NHS
Gloucestershire Hospitals
NHS Foundation Trust

Dalbavancin for *routine* OPAT

Expensive? Can we afford??

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Dalbavancin – Cost-effectiveness Analysis (Dec 22-Oct 23)

Audit Design

- Retrospective Audit
- Data pulled out from Business Intelligence Unit
- Review the usage using Electronic Patient Record (EPR)

Aims

- To confirm if dalbavancin was used according to licensed indication
- To identify the proportion of the unlicensed use with dalbavancin
- To analyse whether dalbavancin was used prudently for a specific indication
- To conclude if dalbavancin is a cost-effective drug for OPAT

Limitation

- The data is based on the accounts of EPR; unable to access Consultant Microbiologist's Enquiry Records to confirm the accuracy of the communication between the clinical team and consultant microbiologist on duty when dalbavancin was prescribed.

Result 1 - Patient Type

Total number of patients (N):	63
Number of OPAT* patients: • Number of patients in Day Case units *OPAT*= discharge hospital within 24hours or no hospital admission*	**41 (65%)** **15 (24%)**
Number of Inpatients#: *Inpatients# = stay in hospital > 24hours*	**22 (35%)**
Number of patients starting dalbavancin due to other reasons (eg. failed invasive intravenous cannula access such as midline or PICC, ADR of other antibiotics): **Note: except PWID**	**5 (8%)**
Number of PWID patients:	**10 (16%)**

Result 2 – Indications

Infection Types	Number and Percentage	Number of Empirical Use of dalbavancin
SSTIs (cellulitis/chronic cellulitis)	7 (11%)	3
Discitis	4 (6%)	3
Osteomyelitis	9 (14%)	3
Septic arthritis	8 (13%)	1
BJI (including prosthetic BJI)	**20 (31%)**	5
Abscess (groin, liver, spine)	3 (5%)	1
IE	4 (6%)	1
Diabetic foot infection	2 (3%)	0
Septicaemia/bacteraemia	2 (3%)	0
CAP	1 (2%)	1
Sacral and leg ulcers	3 (5%)	2
Total:	**63**	**20 (32%)**

Result 3 – Dosage and Number of courses

Infection Types	No of patients	Dosage and No. of courses received in GHT
SSTIs (cellulitis/chronic cellulitis)	7	5pts- 1500mg stat; 1pt- 1500mg x 2; 1 pt – 500mg x 2
Discitis	4	1 pt – 1500mg stat; 3 pts – 1500mg x 2
Osteomyelitis	9	3 pts – 1500mg stat; 6 pts – 1500mg x 2
Septic arthritis	8	4 pts – 1500mg stat; 4 pts – 1500mg x2
BJI (including prosthetic BJI)	**20**	5 pts – 1500mg stat; 13 pts – 1500mg x 2; 1 pt (infected dislocated R THR with open relocation, debridement and insertion of stimulant beads) – 1500mg x 3 on D1, D8, wk4; 1pt (infected L TKR) – 1500mg x 4 on D1, D8, wk4 and wk5
Abscess (groin, liver, spine)	3	3 pts – 1500mg x 2
IE	4	2 pts – 1500mg stat; 2 pts – 1500mg x 2
Diabetic foot infection	2	1 pt – 1500mg stat; 1 pt – 1500mg x 2
Septicaemia/bacteraemia	2	1 pt – 1500mg stat; 1 pt (renal impairment)- 750mg D1 then 375mg D8
CAP	1	1 pt – 1000mg stat
Sacral and leg ulcers	3	3 pts -1500mg stat
Total:	**63**	**26 patients received 1 course** **35 patients received 2 courses** **1 patient received 3 courses** **1 patient received 4 courses**

