

Development of an expert professional curriculum for antimicrobial pharmacists in the UK

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The role of antimicrobial pharmacists has changed considerably over the past 15 years. We describe here the development and ratification of a new expert professional curriculum to guide the training and development of antimicrobial specialist pharmacists. The curriculum has been developed by the UK Clinical Pharmacy Association Pharmacy Infection Network and endorsed by the Royal Pharmaceutical Society as a tool to support pharmacists in meeting the requirements for joining the Royal Pharmaceutical Society Faculty. This new resource has also been endorsed by PHE, the Scottish Antimicrobial Prescribing Group and the BSAC, and will support antimicrobial pharmacists in delivery of antimicrobial stewardship, which will in turn help the fight against antimicrobial resistance.

Keywords: antimicrobial stewardship, education, pharmacy

Introduction

The global threat of antimicrobial resistance (AMR) is widely recognized¹ and the case for action in the UK was set out in the Annual Report of the Chief Medical Officer 2011² and the UK Five Year Antimicrobial Resistance Strategy 2013 to 2018.³ The overarching goal of the Strategy is to slow the development and spread of AMR, and good antimicrobial stewardship has been firmly established as a national priority. A key element for effective local stewardship is a multiprofessional Antimicrobial Management Team with links to management, infection prevention and control, and patient safety teams.⁴ One of the seven key areas for action highlighted in the UK strategy plan was improving professional education and training to enable teams to optimize clinical practice.

The UK Department of Health has recently published competencies for antimicrobial prescribing,^{5,6} however, these are aimed at prescribers, and do not address training for the pharmacists who are integral to Antimicrobial Management Teams, and who are often delivering the bulk of antimicrobial stewardship training programmes.⁷⁻⁹

Why we needed an education framework for antimicrobial pharmacists

Antimicrobial pharmacy as a specialist area has developed since 2000 with increasing numbers of clinical pharmacists experienced in infectious diseases or microbiology taking up specialist posts during the past 10 years.⁹ Typical activities of these staff include providing clinical advice on the use of antimicrobials and patient management, writing antimicrobial guidelines and making

formulary decisions,⁹ both in hospital care and increasingly in primary care settings.¹⁰

Typically, antimicrobial pharmacists develop their generic clinical pharmacy skills through training rotations through medical and/or surgical specialties, and specialist training within an infectious diseases or microbiology multiprofessional team, although this is often on an *ad hoc* basis.

Until 2013–14, formal postgraduate study was available at Imperial College London as an MSc in Infection Management, while in Scotland a module on Healthcare Associated Infection and Antimicrobial Stewardship has been developed within the MSc Clinical Pharmacy at the University of Strathclyde, although this is aimed at pharmacists considering a career in antimicrobial pharmacy rather than those already in post. Perhaps due to this paucity of formal training, and the lack of a defined career progression in this relatively new specialty, one-third of pharmacists in specialist posts in England felt their training was insufficient to carry out their role effectively.¹¹

How we developed the expert professional curriculum

In June 2013 the Royal Pharmaceutical Society (RPS) developed and launched a new Faculty to support and recognize the continuing professional development of pharmacists. Assessment of competency to join the Faculty involves developing a portfolio of evidence across five core professional curricula (collaborative working relationships; leadership; management; education, training and development; and research and evaluation) and an expert curriculum relevant to the individual's area of specialist practice,

which provides an overview of the knowledge, skills, experiences and behaviours required to practise at advanced level. We describe the development of an expert infection and antimicrobial stewardship curriculum for specialist pharmacists working at all

levels from 2 years post-registration to nationally/internationally recognized expert.

