


# The imperative of teamwork in antimicrobial stewardship (AMS) interventions: insights from an ethnographic study with practitioners in Spain

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Teamwork—the activity of working together in a group towards a similar goal—is a defining feature of the practice of clinical medicine carried out in hospitals and other healthcare facilities. This Viewpoint suggests that teamwork is a defining feature of antimicrobial stewardship (AMS) programmes, and identifies six elements that characterise AMS team dynamics. These insights arise from an original ethnographic study of AMS carried out in Spain, where these programmes are known as *Programas para la Optimización de Antimicrobianos*. The study used qualitative research methods including ethnographic observations in public hospitals and scientific and educational fora, in-depth interviews and archival research. It calls for a reflection on the part of the global community of AMS practitioners on the role of team dynamics in building sustainable AMS interventions and the inclusion of teamwork skills in training curricula aimed at future practitioners.

## Insights from an ethnographic study of antimicrobial stewardship (AMS) in Spain

This Viewpoint article highlights key findings derived from a social science research study that investigated how antimicrobial stewardship interventions are imagined, designed and implemented in Spanish public hospitals by AMS practitioners. AMS interventions are gaining importance as a solution to the problem of AMR in clinical contexts.<sup>1,2</sup> Although qualitative studies focused on understanding prescriber behaviours are now well established,<sup>3–8</sup> this study contributes to the growing scholarship on the experiences of AMS practitioners themselves by emphasising the crucial role interpersonal relationships, ethics and work cultures play in team dynamics.<sup>9–11</sup> AMS interventions are known in Spain as *Programas para la Optimización de Antimicrobianos* or PROAs (Programmes for the Optimization of Antimicrobials).<sup>12</sup> The doctoral research informing this Viewpoint was based on data collected over 24 months (2021–2023) using a mix of qualitative research methods. These include hospital ethnography, in-depth interviews with professionals, archival research, and participant observation in scientific conferences, public events and educational fora. The ethnographic study aimed to describe the social life of hospital AMS teams, as well as to analyse AMS practitioners' experiences of their work.

Spain offers a crucial case to analyse the integration of AMS interventions into existing healthcare systems. Spain was among

the first countries to establish a national AMR plan in Europe and globally in 2014. Between 2014 and 2022, the Spanish Medicines Agency (*Agencia Española del Medicamento y Producto Sanitarios*, AEMPS) has published three versions of the National Plan.<sup>12,13</sup> In these, PROAs have always been considered the primary action to tackle the problem of AMR in the context of human health. Most recently, the AEMPS has engaged in the enrolment of a standardised quality-oriented AMS accreditation in public healthcare settings.<sup>14</sup> Spain is a high-income country, with a public national and universal healthcare system. Like many other neighbouring countries in Europe and the UK, Spain's healthcare has been affected by more than a decade of austerity measures and expenditure cuts with long-standing effects on staffing, resources and professionals' and patients' experiences of using healthcare.<sup>15–21</sup> Moreover, due to historical conditions, Spain's healthcare spending and planning is decentralised and devolved to the government of the 17 different regions (*Comunidades Autónomas*) that make up the country.<sup>22,23</sup> This translates on unequally distributed staffing, material resources, and information systems available to the population of these different regions. While AMR has substantially grown in political relevance in Spain, to date PROAs or the issue of AMR in general continue to have no stipulated national budget from the Ministry of Health. Altogether, this has resulted in action to implement AMS programmes that are more abundant and standardised in some regions than others.

## **‘All on the same page’: teamwork in PROA**

With PROAs gaining momentum and importance in Spanish healthcare, this study observed how AMS practitioners in large urban hospitals go about carrying out their daily work in clinical settings. One of the key findings of the ethnographic study is that teamwork plays crucial roles in AMS, as well as across clinical medicine.<sup>22,23</sup> As clinical microbiologist Marta (pseudonym) suggested in her interview: a ‘good PROA team’ is one ‘that is all on the same page (...); one that is committed to the same (aim); and whose members are synergic among them’. Teamwork could be defined as the activity of working together in a group with other people towards a similar goal. In this Viewpoint, the six main elements that characterise teamwork in AMS programmes identified in the study are described.

### **Professional recognition**

Teamwork requires an active recognition of individuals’ professional work and care for patients.<sup>23,24</sup> In their daily practice, AMS team members dedicate time to recognising the work of fellow colleagues who may be prescribers, allied healthcare professionals, nurses or others on the receiving end of the AMS intervention. Equally, AMS practitioners repeatedly recognise one’s team colleagues (who may be clinicians, clinical microbiologists, pharmacists, nurses and often different from one’s profession) in the way that they organise their work and communicate.

