Healthcare Improvement Scotland | SHTG Advice on health technologies

Plain Language Summary 01-21

Outpatient parenteral antimicrobial therapy (OPAT)

What is a microbial infection?

Microbial infections occur when microbes, such as bacteria, viruses, parasites or fungi, invade the human body and multiply. This causes an immune response aimed at destroying the invading microbes. When the body's immune system is not able to eradicate the infection, treatment with an antimicrobial (sometimes referred to as an antibiotic) may be required.

What are outpatient parenteral antimicrobial therapy (OPAT) services?

Patients who have a serious or complex infection are usually treated in hospital with intravenous (IV) antimicrobial medications. If they do not need to stay in hospital for any other reason, their infection can be treated through an OPAT service. This allows patients to be treated in an outpatient clinic or in their own home. A nurse administers the antimicrobial medication or the patient can administer the medication themselves.

Patients with bacterial skin infections, bone or joint infections, respiratory infections, or diabetic foot infections, can all be considered for treatment through an OPAT service.

Why is this topic important?

An estimated one in three hospital patients in the UK will be given an antimicrobial medication. In 2018, antimicrobials administered by IV accounted for 30% of all antimicrobial medications prescribed in hospitals. Treating these patients through OPAT services instead of in hospital has many potential benefits including reduced risk of hospital-acquired infections, cost savings through reduced bed use, increased patient satisfaction, and increased care in the community (a Scottish government objective).

What we did

We looked at the published evidence on whether OPAT services were safe and effective compared with hospital care. We also compared different ways of delivering OPAT services. And we assessed whether OPAT services could save NHSScotland money compared with treatment in hospital.

What we found

We found many studies on OPAT but most of them did not compare OPAT with hospital care or alternative ways of delivering OPAT.

Patients treated in OPAT services had different medical characteristics compared with patients treated for infections in hospital. For example, hospital patients tend to have more severe infections and to be sicker than patients treated in OPAT. These patient differences make it harder to directly compare OPAT with hospital care. This should be kept in mind when interpreting the results presented below.

OPAT versus hospital care

A review comparing adult OPAT with hospital care found no difference in duration of treatment in eight out of nine studies. The results were inconclusive for infection cure rates. A second review compared OPAT at home with hospital care for children with an infection. There were no differences in treatment failure rate between OPAT at home and hospital care. Seven out of 15 studies reported longer duration of treatment for children having OPAT at home. This may be due to less frequent check-ups for children treated at home.

A third review reported hospital readmission rates for patients of different ages treated in OPAT. No data were reported for hospital care. Hospital readmission rates were 6.4% in adults of varied ages, 5.2% in adults aged over 60, and 8.7% in children aged under 18.

Safety of OPAT versus hospital care

In adult OPAT compared with hospital care, there were no differences in the number of patients dying in five out of six studies. Medication side effects were similar in six studies, lower in OPAT in two studies, and unclear in two studies. Two studies found signs of an increased number of complications relating to the IV line used to deliver medicines in OPAT patients. Two studies found no difference in this outcome.

Few adverse events (range 0 to 2) were reported for either OPAT at home or hospital care in ten studies reporting this outcome in children.

A review reported complications for three different age groups. Higher rates of IV access complications were found in older adults (over 60) and children under 18 compared with younger adults. Medication side-effects were similar in adults and older adults, and slightly higher for children. Mortality was higher in older adults compared with adults of younger ages. No data were presented on hospital care.

Comparing ways of delivering OPAT services

Four different models for delivering OPAT care were compared: attending an outpatient clinic, a hospital specialist nurse visiting patients at home, a community/district nurse visiting patients at home, and patients administering medication themselves.

Infection cure rates were similar for all models of care, with an average cure rate of approximately 88%. There was no difference in duration of treatment for any model of OPAT service delivery compared with hospital care.

Does OPAT save the NHS money?

Our analysis showed that all models of OPAT service delivery were less expensive than hospital care. The amount of money saved depended on the type of infection treated and the model of OPAT service delivery. Costs for OPAT services were approximately 20% to 55% of the cost of care in hospital for the same infection. Patients administering medication themselves was associated with the lowest, and nurses visiting the patient's home the highest, OPAT costs.

Patient experiences of OPAT

Studies in patients from England and Scotland explored patient experiences of OPAT. The main perceived benefits of OPAT, regardless of model of delivery, were avoiding unnecessary hospital admissions, time to enjoy the comforts and security of home, and reduced disruptions to daily life (including work).

Concerns expressed about OPAT related to travel, the impact of OPAT on family and friends, the perceived risk of hospital-acquired infections, fears about returning to daily life and IV access complications, perceived premature transition to oral antimicrobials, and cleanliness of the home environment for home-based care.

In an analysis of patients in northeast Scotland, the main reasons for not self-administering medications at home were a lack of awareness it was an option, a perception that hospital staff were the most appropriate people to deliver OPAT, and anxiety about potential complications with self-administration.

One study from NHS Lothian found inequities in access to OPAT services. Patients from the most deprived areas and women were significantly less likely to be referred to OPAT services.

What did the SHTC Council consider when developing advice for NHSScotland?

- The Council recognised that each OPAT model had advantages and disadvantages. A flexible service - offering more than one model of care - should ideally be available.
- The Council acknowledged the desirability of increased equitable access across NHSScotland to antimicrobial therapy through OPAT services.
- The Council agreed that the British Society for Antimicrobial Chemotherapy (BSAC) good practice recommendations for OPAT in adults and children in the UK should be adhered to in Scotland. In particular, provision of 24h access to OPAT support.
- The Council debated the challenges around funding of OPAT services.
- The COVID-19 pandemic was discussed during the Council's deliberations. A shift towards increased IV antimicrobial treatment at home reduces the number of patients visiting or staying in hospitals.
- The Council noted the importance of local context, and that the provision of OPAT should take into account local delivery constraints. The Council were clear that this should not affect access to OPAT services per se, but that it may impact upon the most appropriate model of care for individual patients.
- The Council discussed how OPAT is an important part of national strategies to managed and reduce the use of antibiotics.
- The importance of ongoing data collection and analysis was emphasised by the Council, in order to inform future service decisions.

What is our advice to NHSScotland?

OPAT services should be offered to clinically appropriate patients with serious infections who do not require hospitalisation beyond their need for antimicrobial therapy.

NHS Boards should aim to offer a flexible OPAT service with multiple care pathways designed to meet individual patient needs within the context of local resources and geography. Alternative care pathways include outpatient clinics, nurse visits to patients' homes, or patient or carer self-administration at home.

All OPAT services should ensure clear, ongoing communication with patients and their carers throughout their care. This will enable any concerns and risks associated with home-based OPAT to be managed within the service.

This plain language summary has been produced based on SHTG Recommendations 01-21 January 2021