Result 4a – Microbiology vs Concomitant Antibiotic Prescribing with dalbavancin

Infection Types & course length	No of patients	Number of Empirical Use of dalbavancin (E)	Causative pathogens isolated in the relevant samples	Concomitant Antibiotic with dalbavancin
SSTIs (cellulitis/chronic cellulitis) **(10days-6wks)**	7	3	Group B Streptococcus (a) Group B Streptococcus & E coli (b) Enterococcus sp & coliform (c) Moraxella sp (d)	Clindamycin IV/po (E) Levofloxacin po (a) Clindamycin and levofloxacin po (c) Co-trimoxazole (b, d)
Discitis **(6wks)**	4	3	MSSA (a)	Ciprofloxacin 750mg po bd + Linezolid (E) Levofloxacin po (a) Flucloxacillin po (E) Ciprofloxacin 750mg po bd + Clindamycin (E)
Osteomyelitis **(4-6wks)**	9	3	MSSA (a,j) Enterococci sp & Coliform sp (b) Coliform sp (c) Strep sp and staph sp (d) Group G Strep and pseudomonas sp (e) MSSA, Strep anginosis & pseudo (f) MSSA, enterococci sp, coliform sp and E coli (g) Candida parapsilosis (h)	Clindamycin po (d,j) Ciprofloxacin 750mg po bd + metronidazole (b,g) Fosfomycin IV + metronidazole (c) Ciprofloxacin 750mg po bd + clindamycin po (e) Clindamycin po+ Ciprofloxacin 750mg + metronidazole (f) Co-trimoxazole po (h)
Septic arthritis **(3-6 wks)**	8	1	PVL MRSA (a) MSSA (b,d,f,g) Strep dysgalactiae (e) MSSA and Group A Strep (h)	Linezolid po (a) Clindamycin, co-trimoxazole and doxycycline (b)

Result 4b – Microbiology vs Concomitant Antibiotic Prescribing with dalbavancin

Infection Types & course length	No of patients	Number of Empirical Use of dalbavancin (E)	Causative pathogens isolated in the relevant samples	Concomitant Antibiotic with dalbavancin
BJI (including prosthetic BJI)	20	5	Cutibacterium acne (propioni bacterium) (a) MSSA (b) Enterococcus faecalis (c) Strep anginosus (d) S hominis/Bacillus sp/micrococcus luteus (e) S epidermidis and cutibacterium acnes in (f) MSSA + pseudomonas sp (g) S epidermidis and propionibacterium (h) Staph caprae, corynebacterium sp, rothia sp (i) MSSA (j) S saccharolyticus & Propionibacterium (k) MSSA (l) MSSA (m) MSSA (n)	Clindamycin po (a) Flucloxacillin 1g + rifampicin 450mg po (b) fluclo 1g po (E) Linezolid (c) Cipro 750mg po (E) Clindamycin po (d) rif 450mg po bd & amoxicllin po (e) clindamycin 450mg + rifampicin 450mg po (f) ciprofloxacin 500mg po & rifampicin 450mg (g) Doxycycline po (h) cipro 750mg & linezolid (E) Nil antibiotic (i) Rifampicin 450mg po bd (j) Cipro 750mg (k) Levofloxacin + rifampicin po (l) Metronidazole (m) Cipro 750mg +linezolid 600mg po bd (n)
Abscess (groin, liver, spine) **(6 weeks)**	3	1	Staph hominis isolated in B/C; enterococci sp and coliform sp isolated in pus (a) MSSA & S anginosus in B/C (b)	Delafloxacin po(E) Ciprofloxacin and metronidazole(a) Clindamycin po (b)

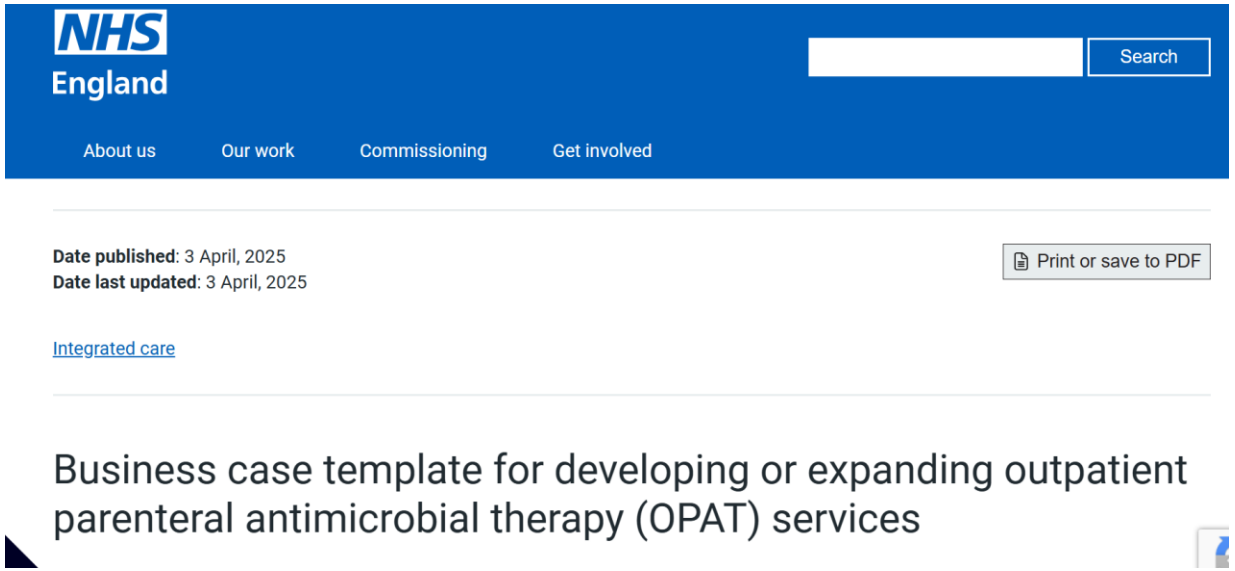
Result 4c – Microbiology vs Concomitant Antibiotic Prescribing with dalbavancin

