

Reduced hospital stays for skin infections treated with dalbavancin

Sharon Falconer, Robert BS Laing. Aberdeen Royal Infirmary, Foresterhill, Aberdeen AB25 2ZN, UK

BACKGROUND

Acute bacterial skin and skin structure infections (ABSSSIs) are a frequent reason for referral to hospital for parenteral antibiotic therapy. Whilst intravenous antibiotics are often administered in hospital, outpatient parenteral antibiotic therapy (OPAT) is an option for some patients and has the advantage of avoiding or shortening an inpatient stay. However, not all patients are suitable for OPAT according to the criteria agreed by the British Society for Antimicrobial Chemotherapy (BSAC)¹ – often as they are unable to travel to receive their treatment. In some such cases, dalbavancin may be an attractive option.

Dalbavancin is a second-generation lipoglycopeptide bactericidal antibiotic that is active against susceptible Gram-positive pathogens and is indicated for the treatment of ABSSSIs in adults.^{2,3} Dalbavancin is structurally related to teicoplanin and, like other glycopeptides, binds to the D-alanyl-D-alanine terminus of peptidoglycan, which prevents cross linking, thus interrupting formation of the cell wall (Figure 1).^{2,3} Dalbavancin's unique pharmacokinetic profile allows intravenous administration of a two-week dose of therapy via a single dose of 1,500 mg over 30 minutes or via two doses comprising 1,000 mg over 30 minutes on day 1 and 500 mg over 30 minutes on day 8.^{2,3}

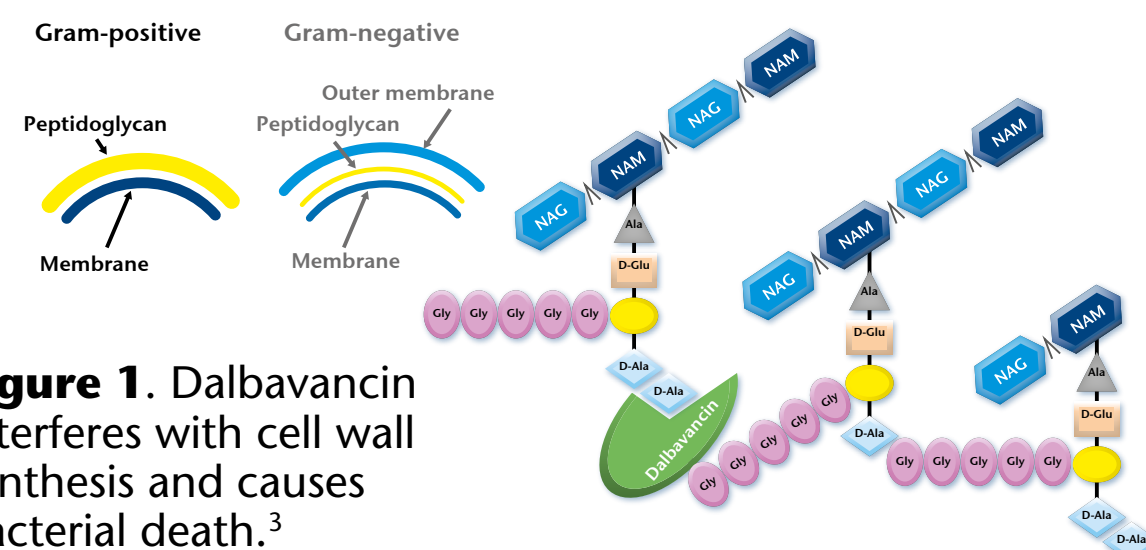


Figure 1. Dalbavancin interferes with cell wall synthesis and causes bacterial death.³

Aberdeen Royal Infirmary's OPAT service, which covers a population of more than 525,000 people across Grampian, is run by one full-time nurse with support from four infectious diseases consultants. The service treats a variety of infections, including 30–40 ABSSSIs per year. Some such patients do not need hospital care but are unsuitable for OPAT as they cannot access the transport required to attend the OPAT clinic or nearest community hospital for their treatment. These patients were considered for treatment with dalbavancin to examine whether the use of this drug might reduce the need for hospital admission.

METHODS

All patients had been reviewed by a consultant in infectious diseases, who confirmed the diagnosis of ABSSSI. Patients referred for treatment with dalbavancin had been given an explanation of the local OPAT service and had declined treatment through this service – most commonly due to the travel requirements involved in daily administration of parenteral antimicrobials. Dosing of dalbavancin (single dose or two doses) was decided by the consultant caring for the patient. Dalbavancin infusions were delivered over one hour. Patients were reviewed by the OPAT nurse and consultant on days 7 and 14 following treatment.

