Public Health England

ARHAI

Department of Health
Expert Advisory Committee on **A**ntimicrobial **R**esistance and **H**ealthcare **A**ssociated **I**nfection

Antimicrobial prescribing and stewardship competencies

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Antimicrobial prescribing and stewardship (APS) competencies

Developed by ARHAI[1] and PHE through an independent multi-professional development group.

The goal of the APS competencies

The goal is to improve the quality of antimicrobial treatment and stewardship and so reduce the risks of inadequate, inappropriate and ill-effects of treatment. This will improve the safety and quality of patient care, and make a significant contribution to the reduction in the emergence and spread of antimicrobial resistance. Antimicrobial stewardship is an important element of the UK five-year antimicrobial resistance strategy (1) and the Chief Medical Officer's annual report (2).

Introduction

Antimicrobial resistance is a global public health issue driven by the overuse of antimicrobials and inappropriate prescribing. The increase in resistance is making antimicrobial agents less effective and contributing to infections that are hard to treat. The number of infections due to multi-drug resistant organisms is growing, however, the number of new antibiotics in the pieline is extremely limited.

Antimicrobial stewardship initiatives aim to improve the prescribing of all agents, whether they target bacterial, viral, fungal, mycobacterial or protozal infections.

Antibiotic resistance is of particular threat to children, older people and those with weakened immune systems. Effective antibiotics have revolutionised many treatments, such as those for cancer, allowing more aggressive therapy to be used and consequently leading to higher survival rates. Nevertheless, an increase in infections that are more difficult to treat with antibiotics affects everyone, not just vulnerable groups. Bacterial resistance potentially complicates the management of every infection, no matter how mild they may be at the time of first presentation.

Educating the public and clinicians in the prudent use of antimicrobials as part of an antimicrobial stewardship programme is of paramount importance to preserve these crucial treatments and to help control resistance. Improving surveillance, and infection prevention and control are other key strategies (3,4). Ridge et al (2011) (5) defined

[1] Department of Health Expert Committee on Antimicrobial Resistance and Health Care Associated Infections

antimicrobial stewardship as embodying “an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness”.

According to Doron and Davidson (2011) (6) three major goals for antimicrobial stewardship are to:

- optimise therapy for individual patients
- prevent overuse, misuse and abuse
- minimise development of resistance at patient and community levels

An antimicrobial stewardship programme is a key component in the reduction of healthcare associated infections (HCAI) and contributes to slowing the development of antimicrobial resistance. A **Start Smart – then Focus** (7) approach is recommended for all antibiotic prescriptions in secondary care and the **TARGET toolkit** (8) is recommended for primary care.

Background

Antimicrobial stewardship competencies were designed to complement the National Institute for Health and Care Excellence (NICE) National Prescribing Centre’s (NPC) generic competency framework for all prescribers[2](9).

Competencies are described as a “combination of knowledge, skills, motives and personal traits”, development of which should help individuals to continually improve their performance and to work more effectively (10). The NPC competency framework provides an outline framework of “generic prescribing competencies that, if acquired and maintained, can help prescribers to continually develop their prescribing practice”. It is intended for any independent prescriber, doctor, dentist or non-medical. The vision is to provide a “starting point for discussion of competencies required by an individual, or groups of, prescribers at all levels of practice, from new (or training) prescribers, through to those practicing at a specialist level.” There is also an emphasis on multi-disciplinary expertise.

These five competencies complement the NPC document and each has an overarching statement that describes the activity or outcome that prescribers should be able to demonstrate.

[2] It is intended to “complement and be consistent with the requirements of the General Medical Council and the proposed Prescribing Skills Assessment, and also to support doctors as they develop their own prescribing practice from student/new prescriber through to experienced and specialist prescriber”. (B1, B2)

How can the APS competencies be used?

As for the NPC competencies, the APS competencies can be used by any independent prescriber to help develop their prescribing practice at any point in their professional development in relation to prescribing antimicrobials.

To understand your level of competence it is necessary to undertake an honest assessment of your current level of knowledge and skills and your ability to apply them in practice. You can seek the help of others (for example, your colleagues, peers and/or your manager) in this assessment.

Once you have a realistic assessment of your own level of knowledge, skills and competence, you will be able to identify your learning needs and how these can be met. As your learning and development progresses, you will need to revisit the competences and continue to assess yourself to identify your progress in achieving all of the competences.

These competences can also be used by regulators (11), education providers and professional bodies to inform standards, guidance and the development of training. The NPC document describes the many ways in which these might be achieved including; development of curricula; the design, delivery and validation of training courses and materials for continuing professional development and self-assessment; as a point of reference for portfolio writing and agreeing goals for personal development plans and individual appraisals; informing multi-disciplinary discussions on relevant competencies and possible organisational changes; and a useful resource to help design recruitment procedures, for example, the initial testing, questioning and benchmarking of candidates.

Code of Practice for the prevention and control of infections

The competence framework can be used to demonstrate compliance with the Code of Practice (11)

COMPETENCY 1: Infection Prevention and Control *All independent prescribers must understand the principles and demonstrate competence in preventing and controlling infections, including those that are associated with healthcare and apply this knowledge as a routine part of their prescribing practice as follows:*
1. The nature and classification of pathogenic micro-organisms.
2. How micro-organisms cause infections in humans: the importance of understanding the differences between colonisation (for example, of venous leg ulceration) and infection.
3. How micro-organisms are transmitted in both community and hospital settings.
4. The principles and practice of the prevention and control of infection, and the need to have this reflected in individual job descriptions.
5. How current vaccines can benefit prescribing practices, including reducing the need for prescribing antimicrobials and decreasing resistant antimicrobial resistant strains e.g. of S. pneumoniae.

