



Editorial

[Translated article] Indicators of antibiotic use in hospital emergency departments



Indicadores del uso de antibióticos en los servicios de urgencias hospitalarios

Infectious diseases account for about 15% of medical consultations in hospital emergency departments (EDs),¹ and antibiotics are one of the most-commonly prescribed therapeutic groups in this setting.² Several studies have estimated that 30%–50% of antibiotic prescriptions in EDs are inappropriate.^{3–5} The issue is all the more relevant given that antibiotic courses initiated in EDs are often continued during hospital admission and that EDs also generate out-of-hospital antibiotic prescriptions when discharging patients without admission.

Therefore, healthcare administrations should prioritise the implementation of Antimicrobial Stewardship Programmes (ASPs) in EDs. Such programmes have been shown to reduce overall antimicrobial prescribing by 10%–40% and increase adherence to clinical practice guideline recommendations.⁶ This need to implement ASPs in EDs has been referred to in the consensus document PROA-2 (Antibiotic Use Optimization Program-2). It also sets out requirements measuring specific and appropriate clinical outcome indicators and performing relevant quality assessments of antibiotic prescribing.⁷

It is crucial for ASPs to establish such indicators, monitor them over time, and disseminate the results to professionals involved in antibiotic use. As in any quality programme, the measurement of indicators (e.g., structural, process, or outcome) is fundamental to assess the baseline situation, prioritising needs, designing activities, and verifying the achievement of ASP performance targets.⁸ Notable progress has recently been made in Spain with the publication of the Standards for the Certification of ASP Teams, in hospital and community team versions. These documents establish indicators for antibiotic use, microbial resistance, and clinical outcomes using 3 performance ratings: basic, advanced, and excellent.^{9,10} In contrast, no specific indicators of antibiotic use based on consumption have been reported for EDs to date, although such indicators have been published for primary care¹¹ and hospitals.¹²

However, this issue of *Farmacia Hospitalaria* presents a study by Ruiz-Ramos et al whose aim was to develop a panel of indicators to monitor the activity of ASPs in EDs. The indicators were established by consensus of a multidisciplinary group of experts in the management of infections in EDs and in the implementation of ASPs, using a modified Delphi method.¹³ A total of 79 relevant indicators were selected for their impact on health care and ease of implementation and divided into 5 groups: consumption, prescribing appropriateness for the most common infectious diseases, microbiological, process, and outcomes.

In addition, each indicator was ranked in order of priority and given a frequency of measurement.

For the reasons outlined above, this study provides novel aspects with notable practical application for monitoring antibiotic use in an area of considerable interest to ASP teams.

The authors explain the definition of each indicator, without providing the formula for its calculation or the reference standard. Having this formula is relevant for the calculation of the indicator, as the definition of some indicators lacks clarity concerning the determination of the numerator and denominator, as well as the corresponding units of measurement. This aspect could lead to differences between centres, making comparisons difficult. Regarding standards, the majority are quantitative and lack a reference standard. Instead, their value is derived from analysing temporal trends and comparing EDs that share similar characteristics. In order to obtain reliable and robust results, it is essential to have a national register with homogeneous data entry and a large number of users. In this sense, the hospital antimicrobial consumption platform of the Spanish Society of Hospital Pharmacy, in collaboration with the National Plan against Antimicrobial Resistance of the Spanish Agency for Medicines and Health Products, currently offers the option to include consumption data from EDs in the calculation of Defined Daily Doses of each antimicrobial agent per 100 patients treated.¹⁴ It would be advantageous to allow the inclusion of consumption indicators and comparative analyses between participating EDs.

The most ambitious aspect of the study is that it incorporates clinical outcome indicators of mortality, re-consultations, and admissions to intensive care units, and the appropriateness of empirical antibiotic treatment for infectious processes. This aspect requires individualised assessments and adequate computer support for data extraction and recording, 2 considerable challenges in an environment where a lack of human resources and technological development are the main barriers to the adequate development of ASPs.

In summary, the study by Ruiz-Ramos et al is an excellent attempt to provide indicators to monitor antimicrobial use in EDs. This is a matter of prime importance because of the large volume of antibiotic use generated by these departments, and because the information and tools available to ASPs in this healthcare setting are not as robust as in other such settings. The use of these indicators in the near future will

allow us to assess their applicability and validity for the development of ASPs in EDs.

CRediT authorship contribution statement

José María Gutiérrez-Urbón: Writing – original draft.

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José María Gutiérrez-Urbón

Servicio de Farmacia, Complejo Hospitalario Universitario A Coruña,
Coruña, Spain

E-mail address: Jose.Gutierrez.Urbon@sergas.es (J. M. Gutiérrez-Urbón)

Article history:

Received 6 February 2024

Accepted 13 February 2024

Available online xxxx