Infection Types & course length	No of patients	Number of Empirical Use of dalbavancin (E)	Causative pathogens isolated in the relevant samples	Concomitant Antibiotic with dalbavancin
IE (4-6 weeks)	4	1	MSSA in B/C (a) G-ve bacilli in B/C (b) Strep mitis and oralis (c) strep Grp C in B/C (fully sensitive) (d)	Clindamycin po (a) Rifampicin po (b) Clindamycin po (c) Co-amoxiclav 625mg +amoxicillin 500mg TDS+ ciprofloxacin 750mg po (d)
Diabetic foot infection (6 weeks)	2	0	enterococci & Grp G strep (a) S aureus/Strep dysgaclactiae/S epidermidis /Corynebacterium striatum R 1st Toe and foot (b)	Amoxicillin 1g po tds (a) Levofloxacin + metronidazole po (b)
Septicaemia/bacteraemia	2	0	MSSA in B/C (a) Strep mitis in B/C (b)	Linezolid (a) Clindamycin IV (b) **DCC patient with suspected streptococcal septic shock
CAP (7 days)	1	1	NIL	Co-trimoxazole po (E)
Sacral and leg ulcers (10 days to 6 weeks)	3	2	coliform sp in sacral wound (a) enterococcus & proteus sp (b)	Co-amoxiclav and cipro 750mg po (E) Doxycycline + ciprofloxacin 750mg and metronidazole po (a) Linezolid and metronidazole po (b)

Cost of dalbavancin use in different settings

	OPAT (discharge within 24hrs or *NO* hospital admission) N=41	Inpatient stay N=22 (all T&O patients)
Number of dalbavancin vials dispensed	183	96
Expenditure of dalbavancin (inc. VAT)	£122,690.52	£64,362.24
(Extended) Inpatient hospital stay **Note: days calculated from the administration date of dalbavancin**	-----	253 days
Cost of hospital stay **(NHS Tariff 2022/23 - HRG Code (HD25E - Infections of Bones or Joints, with CC Score 9-12 – Per day long stay payment for day exceeding trim point ~ £299)**	-----	£75,647.00
Total cost:	**£122,690.52**	**£140,009.24**
Average cost per patient:	**£2,992.45 (~ 47% of inpatient stay)**	**£6,364.06**

