Outpatient parenteral antimicrobial therapy: updated recommendations from the UK

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Outpatient parenteral antimicrobial therapy (OPAT) offers safe, effective and patient-centred care for adults and children. The OPAT UK good practice recommendations for adults and children have recently been updated through a process of literature review, expert consensus and extensive stakeholder consultation. Here we discuss the key changes in the updated recommendations in the context of recent developments, including novel antimicrobial agents and delivery devices, the place of oral antimicrobials as an alternative to intravenous therapy, new OPAT service models and the broader antimicrobial stewardship agenda.

OPAT is now accepted as the standard of care for many infections across the developed world.1-3 Since its inception in the UK in the 1990s, experience of OPAT has grown substantially,4 with increasing confidence in treating a wide range of infections in various settings ranging from specialist tertiary care units to emergency department ambulatory services and to OPAT services based wholly in the community. The profile of OPAT is such that it is now designated as one of the five options for antimicrobial rationalization in UK Department of Health’s guidance on antimicrobial stewardship, ‘Start Smart—then Focus’.5

OPAT has been shown to be safe, clinically effective and cost effective when delivered through a formal service with appropriate specialist input and clinical governance. Evidence-based good practice recommendations (GPRs) for adults and children were published in the UK in 2012 and 2015, respectively, with the aim of providing practical resources to support development of new services and to OPAT services based wholly in the community. The updated GPRs are based around five key areas, as were the first recommendations (Table 1).

One important change in the healthcare landscape since the original GPRs were published is the recognition of antimicrobial resistance as a national and global health emergency and of antimicrobial stewardship as an essential component of the response to this emergency.5,10 This theme was evident throughout the literature reviewed for the OPAT GPRs update and emerges in all of the five sections of the recommendations.11 More than any other issue, the need for effective antimicrobial stewardship in OPAT reinforces the importance of OPAT being delivered in a systematic way with involvement of an infection specialist, antimicrobial pharmacist and OPAT specialist nurse. Key aspects of antimicrobial stewardship in OPAT include a focus on using oral as an alternative to intravenous therapy where possible, selection of agents with as narrow a spectrum of activity as possible while also facilitating OPAT, and clear treatment plans including prompt intravenous-to-oral switching.

The updated OPAT GPRs include some new themes and recommendations. The evolving literature on community-based OPAT services has been recognized12 and the updated GPRs are applicable to these settings as well as the more traditional UK model of OPAT delivered from specialist services based in secondary care, such as infectious diseases or cystic fibrosis units. However, the recent literature clearly reinforces the importance of having a formal OPAT structure in place, and this has been reiterated in the recommendations.

Table 1. Domains of the updated GPRs.

| 1. OPAT team and service structure |
| 2. Patient selection |
| 3. Antimicrobial management and drug delivery |
| 4. Monitoring of the patient during OPAT |
| 5. Outcome monitoring and clinical governance |

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In terms of patient selection, the previous GPRs recommended development of infection-specific and patient-specific inclusion and exclusion criteria: infection-specific criteria include site and severity of infection, complications and initial response to therapy, while patient-specific criteria include home circumstances, support from family members and transport. While these are still important, the new GPRs also suggest that other factors that may predict likely OPAT success or failure are also considered, for example comorbidity. However, it is clear that we still do not have a detailed understanding of how to predict which patients are more or less likely to have a successful OPAT outcome and this is highlighted as an area for further research.

Perhaps some of the greatest changes in OPAT since the last GPRs were published relate to antimicrobial agents and delivery devices. New longer-acting parenteral antimicrobials such as dalbavancin and oritavancin are being used for selected patients and it is not yet clear how these should optimally be used in the context of OPAT; the GPRs stress the importance of using them within the bounds of effective antimicrobial stewardship. There is increasing use of continuous infusions, although development in this treatment modality has been limited by lack of robust data on stability of antimicrobials at the temperature ranges experienced in OPAT. The development of elastomeric devices has made it easier for patients or family members to administer therapy in the home setting. However, their use can be associated with adverse events such as leakage and device failure and the GPRs highlight the importance of a robust service structure with protocols for escalation.

In the UK many OPAT services contribute to a national outcomes registry, which uses standardized outcome measures (http://opatregistry.com). However, with OPAT now being expanded to cover novel indications such as palliative care, or long-term suppression for patients with infections of prosthetic orthopaedic or vascular grafts where cure is unlikely, a broader set of standardized outcome measures is required to capture these new uses of OPAT. The updated GPRs propose a new set of outcome measures based on the treatment aim for an individual patient (e.g. cure, improvement/suppression or palliation) and on whether this is fully, partially or not achieved. Feedback from the consultation process suggests that these new outcome measures will be well received, but it remains to be seen whether they are implemented in practice.

Finally, the concept of complex outpatient antimicrobial therapy (COpAT) has been developed: this refers to both outpatient intravenous therapy and also the use of oral regimens facilitating early intravenous-to-oral switch or as an alternative to intravenous antimicrobial therapy. OPAT teams with the necessary expertise in antimicrobial therapy and infection are well placed to supervise patients who are receiving COpAT and to monitor them for adverse reactions.

In conclusion, OPAT is going from strength to strength in the UK, supported by the BSAC OPAT initiative (http://www.e-opat.com). Lessons learnt from the UK experience of developing and expanding OPAT nationally could potentially be applied to other regions with broadly similar healthcare systems. The updated GPRs provide a comprehensive update of the adult and paediatric literature, with antimicrobial stewardship being a central component. They provide a set of quality standards for OPAT services, irrespective of the service setting, which, if implemented, should support delivery of safe, effective and patient-centred clinical care.

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