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Editorial

Poor antimicrobial training of clinicians in Spain

En España la formación en antimicrobianos es deficiente

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The antimicrobial crisis is just as real as the economic one currently affecting us, although the former is less well known, and so causes more deaths, more morbidity, and more health spending. Antimicrobial therapy accounts for upwards of 30% of a hospital's pharmacy budget; if the crisis worsens, it will paralyze the great achievements of modern medicine, because complex surgical interventions, cytotoxic chemotherapy, and transplants are not possible without antimicrobials.

To solve this crisis we need new antimicrobials and to better manage those we already have. This requires progress in both research and education, although the pace of each is very different.

Fortunately, basic research, which is traditionally limited to private initiatives, has expanded in recent years with joint public and private funding agreements, such as the Innovative Medicines Initiative (IMI), which is the largest European public-private initiative for the development of drugs. Topic 3 in the 8th call is directed at the discovery and development of new drugs against infections by Gram-negative bacilli.¹ The European Union, through the Seventh Framework Programme, has also channeled funding for clinical research into independent clinical trials involving off-label antimicrobial use, and not therefore of commercial interest. These projects are currently under development, as is MagicBullet (optimisation of treatment with off-patent antimicrobial agents of ventilator-associated pneumonia caused by *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and other multidrug-resistant gram-negative bacilli).² In Spain, the Instituto de Salud Carlos III has also prioritized funding for independent clinical trials, using a specific call and creating CAIBER (Consortium of Biomedical Research Support Network) in 2008, now transformed into a cooperative research network that supports and facilitates non-commercial clinical trials.³ Thanks to these initiatives and resources, it is now possible in our country to conduct a clinical trial like the recent one published by Dulhunty et al. Their results represent a paradigm shift, because they show that administration by continuous infusion beta-lactams is an improvement on the bolus infusion we have

used for decades, in terms of both pharmacokinetic and clinical results.⁴

Training is needed if this enormous volume of rapidly evolving information generated by antimicrobial research is to be applied successfully. Training becomes real when the doctor prescribes antibiotic treatment. This decision is the result of a chain of questions and answers, ranging from whether or not treatment is indicated, to the antibiotic of choice, the dose, route of administration and its expected duration. So, the physician must be well-trained in order to make appropriate decisions. The reality is that 50% of antimicrobial prescriptions are inappropriate,⁵ and this is because there is an imbalance between the high level of knowledge required to use antibiotics appropriately and the scant training that is offered to the practicing clinician in this area.

Data from the study by Navarro-San Francisco et al., and published in this issue, reinforce this statement. The specialist-in-training (MIR) often hesitates when taking key decisions during the prescription process. Thus, 50% of MIRs have doubts about not prescribing antimicrobial treatment for a patient with a non-serious condition and an uncertain diagnosis; 50% feel insecure about deciding on the end of treatment; and 30% hesitate when selecting the most appropriate antimicrobial.⁶

This training deficit is structural. Antimicrobials are prescribed by virtually all MIRs and specialists in the different clinical specialties, although antimicrobial treatment is not part of the specialist's training plan and is not a standard part of their continuing education. In our country, to this deficit, we must add the unaccountable absence of an infectious diseases specialty, which prevents possible specialists from being formally trained. In this regard, the impact of training sponsored by the pharmaceutical industry, and which is of obvious commercial interest, contributes to the overuse of antimicrobials.

Possible solutions to this training deficit are the following: (1) to create an infectious diseases specialty in our country,^{7,8} Antimicrobials require a specialist, in the same way as chemotherapy has hematologists and oncologists. The government of the country is being irresponsible by constantly putting off this decision, because the antimicrobial crisis requires urgent action; (2) to include antimicrobials in the training plans of MIRs in all clinical specialties; (3) to increase collaborative agreements between the pharmaceutical industry, institutions and scientific societies to perform

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high-quality continuing training, such as the Master of Infectious Diseases, at the University of Seville, sponsored by Merck Sharp and Dhome, with the professional support of the Andalusian Society of Infectious Diseases (SAEI)⁹; (4) to implement the Program for Optimizing Antimicrobials (PROA) guided by the SEIMC consensus document, in every hospital.¹⁰ In 2009, only a minority—40% of 78 hospitals surveyed—performed activities related to the program.¹¹ Institutional support for PROA at the highest level is essential to prioritize human resources. In Andalusia, PROA is included as a priority objective of the 2012 Contract Programme between the Andalusian Health Service and hospitals, although it requires defining and developing, and professional leadership is essential for this task¹²; and finally (5) to determine infectious diseases specialists who will direct the antimicrobial training of other specialists as a primary responsibility of their hospital activity. The SEIMC offers specific training programs to achieve just that.¹³

In conclusion, antimicrobial training in our country is in urgent need of improvement, although political decisions and professional leadership are required. Do we have them?

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