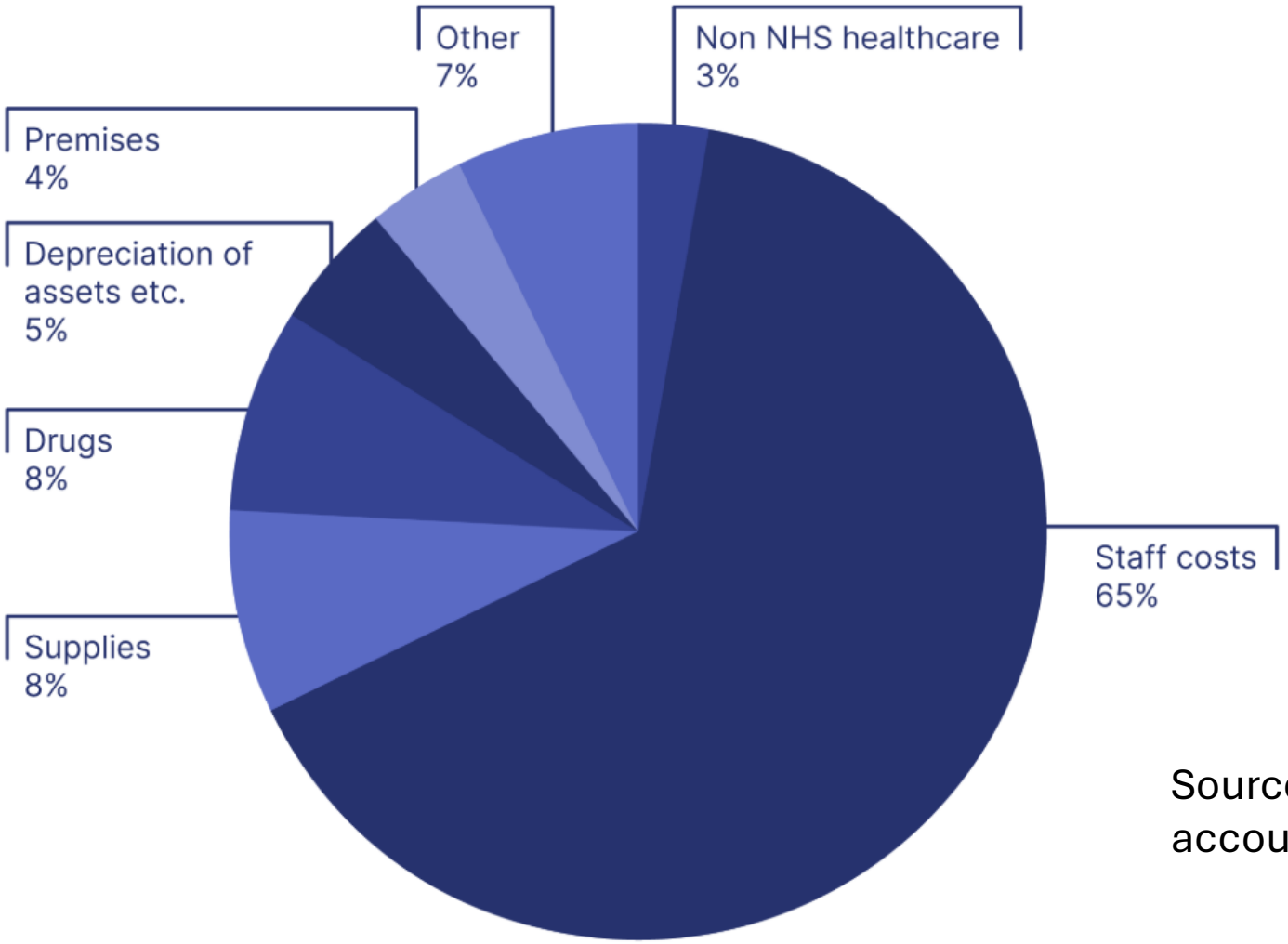
#Dalbavancin 500mg vial - Unit Price (exc. VAT) = £558.70



As well as being one of the commonest reasons for hospital admission, infections may complicate hospital treatments and surgical interventions. In the 2016 national point prevalence survey of antimicrobial use in English hospitals it was estimated that 37% of inpatients received an antimicrobial and 60% were via the parenteral route. As healthcare advances and the complex needs population grows, patients receiving intravenous (IV) antimicrobial therapy in hospital are likely to increase. Reviewing IV therapy, optimising timing of IV to oral switch and considering the need for Outpatient Parenteral Antimicrobial Therapy (OPAT) are established recommendation at the 48-72 hour stage in the NHS England antimicrobial stewardship guidance "Start Smart then Focus".

IV Antimicrobials	Cost per week (BNF 2025; SHTG OPAT Model 2021) excl VAT	Cost per day
Ceftriaxone 2g daily	£134.26	£19.18
Daptomycin 700mg once daily	£840.00	£120.00
Teicoplanin 600mg once daily or 1200mg 3x per week	£82.53	£11.79
Flucloxacillin 8g 24hrs infusion via EP (pre-filled)	£630.00	£90.00
Flucloxacillin 8g 24hrs infusion via EP (nurse-filled)	£259.00	£37.00
Dalbavancin 1.5g One-off	**£1,676.10**	**£239.44**

The pie chart below shows NHS trust and foundation trust expenditure for 2023/24.



