The expanding role of the antibiotic pharmacist

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Widespread inappropriate prescribing of antibiotics in UK hospitals has led to the introduction of specialist antibiotic pharmacists. Their role is to monitor antibiotic use, advise clinicians, educate all grades of healthcare workers and help to develop policy. Antibiotic pharmacists have been shown to be effective in many situations. As these practitioners become more accomplished it will be possible to expand their role to include direct intervention in patient treatment. Simple measures, such as modification of intravenous treatment to oral and automatic stop orders, could greatly enhance patient care.

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Introduction

It is recognized that a substantial proportion of antibiotic prescribing is sub-optimal. Common errors include: use of an agent with an inappropriate spectrum, administration of an antibiotic when there is little evidence of bacterial infection, unnecessarily prolonged courses and overuse of intravenous agents. The result is an increase in avoidable side effects for the patient, expense for the funding body and resistance to antibiotics for the community as a whole.

General practitioners in the UK, and their patients, are constantly reminded that antibiotics are not effective against coughs, colds and flu, and this public health message appears to be reducing prescribing levels in recent years. Since 1996 the level and cost of prescribing of antibacterial drugs in primary care in England and Wales has been falling.

Although the overall volume of antibiotics administered in secondary care is much less than that in the community, the impact of their use is just as great. It would, therefore, be desirable for this downward trend to be repeated in hospitals where an estimated 40–50% of antibiotic prescriptions are inappropriate. However, implementing an intervention to reduce antibiotic use is not straightforward. Despite the initial success of education campaigns, progress is generally short-lived, possibly due to the high turnover of medical staff. Almost all strategies successful in the long term involve an element of restriction and compulsion supported by enough education to make them palatable to the independent practitioner. Interventions of this type are time consuming and need the full-time services of a dedicated individual. This task is well suited to a pharmacist with the tools of the pharmacy department at their disposal.

Following the House of Lords Science and Technology Select Committee Report ‘Resistance to Antibiotics and other Antimicrobial Agents’ in 1998, the Department of Health issued an action plan for the NHS, aimed at reducing the emergence and spread of antimicrobial resistance and its impact on the treatment of infection. Included in the action plan were strategies to monitor and optimize antimicrobial prescribing by implementing antibiotic guidelines, supporting professional development on appropriate prescribing, reducing inappropriate prescribing and using clinical governance arrangements to support improved prescribing. This follows the World Health Organization report on overcoming antimicrobial resistance and the European Union ‘Copenhagen Recommendation’ that antimicrobial teams, including specialist pharmacists, microbiologists and infectious disease physicians, should be established in all hospitals. The Infectious Diseases Society of America guidelines on improving the use of antimicrobial agents in hospitals similarly encourage the introduction of such teams.

Enthusiasm for hospital pharmacists to take the lead in the promotion of prudent antimicrobial prescribing is reflected in the recent announcement by the United Kingdom Department of Health to provide £12 million for this purpose. The Medicines Management Framework is a scheme outlined in the report ‘A Vision for Pharmacy in the new NHS’, which focuses on the clinical and cost-effective use of drugs in secondary care. Standard 16 of the Medicines Management Framework recommends that NHS trusts should nominate a lead pharmacist for antimicrobial prescribing and resistance, who should be responsible for ensuring that appropriate antimicrobial policies are in place. The recent Winning Ways report includes a recommendation that support for prudent antibiotic prescribing is provided by clinical pharmacists, medical microbiologists and infectious diseases physicians.

Development of the antibiotic pharmacist

In the UK, the clinical pharmacy service includes prescription monitoring, taking accurate medication histories, provision of medicines information, patient counselling, regular liaison with
the medical or surgical team and daily contact with the patient. This has been shown to improve patient care and provide better, more cost-effective, use of medicines. In 2001, the Audit Commission reported that the pharmacy service was ‘absolutely vital’ to the quality of patient care, and that inclusion of pharmacists into multi-disciplinary teams would reduce the workload of doctors in training, improve prescribing and save money. As with medicine, pharmacy in the UK is becoming increasingly specialized, with lead pharmacists playing key roles in clinical areas such as critical care, haematology, oncology and neonatology. The development of the antibiotic pharmacist role over the past decade in the UK is a reflection of this, coupled with the recognized need for prudent antimicrobial prescribing.

The UK pharmacy undergraduate training consists of a 4 year master’s degree with a strong clinical emphasis. The course includes a basic grounding in microbiology, common infectious diseases, mode of action and spectrum of antimicrobial agents. Specialized options and research projects allow an interest in microbiology to be pursued. Antibiotic pharmacists appointed in the UK also usually have considerable post-registration clinical experience and, often, formal postgraduate qualifications ranging from clinical pharmacy to doctorates in microbiology.

### The role of the antibiotic pharmacist

Some UK hospitals have appointed microbiologists or infectious diseases physicians with antibiotic management as a specific role. However, experience has shown that this is a full-time task and these medical professionals have many other functions to fulfill. A dedicated antibiotic pharmacist has the time and skills to monitor antibiotic prescribing and manage it appropriately, lessening the demand on hard-pressed microbiologists and infectious diseases physicians. Utilizing a network of pharmacists and accessing IT, microbiology and pharmacy computer systems allows the antibiotic pharmacist to identify problem areas and devote resources to tackling them.

Key roles for antibiotic pharmacists include education of medical, pharmaceutical and nursing staff, audit of local practices, monitoring of antibiotic consumption, participation in infection control, formulary development and appraisal of new antimicrobials. The addition of a dedicated antibiotic pharmacist to an active team has been shown to benefit patients by reducing medication errors and length of hospital stay, encouraging oral medication and ensuring appropriate drug choice. It is difficult to quantify exactly how great the clinical and financial benefits are as the studies in this field are generally of poor quality. However, all but one reported savings on antibiotic costs, for the pharmacist-led programme, well above the salary of the individual employed.