In July 2013, the authors were nominated by the UK Clinical Pharmacy Association Pharmacy Infection Network (UKCPA-PIN)

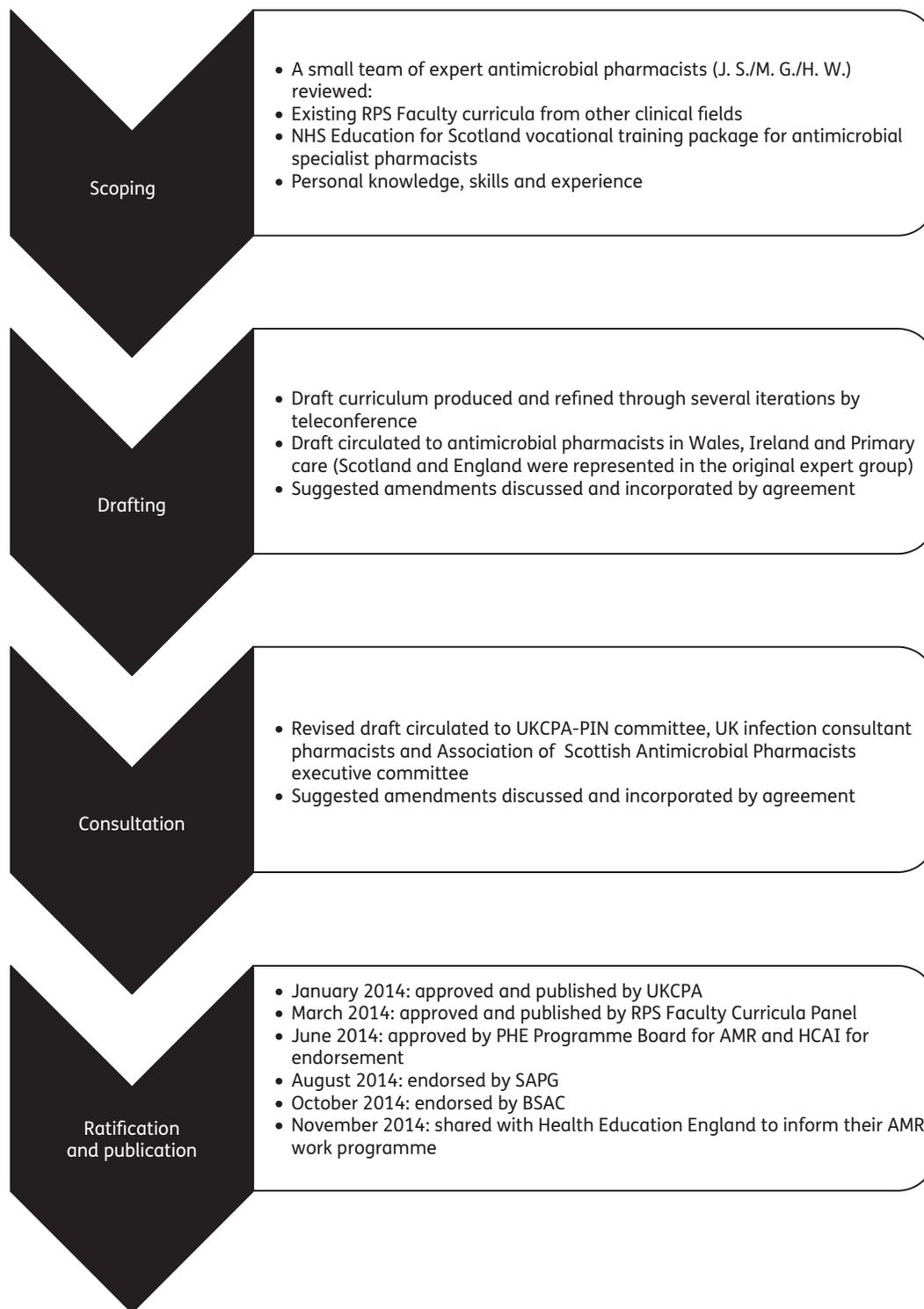


Figure 1. Development process for the RPS Faculty/UKCPA-PIN curriculum for infection and antimicrobial stewardship.

to lead on the development of the curriculum, and the process used to compile and peer-review the document is shown in Figure 1.

