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Dosing oral-liquid azithromycin suspensions: do users follow instructions?

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ABSTRACT

Introduction: Oral-liquid suspensions are pharmaceutical forms usually accompanied by dosing devices [1]. The type of device influences dose measurement, which is associated with administration errors, with possible impact in the pharmacological treatment [2,3]. On the other hand, as liquid disperse systems, it is essential to shake them before use, to ensure that the active ingredient is well dispersed throughout the vehicle before administration. The aim of this work is to evaluate the degree of awareness of pharmacy students, regarding two key factors for an accurate dose administration: "shake before use", and the choice of an adequate dose-measuring device, packaged with the antibiotic, based on the dosing volume.

Materials and methods: A pilot study was conducted at Instituto Universitário Egas Moniz, with 40 randomly selected pharmacy students with an average age of 21.5 years (± 3.2), who signed an informed consent. Two oral extemporaneously compounded suspensions from azithromycin were used (Azithromycin Baldacci and Zithromax; 40 mg/mL, both including a dosing spoon, an oral syringe and a reconstitution cup). The volunteers were requested to rank the three types of device according to their preference, for doses of 2.5 and 5 mL. It was also recorded if the suspension was shaken before measurement. Otherwise, volunteers were reminded of the importance of the procedure, as stated on product label. The protocol was approved in Egas Moniz, ethics committee.

Results: 70% ($n = 28$) of the volunteers chose the dosing device regardless of the dose volume. 50% ($n = 20$) preferred the dosing spoon, whereas 35% ($n = 14$) choose the oral syringe and 15% ($n = 6$) the reconstitution cup as a first choice for administration of the medicines. The main order of preference of the participants was spoon-cup-syringe ($n = 14$, 35%), followed by the syringe-spoon-cup ($n = 9$, 22.5%) and finally spoon-syringe-cup ($n = 6$, 15%). For the participants that questioned about the volume to be measured ($n = 12$, 30%), the cup was never the first option, and the most prevalent sequences were spoon-syringe-cup and syringe-cup-spoon, both with 42% ($n = 5$). In the first measurement, 80% ($n = 32$) of participants did not shake the suspension. After being reminded, the value decreased to 37.8% ($n = 15$), in the second antibiotic.

Discussion and conclusions: The dosing spoon was the preferred device for most participants. The reconstitution cup was mistaken for a measuring device by all participants. Therefore, the inclusion of this type of device may cause gross dosing errors. The "shake before use" instruction which accompanies the label on suspensions, was easily overlooked, despite the specific academic training of these students. This should not be used as the only means of communicating such important information. Upon dispensing of suspensions the pharmacist should make sure that patients fully understand the need to shake the medication well before each administration and are able to choose, and properly use, the most adequate dosing device.

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Evaluation of antibiotic prophylaxis use in a university dental clinic in the Lisbon area

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ABSTRACT

Introduction: Antibiotic prophylaxis (AP) in dentistry is recommended before dental procedures that involve manipulation of gingival tissue or periapical region, and perforation of oral mucosa in order to prevent a serious bacterial infection. The American Heart Association (AHA) Guideline recommends that the cardiac conditions with the highest risk of infective endocarditis (IE), for which AP is reasonable are: prosthetic cardiac valves, previous IE, congenital heart disease and cardiac transplantation with cardiac valvulopathy [1,2,3]. The aim of this study is to evaluate the use of AP in a University dental practice compared to AHA guidelines.

Materials and methods: An observational and descriptive study was conducted between June and August 2016 at Clínica Dentária Egas Moniz (CDEM), a University Dental Clinic in the greater Lisbon Area. A total of 4000 patient records were analysed. 60 records were selected according to predefined inclusion criteria: patients submitted to endodontics and/or periodontology and/or surgery appointments, patients with IE/prosthetic cardiac valves/cardiac bypass/cardiac valvular disease/rheumatic fever or hip/knee joint prosthesis and patients who required AP before an invasive dental procedure. Clinical processes analysis were authorised by the patients through a declaration of informed consent. This study was authorised by the Clinical Director of CDEM and approved by Egas Moniz Ethics Committee.

Results: Periodontology patients had AP indication in: congenital cardiac disease (4/16), cardiac valvular disease (5/13), rheumatic fever (3/7), and prosthetic cardiac valves (7/8). Surgery patients had AP indication in: IE (2/2), congenital cardiac disease (4/12), cardiac valvular disease (4/6), rheumatic fever (2/4) and prosthetic cardiac valves (6/8). Endodontic records were not enough to have significant results to compare.

Discussion and conclusions: There is some disparity between the AHA guideline and the attitudes of dentists towards AP indication [4]. The use of antibiotics in dental medicine is characterised by empirical prescription based on epidemiological and clinical factors, using broad spectrum antibiotics and for short periods of time. The abuse of unjustified antibiotics and the lack of knowledge about the application of AP ultimately encourages bacterial resistance and the increase in untreatable infections. Antimicrobial resistance is a current serious global threat accordingly to WHO. It is no longer a prediction for the future, as it is happening in all regions of the world and has the potential to reach anyone [5]. The knowledge and communication over this topic must be stressed, even more in newly graduated dentists, to encourage evidence based homogeneous prescription patterns that promote good and safe clinical practices.

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