RESULTS

A total of 17 patients were treated with dalbavancin – nine male and eight female aged 16–78 (median 49) years. All patients had been referred to the infectious diseases ward for inpatient treatment. All patients had ABSSSIs, but 14 patients had cellulitis only, while one each had infection associated with eczema, lymphoedema, and a skin abscess. No patients had positive blood cultures.

Dosing

Fifteen (88%) patients were treated with a single dose of dalbavancin and two received two doses. Standard doses were administered to 16 patients, and one patient, who weighed <60 kg, was given a reduced dose of 15 mg/kg.

Efficacy

Sixteen (94%) patients improved following treatment. Fifteen patients showed substantial improvement or complete resolution on review on day 14. One patient failed to attend for clinic review but was assessed by telephone consultation and stated that her infection had resolved. One patient developed a flu-like illness seven days after receiving dalbavancin, which required admission to the ward for five days, and the cellulitis in this patient did not appear to have improved.

Safety and tolerability

Two patients developed pruritus and rash, which may have been due to dalbavancin. One patient described nausea following the dalbavancin infusion. There were no serious adverse events.

Health economic considerations

Patients with cellulitis who are referred to hospital for intravenous antibiotics will typically receive this treatment for around seven days – either in hospital or through the OPAT service. In this cohort, four (23.5%) patients required admission to hospital: two were hospitalised for three days and two for one day. Thirteen (76.5%) patients were seen and treated in clinic with no immediate requirement for hospital admission, but one patient who developed a rash was, as a result, admitted to hospital for five days. The estimated bed-day cost in NHS Grampian is approximately £500, and the estimated number of bed-days saved in this study is $17 \times 7 - 13 = 106$ bed-days, which would represent a cost of £53,000 (Box 1).

Box 1 Cost savings related to bed-days in patients with ABSSSIs treated with dalbavancin

Approximate cost of one bed-day	£500
Estimated costs for 17 patients with mean hospital stays of 7 bed-days	£59,500
Actual bed-days for 17 patients – 13 bed-days	£6,500
Estimated cost saving excluding drug cost	£53,000

Patient experience

Patients generally considered their treatment as a very positive experience. As none of them had considered themselves suitable for standard OPAT and had no past experience of OPAT, they were unable to compare dalbavancin and standard OPAT.

- “It's so much easier to go in for a 60-minute treatment and then go straight home”
- “Makes a huge difference, as I'm the carer for my 79-year-old mum”
- “It means you can get on with your day-to-day life”.

CONCLUSIONS

Outpatient parenteral antibiotic therapy for ABSSSIs is highly successful and well established. In NHS Grampian, patients are required to travel to an OPAT clinic in the main hospital or one of a number of peripheral hospitals to receive their treatment. Alternatively, they can be trained over three days to self-administer their antimicrobial. At present

there is insufficient resource to allow the OPAT nurse to treat patients at home. Use of dalbavancin in patients with ABSSSIs allows intravenous antibiotics to be used in patients who would otherwise be ineligible for OPAT as it is currently provided by NHS Grampian. Our early experience of this treatment for ABSSSIs has suggested similar outcomes to standard OPAT.

Key points

- ABSSSIs often require intravenous antibiotic therapy, which may be associated with lengthy hospital stays to enable full recovery.
- OPAT is another treatment option, although it is not always suitable or optimal for patients, and dalbavancin provides a safe alternative for this group of patients.
- Dalbavancin, which is indicated for ABSSSIs in adults, has a unique pharmacokinetic profile that allows intravenous administration of a two-week dose via a single dose of 1,500 mg or two doses of 1,000 mg on day 1 and 500 mg on day 8.
- Use of dalbavancin in patients with ABSSSIs allows intravenous antibiotics to be used in patients who would otherwise be ineligible for OPAT as it is provided in our centre. This treatment minimises disruption to patients' lives and reduces hospital admissions/length of stay with potential cost savings.

FUNDING

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REFERENCES

1. Chapman ALN, Seaton RA, Cooper MA *et al.* Good practice recommendations for outpatient parenteral antimicrobial therapy (OPAT) in adults in the UK: a consensus statement. *J Antimicrob Chemother* 2012;**67**(5):1053-62.
2. Correio UK Ltd. *Summary of product characteristics: Xydalba 500 mg powder for concentrate for solution for infusion.* London: Correio UK Ltd, 2017.
3. European Medicines Agency. *European public assessment report: Xydalba.* London: EMA, 2014.