### **Maintaining work relationships**

AMS team members constantly navigate interpersonal work relationships with many different colleagues. Their interactions with other teams and individual team members are frequently mediated by work-related synergies, affinities, friendship and mentorship relations, but equally, also by hierarchies, social boundaries and power dynamics historically ingrained in the practice and teaching of clinical medicine and its diverse professional cultures.<sup>25,26</sup> For instance, sometimes the prescriber receiving the AMS recommendation or activity may have met the AMS clinician or pharmacist when they were trainees. Or perhaps they have shared night shifts at the emergency room or roles in committees for as long as they can remember. Or maybe they are complete strangers because they have just been hired. Hierarchies across medical specialties and between clinical medicine and other allied health professions (e.g. nursing, pharmacy, etc.), as well as wider socioeconomic factors (e.g. age, class, race/ethnicity and gender) all have a crucial impact on how AMS team members navigate interpersonal relationships with their colleagues, and can in turn be definitive of the effectiveness of AMS interventions.

### **Emotions and diplomatic work**

AMS team members encounter a myriad of emotions, experienced by their colleagues, by patients and carers, as well as themselves in their daily work, and in the context of power dynamics described above.<sup>23,27,28</sup> Antimicrobials are remarkably versatile medicines and, as such, are used in incredibly diverse contexts of medicine. The context in which an AMS practitioner suggests a change to daptomycin for a patient with endocarditis

is dramatically distinct from the context in which gentamicin is given in pre-op prophylaxis. These are also different from the context in which an AMS practitioner is arguing for a change from intravenous amoxicillin-clavulanic acid to an oral treatment in a post-surgical wound infection with good prognosis. Or where a group of clinicians are considering limiting treatment, including antimicrobials, for a patient entering palliative care. From concern, to urgency, uncertainty, relief, joy, anguish or grief, diplomatic work, empathy and skillful managing of emotions is crucial for PROA team members and their interlocutors when undertaking AMS work and negotiating antimicrobial recommendations for individual patients.

### **Apprenticeship and teamwork skills**

Clinical teamwork (in AMS or otherwise) is not a given, it is learnt and taught.<sup>24,29,30</sup> Knowledge on antimicrobial treatments, antimicrobial resistance mechanisms, infectious disease syndromes and pharmacodynamics is most certainly important to learn when becoming an AMS professional. However, the social, emotional and interpersonal skills (described in the previous three subsections) required for this kind of work are also taught to novice AMS practitioners by their peers and mentors in AMS teams. AMS apprenticeship includes learning to navigate social relationships, emotions, power dynamics and boundaries with colleagues in other teams, to listen empathetically to other professionals’ and their professional concerns, and to build convincing arguments.

### **Information infrastructures and communication**

Information systems make materially possible the daily work AMS teams do and how they can communicate and effectively deliver AMS interventions.<sup>31–35</sup> Hospital-wide information systems are used for the purposes of carrying out AMS activities by practitioners. Information systems allow for communication of key information between team members across pharmacy, microbiology and clinical services, as well as the delivery of recommendations for the intervention’s recipients via electronic clinical histories or microbiological diagnostic result software. However, the interoperability of information systems can also at times limit the work AMS practitioners can do, as they might not be programmed for these purposes, and require AMS teams to adapt to the digital ecosystems available to them in their workplaces. This is a particularly important issue PROA teams face in Spain; with 17 different health departments, the large and uncoupled ecosystem of information infrastructures available requires AMS teams to create adaptive communication strategies to the and material conditions of wider hospital information infrastructures.

### **Job security and sustaining AMS interventions**

Sustaining AMS interventions over time require the recognition of this medical work in the form of stable employment by health authorities and hospital or other facilities’ management boards. At present, how to integrate this work into existing public healthcare employment in Spain remains an open question. Some AMS interventions in Spanish hospitals remain a semi-voluntary activity for practitioners to carry out on top of their clinical care duties; others

rely on the work of (often junior) individual professionals on precarious modes of employment (e.g., early career short-term clinical-research contracts or part-time and temporary *ad hoc* contracts). Although certification schemes being rolled out in public healthcare systems including in the UK<sup>36</sup> and Spain are helping considerably to increase recognition of the relevance of this work and the problem of AMR in clinical settings, AMS interventions simply cannot be sustained if aspects of job security and sustainable work conditions are not taken seriously by health authorities. Whether integrating AMS tasks into healthcare professionals' work commitments and job descriptions, or creating AMS-specific job posts (or a combination of both) may be a solution going forward should be put out for debate sooner rather than later. Under current circumstances, understandably, issues of burnout<sup>37</sup> and detrimental group dynamics and individual experiences can arise within AMS teams, having an impact on the feasibility of efficient AMS interventions in the long term.

## A call to reflect on teamwork's role in AMS

Teamwork is an imperative for AMS practitioners working in clinical settings today. AMS interventions will continue to gain attention as a solution to the problems posed by resistant infections in healthcare settings across the globe. As they do, reflection on these six characteristics of AMS teamwork will become crucial to ensure that interventions being designed and implemented are feasible, sustainable and integrated into the social circumstances of given healthcare settings. The case of Spanish AMS practitioners demonstrates that teamwork skills should be included in curricula and training programmes aimed at future practitioners. Equally, serious consideration of the conditions (including both material and human resources) that make possible the work of AMS teams will be an imperative in future planning if we are to design and implement sustainable AMS interventions with effective results, lasting effects and satisfactory experiences for patients and practitioners alike.

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## Transparency declarations

None to declare.

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