What providers spend their money on

The biggest cost to providers is their staff. NHS provider bodies typically spend about 65% of their budgets on staff costs.

Source: Note 7.1 of the consolidated NHS provider accounts 2023/24 (NHS England, 2024a)

Spend on staff costs was nearly £85bn in 2023/24 for NHS provider bodies.

Revenue Cost - Staffing

- Ref: NHS AfC 2025/26; NHS Employer Pay and Conditions Circular (M&D) 2/2025

Subjective code	Expense type	Staffing ratio (WTE)	Unit cost	Notes	Annual salary	Annual Budget
Pay - Staffing						0
	Medical Consultant	1.00	£75.00	Per working hour	£145,487.00	£145,487.00
	Pharmacist band 8a	1.00	£32.06	Per working hour	£62,682.00	£62,682.00
	Nurse band 6	1.00	£23.82	Per working hour	£46,580.00	£46,580.00
	Nurse band 5	3.00	£19.33	Per working hour	£37,796.00	£113,388.00
	Admin & Clerical band 4	1.00	£15.43	Per working hour	£30,162.00	£30,162.00
Pay	**Total**	**7**	**£165.64**	**0**		**£398,299.00**

Revenue Costs – Consumables and Overheads

BMJ Open

Outpatient parenteral antimicrobial therapy (OPAT) versus inpatient care in the UK: a health economic assessment for six key diagnoses

Maria Dimitrova,[1] Mark Gilchrist,[2] R A Seaton [3,4]

Supplementary table 4 Unit costs of resources used in OPAT services

Item	Unit cost	Notes	Source
Medical consultant	£109	Per working hour	PSSRU,2019
Pharmacist band 8a	£67	Per working hour	PSSRU,2019
Nurse band 6	£47	Per working hour	PSSRU,2019
Nurse band 5	£38	Per working hour	PSSRU,2019
Antimicrobial medicine (IV)	Variable*	Condition-specific	BNF,2020, eMIT, 2020
Antimicrobial medicine (oral)	Variable*	Condition-specific	BNF,2020, eMIT, 2020
Laboratory tests	£8	UE,LFT,CRP and FBC	ISD Cost book,2020
Laboratory tests (specialist)	£47	Teicoplanin levels	Expert
Consumables - PICC line	£36	Per patient	National Procurement
Consumables - Butterfly needle	£1	Per administration	National Procurement
Consumables (other)	£1.65	Single use; apron, needles, syringe, pre-injection swab	National Procurement
Elastomeric device; empty	£31	Based on equal market share of two devices (single use)	National Procurement
Elastomeric device; commercially pre-filled (piperacillin with tazobactam; flucloxacillin)	£90	Per administration	Expert
Elastomeric device; commercially pre-filled (ceftriaxone)	£45	Per administration	Expert
Buffered saline	£2	Per administration	Expert
Nurse travel	£11	Per journey - based on average travel of 11 miles	ISD Cost book,2020
Patient transport service	£42	Per journey - based on average travel of 11 miles	ISD Cost book,2020
General cost of using healthcare services (inflated)	£13	Per patient; per day (inflated to 2019 prices using the NHS cost inflation index)	Minton, 2017[3]

*See tables S5 and S6 for costs of antimicrobials in OPAT

UE, urea and electrolytes; LFT, liver function test; CRP, c-reactive protein test; FBC, full blood count; PSSRU, Personal Social Services Research Unit; BNF, British National Formulary; eMIT, electronic market information tool; ISD, Information Services Division

Table 9: cost of OPAT models of care versus inpatient stay for short-term SSTI in the UK

Model of care		Cost	Difference compared with inpatient stay	OPAT as % cost of inpatient care
Inpatient stay	Cost per episode	£2,476		
	NORS total	£18,253,696		
OPAT once daily outpatient clinic	Cost per episode	£631	-£1,846	
	NORS total	£4,650,245	-£13,603,451	25%
OPAT specialist nurse daily home visit	Cost per episode	£831	-£1,645	
	NORS total	£6,125,310	-£12,128,386	34%
OPAT self-administration (bolus IV)	Cost per episode	£566	-£1,911	
	NORS total	£4,170,675	-£14,083,021	23%
OPAT self-administration (elastomeric device)	Cost per episode	£611	-£1,865	
	NORS total	£4,506,304	-£13,747,392	25%
OPAT one-off dalbavancin	Cost per episode	£1,266	-£1,210	
	NORS total	£9,335,278	--£8,918,418	51%
OPAT CIVI as an outpatient (elastomeric device)	Cost per episode	£802	-£1,674	
	NORS total	£5,912,090	-£12,341,606	32%