These benefits are achieved in a variety of ways but central to the role of the antibiotic pharmacist is the monitoring and enforcement of hospital antibiotic policy. Awareness of local guidelines by junior doctors is often low, and they are seldom consulted in daily practice. An antibiotic pharmacist has the skills and time to monitor day-to-day use of antimicrobials, and any areas of gross deviation from a hospital antibiotic policy. There have been a number of studies showing that a pharmacist dedicated to the monitoring of antibiotics can develop and apply guidelines. Inappropriate prescribing of specific agents or of antibiotics in general has been reduced. The majority

### Potential shortcomings

The ability of an antibiotic pharmacist to be effective could be reduced by lack of specialist knowledge or by lack of support from clinical colleagues. While the pharmacy degree provides basic training in microbiology, it is likely that further specialist tuition will be necessary. In the United States, numerous full-time residency programmes in infectious diseases pharmacy practice followed by fellowships in practice or research are available. Specific postgraduate courses in the UK include MScs in infection control, and a recently launched MSc in infection management for pharmacists. In addition, the local microbiologist or infectious diseases physician can supply tuition during supervision and formal training, perhaps in conjunction with the local microbiology Specialist Registrar programme. Continuing training whilst in post and close liaison with an infection specialist, to whom complicated cases can be referred, also helps to develop the diagnostic and evaluation skills that only come with experience.

While many clinicians recognize the need to improve antimicrobial prescribing, not all will accept that their own practice may be in need of improvement. The antibiotic pharmacist will, therefore, have to work hard to gain the respect of medical
Expanding the role of the antibiotic pharmacist

At present antibiotic pharmacists generally offer a service based on advice and feedback of collected data. The logical progression is to move to one where they perform a more active role.

The ‘Review of Prescribing, Supply and Administration of Medicines’ report for the UK Department of Health (1999)29 recommended a new form of supplementary prescribing. This is ‘to be undertaken by non-medical health professionals after a diagnosis has been made and a clinical management plan has been drawn up for the patient by the doctor’. Supplementary prescribing has been defined as a voluntary prescribing partnership between an independent prescriber and a supplementary prescriber, to implement an agreed patient-specific clinical management plan with the patient’s agreement. Both pharmacists and nurses can become supplementary prescribers, and both professions now have members qualified as supplementary prescribers.

Application of the supplementary prescriber function to the role of the antibiotic pharmacist provides several opportunities. Although it would not be appropriate for them to initiate treatment, there is no reason why the properly trained antibiotic pharmacist cannot modify therapy. They would thus be able to apply automatic stop orders or oral switch without direct reference to the clinical team on every occasion. Provided that robust guidelines are in place to prevent inappropriate action causing harm to the patient it is realistic to believe that an antibiotic pharmacist will be as accomplished as the junior doctors. Moreover, given the rapid turnaround of junior doctors the antibiotic pharmacist is likely to be more conversant and compliant with local protocols. The time saved by not having to make phone calls will benefit both the pharmacist and the medical team. In the simplest form, the antibiotic pharmacist could amend the antibiotic treatment in light of the clinical status of the patient, new culture or susceptibility results, side effects or superinfection with a non-susceptible organism. In a similar fashion, the antibiotic pharmacist could change antibiotic treatment in light of the clinical status of the patient, new culture or susceptibility results, side effects or superinfection with a non-susceptible organism. In a similar fashion, the antibiotic pharmacist could amend the antibiotic treatment in light of the clinical status of the patient, new culture or susceptibility results, side effects or superinfection with a non-susceptible organism.

The Department of Health ‘Vision of Pharmacy’ report16 proposes future senior roles of independent prescriber or consultant pharmacist. This could conceivably lead to an independent antibiotic pharmacist with involvement in all aspects of infection, from diagnosis, prescribing, monitoring to cessation of therapy when appropriate.

In 1994, a working party report of the British Society for Antimicrobial Chemotherapy recommended that certain antibiotics should be made available for over-the-counter sale through community pharmacies, for certain self-limiting infections.30 The report generated intense debate, and critics cited inadequate training of pharmacists to recognize infection, the lack of access to medical records and diagnostic testing facilities and inadequate facilities to maintain patient confidentiality as reasons why community pharmacists should not be able to supply antibiotics over the counter. In a secondary care setting, these criticisms could be addressed. Does this mean that antibiotic pharmacists should be able to supply antibiotics, not over the counter, but on the drug chart by prescribing them?

Many physicians, medical microbiologists and infectious diseases physicians might feel threatened by such proposals, with antibiotic pharmacists blurring the traditional boundaries between pharmacy and medicine. The antibiotic pharmacist could never match the extensive training, expertise and knowledge base of these professions. Serious, complicated or exotic infections would remain the remit of those best qualified to deal with them. But perhaps antibiotic pharmacists could help to effectively manage the simpler, more common infections, within the context of stringent guidelines, with the recognized outcomes of improved patient care and cost-effective use of medicines. Clearly such a radical departure from tradition would have to be thoroughly planned and piloted with the risks and benefits carefully weighed before implementation. However, it is possible that, just as nurses have taken on the administration of intravenous medication in recent years, prescription of some antibiotics will be available to non-medical personnel. It may be better to have this in the hands of well-trained, highly specialized antibiotic pharmacists than a wider range of less qualified individuals. Furthermore, having a group of professionals with direct responsibility for prudent antimicrobial prescribing is likely to improve overall patient care.

References

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