The resulting curriculum covers five areas:

- (1) Infection and antimicrobial stewardship in context: awareness and interpretation of local and national antimicrobial usage and resistance data, national and international policy pertaining to antimicrobial stewardship and global issues in AMR.
- (2) Clinical microbiology: theory, laboratory tests and their interpretation, clinical principles of infection and principles of AMR.
- (3) Antimicrobials: therapeutic drug monitoring, pharmacology, pharmacokinetics and pharmacodynamics, and antimicrobial use in special populations.
- (4) Management of clinical syndromes: organized by bodily system.
- (5) Principles of an antimicrobial stewardship plan: role of the stewardship team and key components of hospital and primary care stewardship programmes.

Within each area there are three levels of competency that cover professional practice from being new to the specialty (Advanced stage I), through gaining experience of complex issues (Advanced stage II) to working at national level (Mastery). Examples of the

knowledge and behaviours expected at different levels are given in Figure 2.

Ratification and communication

The curriculum was initially ratified by the RPS and UKCPA and disseminated via both organizations' websites, which are accessible to members. The curriculum has also now been endorsed by PHE, the BSAC and the Scottish Antimicrobial Prescribing Group (SAPG) and has been shared with Health Education England to inform their action plan to support delivery of the UK AMR strategy. The curriculum has also been aligned with specialist training in Scotland, which was developed in parallel and is available via NHS Education for Scotland.¹²

We believe that we have produced an expert curriculum to guide the development of pharmacy antimicrobial specialists, formalize training routes and provide a clear pathway for career progression. We suggest that it is incorporated into the training plans for specialist antimicrobial pharmacists to support career/educational development and encourage colleagues to utilize their learning to support RPS Faculty membership. Further work is planned to extend the scope of the curriculum to foundation and mastery stages to encompass the entire RPS professional

KNOWLEDGE AND BEHAVIOURS	STAGE OF PRACTICE
Setting the scene: infection and antimicrobial stewardship in context	
Burden of infectious disease/infection	
Prevalence of infectious diseases/infection within your own healthcare setting including key healthcare-acquired infection (HCAI) rates and targets.	ASI
Local prevalence of infectious diseases/infection within region including key HCAI rates.	ASII
National burden of infectious diseases/infection including the national trends of HCAI.	M
Antimicrobial prescribing	
Importance of local monitoring of antimicrobial prescribing.	ASI
Local initiatives to monitor antimicrobial prescribing.	ASI
Relationship of local initiatives to the national antimicrobial agenda.	ASII
Antimicrobial resistance	
Local antimicrobial resistance patterns and their importance.	ASI
Antimicrobial resistance trends at regional level.	ASII
National antimicrobial resistance data.	M
Antimicrobial stewardship	
Definition of antimicrobial stewardship (AS).	-
Contribution of prudent antimicrobial use to reduction of AMR.	-
Principles of good antimicrobial prescribing and the roles of prescribers, pharmacists and nursing staff in ensuring good practice.	-
Role of AS as an integral part of multi-professional interventions to prevent Healthcare Associated Infection (HAI).	ASI
Role of government agencies in developing antimicrobial strategy and policy.	ASI
National policy documents pertaining to AS and HAI.	ASI
Regional and national structures and relevant policy documents for HAI and AS.	ASI
European and global stewardship initiatives.	ASII
Antimicrobial pipeline	
New antimicrobials that have been recently introduced to your organization.	ASI
New antimicrobials recently introduced into the UK market and where they may fit in your healthcare setting.	ASII
Horizon scanning for new antimicrobials in the drug pipeline.	M

Figure 2. Examples of competencies within the expert curriculum. ASI, Advanced stage I; ASII, Advanced stage II; M, Mastery.

development stages, and this can then be used to inform undergraduate and pre-registration curriculum.

We plan to evaluate the uptake and impact of the curriculum through feedback from members of the UKCPA-PIN. A copy of the curriculum is available on request.

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Transparency declarations

J. S. is a member of the SAPG Project Board. M. G. is a member of BSAC Council. H. W.: none to declare.

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