Estimates per individual and for those managed in BSAC NORS participating sites over five years
SSTI=skin and soft tissue; OPAT= outpatient parenteral antimicrobial therapy; CIVI = continuous intravenous infusion; NORS = national outcomes registry system

Note: SSTIs –average duration of treatment: 6.4 days (NORS 2015-19 (UK))
Dalbavancin treatment: 1g iv One-off

Healthcare Improvement Scotland | SHTG Advice on health technologies

SHTG Recommendations 01-21
January 2021

In response to enquiry from the Scottish Antimicrobial Prescribing Group and the British Society for Antimicrobial Chemotherapy

Outpatient parenteral antimicrobial therapy (OPAT)

Model of Care		Cost	Difference compared with inpatient stay	OPAT as % cost of inpatient care
OPAT dalbavancin 1.5g x 2 doses (6 weeks)	Cost per episode	£3,649	-£4,630	
	NORS total	£19,542,537	-£24,791,420	44%
OPAT dalbavancin 1.5g x 3 doses (> 6 weeks)	Cost per episode	£5,474	-£2,805	
	NORS total	£29,313,806	-£15,020,152	66%
OPAT dalbavancin 1.5g x 4 doses (> 6 weeks)	Cost per episode	£7,299	-£980	
	NORS total	£39,085,074	-£5,248,883	88%

Table 11: cost of OPAT models of care versus inpatient stay for longer-term orthopaedic infections in the UK

Model of care		Cost	Difference compared with inpatient stay	OPAT as % cost of inpatient care
Inpatient stay	Cost per episode	£8,279		
	NORS total	£44,333,957		
OPAT once daily outpatient clinic	Cost per episode	£2,506	-£5,773	
	NORS total	£13,420,740	-£30,913,217	30%
OPAT specialist nurse daily home visit	Cost per episode	£3,375	-£4,904	
	NORS total	£18,075,626	-£26,258,331	41%
OPAT self-administration (bolus IV)	Cost per episode	£1,855	-£6,424	
	NORS total	£9,931,850	-£34,402,107	22%
OPAT self-administration (elastomeric device)	Cost per episode	£2,394	-£5,885	
	NORS total	£12,822,294	-£31,511,664	29%
OPAT supervised oral therapies (100%)	Cost per episode	£1,114	-£7,165	
	NORS total	£5,967,800	-£38,366,157	13%
OPAT supervised oral therapies (25% oral, 75% IV)	Cost per episode	£2,009	-£6,270	
	NORS total	£10,759,517	-£33,574,440	24%
OPAT supervised oral therapies (50% oral, 50% IV)	Cost per episode	£1,710	-£6,569	
	NORS total	£9,155,594	-£35,178,363	21%
OPAT supervised oral therapies (75% oral, 25% IV)	Cost per episode	£1,410	-£6,869	
	NORS total	£7,551,670	-£36,782,287	17%

Estimates per individual and for those managed in BSAC NORS participating sites over five years
OPAT= outpatient parenteral antimicrobial therapy; NORS = national outcomes registry system

Note: BJI –average duration of treatment: 27.8 days (NORS 2015-19 (UK))

Contents lists available at ScienceDirect

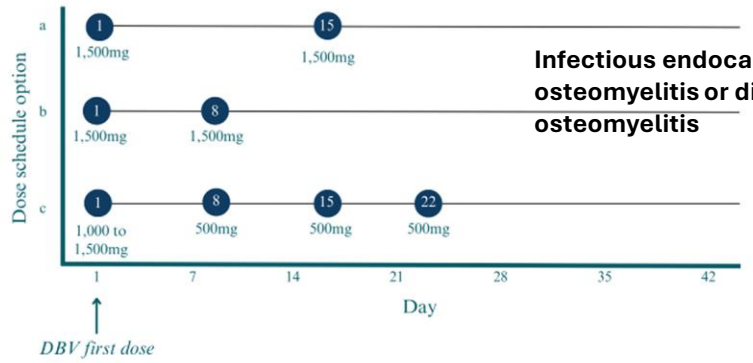
International Journal of Antimicrobial Agents

journal homepage: www.elsevier.com/locate/ijantimicag

Expert Opinion on Dose Regimen and Therapeutic Drug Monitoring for Long-Term Use of Dalbavancin: Expert Review Panel