COMPETENCY 2: Antimicrobial resistance and antimicrobials *All independent prescribers should be knowledgeable in:*
6. The modes of action of antibiotics and other antimicrobials.
7. Knowledge of the spectrum of activity for commonly prescribed antimicrobials.
8. The appropriate use of antimicrobial agents for: • prophylaxis to minimise the risk of infection • treatment of infections
9. The use of microbiological and other investigations to diagnose and monitor the response to treatment of infections and their complications, such as severe sepsis, for individual patient care and for public health purposes.
10. The mechanisms of antimicrobial resistance, including: • intrinsic or acquired resistance • the importance of selection advantages, eg the greater ability for some to colonise, to alter virulence, and how this can be an amplification process for antimicrobial resistance
11. The appropriate use of antimicrobials to prevent the emergence of

resistance and avoidance of adverse effects e.g. their disruptive effects on host normal flora, which may lead to, for example, *C. difficile* infection (12), *Candida* spp infection

COMPETENCY 3: Prescribing antimicrobials *All independent prescribers must be competent in antimicrobial prescribing by demonstrating:*
12. Not initiating antibiotic treatment in the absence of bacterial infection.
13. An understanding of the key elements of prescribing an antimicrobial, including: • obtaining microbiological cultures or other relevant tests before commencing treatment as necessary • the choice of agent • the route of administration • its pharmacokinetics and how this affects the choice of dosage regimen • how to monitor levels and adjust doses, eg in the elderly or renal impairment, or where to seek specialist advice • decisions to switch agent, eg from intravenous to oral, narrower to broader spectrum (or vice versa) based on microbiological results • the duration of treatment and when to consider review/stop dates
14. Knowledge of how to select the appropriate antimicrobial, paying due consideration to local guidance, how, and where, to access this.
15. An understanding of local microbial/antimicrobial susceptibility patterns when considering empiric treatments.
16. An understanding of common side-effects, including allergy, drug/food interactions, contraindications of the main classes of antimicrobials, and the importance of monitoring for these, and what to do when these are suspected, eg documenting allergic reactions in patient records.
17. An awareness of trade and generic names, and the class, of a prescribed antimicrobial to avoid possible harm to patients in whom that antimicrobial is contra-indicated, eg due to hypersensitivity, coagulopathy or organ impairment.
18. Knowledge of when not to prescribe antimicrobials, and use of alternatives,

such as the removal of invasive devices, eg intravenous or urinary catheters and incision and drainage of abscesses.
19. Knowledge of when to use a delayed antimicrobial prescription and how to negotiate this with the patient. (8)

COMPETENCY 4: Antimicrobial Stewardship (12-15) *All independent prescribers must demonstrate clinical competence in antimicrobial stewardship by understanding the importance of:*
20. Using local guidelines to initiate prompt effective antimicrobial treatment within one hour of presentation, or as soon as possible, in patients with life-threatening infections.
21. Avoiding the unnecessary use of broad-spectrum antimicrobials.
22. Documentation in the prescription chart and/or in patients' clinical records, the clinical indication, route, dose, duration and review date of antimicrobials.
23. Using only single doses of antimicrobials for surgical and other procedures for which prophylaxis has been shown to be effective, unless the duration of the operation/procedure is prolonged, there has been excessive blood loss or published national recommendations suggest otherwise. (16,17)
24. Switching to the correct antimicrobial when susceptibility testing indicates resistance, or to a cheaper or more cost effective antimicrobial that is also compatible with the clinical presentation.
25. In primary care, awareness of HPA national guidance (18)[3] and use of the TARGET antibiotics toolkit. (8)
26. In secondary care (13), reviewing antimicrobial prescriptions for hospital inpatients on all ward rounds (see 13). Appropriately choosing one of the five antimicrobial prescribing decisions 48 hours after initiating antimicrobial treatment (ARHAI Guidance – Start Smart – then Focus).[5] a. Stop antibiotics if there is no evidence of infection. b. Switch antibiotics from intravenous to oral administration. c. Change antibiotics – ideally to a narrower spectrum – or broader if

[3] Management of infection guidance for primary care for consultation & local adaptation http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1279888711402 (Accessed 20th March 2013)

required. d. Continue and review again at 72 hours. e. Outpatient Parenteral Antibiotic Therapy (OPAT).
27. Educating patients and their carers, nurses and other supporting clinical staff as to when antibiotics are not required and complying with the duration and frequency of administration of their prescribed antimicrobial.

COMPETENCY 5: Monitoring and learning *All independent prescribers must demonstrate continuing professional development in antimicrobial prescribing and stewardship by:*
28. Engaging the views of others involved in antimicrobial treatment policy decisions, including championing best practice, and that it is a duty of care to co-operate with others more expert than oneself when such expertise is required.
29. Regular engagement in team-based measurement of the quality and quantity of antimicrobial use and understanding that this should be shared with prescribers, as well as informing antimicrobial surveillance/infection prevention and control measures.
30. Using locally agreed process measures of quality (eg compliance with guidance), outcome and balancing measures, such as unintended adverse events or complications.
31. Using the results of adverse event monitoring, laboratory susceptibility reports, antimicrobial prescribing audits and antimicrobial usage data to inform, in a timely manner, best antimicrobial prescribing practices, and so produce sustained improvements in the quality of patient care.

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APPENDIX 1: Contributors to the multi-professional development group

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*On 1 April 2013 Health Protection Agency's (HPA) functions transferred to Public Health England (PHE).