

DISCUSSION

There is still a lack of characterization of the different scenarios that doctors from primary care units present to observe the conditions under which they implement their therapeutic prescription of antibiotics in children with IRA's. It is proved that standardization of recommendations issued by international institutes for this measure are sometimes employed, but the execution of that action must go beyond these recommendations, based on the strategic analysis of background correction and not so little impact in respect to their use. There are many factors involved in the decision and choice of antibiotic use, and many of them are the ways in which the need to look tactically to the problem of irrational use of antibiotics is observed, conflict is not mitigated by the absence of unification of policies designed by interdisciplinary actors that observe and propose efficient alternatives and effective corrective strategies under this issue and the actual resources that doctors have, specifically; the review of policies and strategies in Mexico.¹³

Public and educative Policy intervention

from current models of medical continuing education applied in medical practice; has not had the impact on cognitive modifiability to promote rational use of antibiotics by patients, although studies show the effectiveness of this intervention, which is not contextualized and permanently evaluated by exposing these children to promote resistance to these drugs .

It is highly necessary for health care systems in primary care to conduct a critical analysis of the use of antibiotics in the main reason for children's medical care; allocate who will evaluate its use and provide follow up to these facts, observation of which or what is the reason generating acquisition cost and consumption of antibiotics used not in the most appropriate manner.

The clinical identification of signs and symptoms of the disease in its various clinical presentations are predictors that are used by doctors for prescribing antibiotics, where primary health care represent a very valuable tool for our patients.¹⁴ Under this view, the present study allows us to suggest the need for a multidisciplinary permanent system with advisory experts to assess, monitor and disseminate adherence to standardized policies and regulations for proper use from the evaluation context not only for medical practice, promote the rational use of antibiotics in medical units of primary care in its component of quality care and efficiency but at the local level; evaluating which would be the best teaching methodology used by the doctors and whether it impacts their continuing medical practice or not and to serve as a model of intervention to be implemented and incorporated into a system of training and continuing medical education. The final product in research and change in the process of acquiring antibiotics should only be the beginning of trigger actions not only for this group of drugs but to strengthen drug monitoring for all medicinal products through generating national institutional public policies that also monitors how and why they are used.

CONCLUSION

Foreign medical publications focus on the study of antibiotic prescription in children based on the characteristics of the disease, inclination to

international public policy through standardizing management guidelines and the process of rational use; however, a few studies have directed their attention in the effective resolution of the low impact of these strategies over time “*training and technical strengthening to the doctor who’s prescribing because only educative interventions impact is measured, but there aren’t evaluating studies of the context in which locally this doctors have develop their practice in front of a patient and to be considered for the design of this interventions*” and especially which is the educational model used for such strengthening (educational models or redesigned methodology or even new) in a institutionally form.

The undeniable recognition of rational or irrational use of antibiotics as the main problem of demand for medical care in primary care in the world is clear; however in these studies the installation of interdisciplinary committees in the country to

carry out or execute the objective of APUA is not described. Thus is still necessary to know how they work, how they respond to improvement strategies, if they are applied and how to follow up on a well-known problem which can even be considered as normal without the attempt of modify it at a short or medium term.

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