Eric Senneville[a,*], Guillermo Cuervo[b], Matthieu Gregoire[c,d], Carmen Hidalgo-Tenorio[e,f], François Jehl[g], Jose M. Miro[b,h], Andrew Seaton[i], Bo Söderquist[j,k], Alex Soriano[l,h], Florian Thalhammer[m], Federico Pea[n,o]

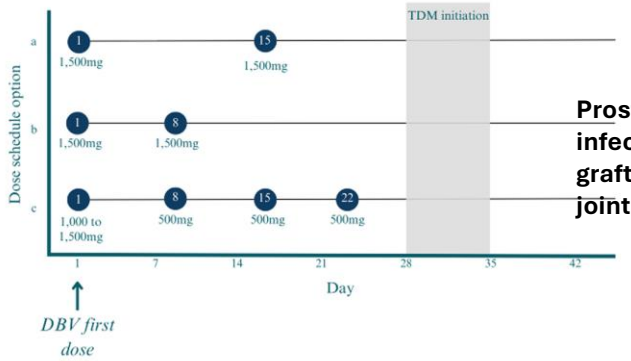
Treatment duration: maximum 6 weeks



Infectious endocarditis, acute osteomyelitis or diabetic foot osteomyelitis

Figure 2. Dose regimens for clinical scenarios where the expected duration of dalbavancin (DBV) treatment is a maximum of 6 weeks. Day 1 is the first day of treatment with dalbavancin. A total of 3000 mg dalbavancin should be administered by week 4 to provide treatment cover for 4–6 weeks, with flexibility in the choice of dose regimen to meet the needs of the healthcare setting.

Treatment duration: > 6 weeks with TDM facility



Prosthetic joint infections, vascular graft infections, bone & joint infections

Figure 3. Dose regimens for clinical scenarios where the expected duration of dalbavancin (DBV) treatment is more than 6 weeks and therapeutic drug monitoring (TDM) is available for use. Day 1 is the first day of treatment with dalbavancin. A total of 3000 mg dalbavancin should be administered over 4 weeks to provide treatment cover for 4–6 weeks, with flexibility in the choice of dose regimen to meet the needs of the healthcare setting. Therapeutic drug monitoring should guide the timing of the subsequent dalbavancin dose and be initiated between Day 28 and Day 35 (Cojutti, 2022).

Treatment duration: > 6 weeks without TDM facility

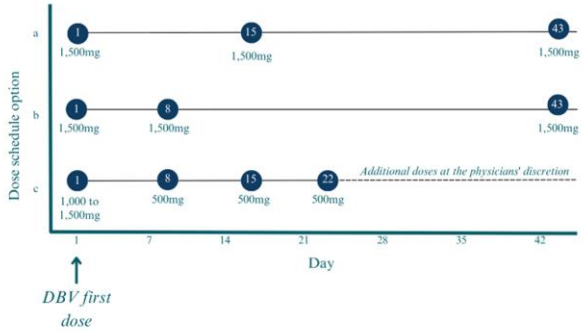


Figure 4. Dose regimens for clinical scenarios where the expected duration of dalbavancin (DBV) treatment is more than 6 weeks and therapeutic drug monitoring (TDM) is unavailable for use. Day 1 is the first day of treatment with dalbavancin. A total of 3000 mg dalbavancin should be administered over 4 weeks to provide treatment cover for 4–6 weeks, with flexibility in the choice of dose regimen to meet the needs of the healthcare setting. Physician discretion should be used if administering 500 mg weekly doses of dalbavancin.

Dalbavancin TDM – A way forward!

- Advantages:

  - ✓ No. of course / No. of vials ↓
  - ✓ AWaRe list – No. of Restricted Antibiotics ↓
  - ✓ AMR ↓
  - ✓ Drug and Operational cost ↓
  - ✓ Side-effects (e.g. nausea, diarrhoea, headache/dizziness) ↓
  - ✓ Redirect the resource to other clinical areas ↑
  - ✓ Revenue/Income ↑