CLINICAL GUIDELINE

Burns patients (adults): Antibiotic recommendations

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

Version Number:	1
Does this version include changes to clinical advice:	N/A
Date Approved:	27th August 2024
Date of Next Review:	31st August 2027
Lead Author:	Scott Gillen
Approval Group:	Antimicrobial Utilisation Committee

Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

NHS Greater Glasgow and Clyde recommendations for antibiotics in adult burns patients

Pre-operative Antibiotics

IV prophylaxis ≤ 60 minutes prior to skin incision/intervention.

For advice or re-dosing antibiotic in operations > 4 hours and operations where there is > 1500 ml blood loss see Principles of Surgical Prophylaxis (1039) | Right Decisions (scot.nhs.uk)

Gentamicin doses up to 600 mg may be given undiluted via slow IV injection over 3-5 minutes or diluted to 20 ml with 0.9% saline and given slowly over 3-5 minutes via large peripheral vein or central line. See Appendix 1[Δ] for prophylactic dosing.

If continuing Gentamicin post-procedure, take Gentamicin level 6-14 hours post-dose and re-dose as per NHSGGC Gentamicin Calculator & Guidelines.
GGC Clinical Info - Home (sharepoint.com)
GGC Medicines - - Gentamicin dosing guidelines (age 16 and over)

Teicoplanin doses should be given via slow IV injection over 3-5 minutes. Teicoplanin and Gentamicin are incompatible when mixed directly; always flush between administration (with sodium chloride 0.9% or glucose 5%).

MRSA carriers: Discuss with microbiology regarding antibiotic choice.

CPE carriers: For those patients who have been identified as CPE (carbapenemase producing enterobacteriaceae) carriers, contact microbiology

Devised by Burns team, Microbiology, Antimicrobial Pharmacist
Approved by AUC Aug 2024
Review Date Aug 2027

Pre-operative Antibiotics

Procedure	Recommended antibiotic regimen	Comments
Debridement (without grafting) and dressing changes (incl. showering) in ICU, Ward or Theatre	No antibiotics required pre-procedure.	
Excision and grafting including autograft, allograft and dermal substitute (Empirical regime in the absence of positive microbiology cultures) **Where microbiology cultures are available:** discuss pre-operative antibiotic regime with Microbiology. Patients who are MRSA or CPE carriers should be discussed with Microbiology.	IV Flucloxacillin 2g + IV Gentamicin*Δ *If severe penicillin allergy:* IV Teicoplanin 400mg + IV Gentamicin*Δ	If the patient is already prescribed gentamicin prior to excision/grafting but cultures remain unavailable, contact microbiology for induction plan for burns patients. **Duration of antibiotics:** • <5% TBSA burn and no infection – single dose at induction then **stop antibiotics.** • ≥5% TBSA burn – continue for 48 hours **then stop** unless signs of infection/ sepsis or different advice from microbiology. In penicillin allergy, Teicoplanin should be switched to vancomycin on the ward. Vancomycin loading dose should be given 6-12 hours after intra-operative Teicoplanin.

Prophylactic Antibiotics

- **Positive wound swab** results may indicate bacterial colonisation rather than infection and if there are no signs of infection, there is no requirement for antibiotics.
- If infection is suspected, see below for empirical antibiotic treatment of infection.

Empirical Antibiotics for Treatment of Infection

- Take appropriate Microbiology cultures.
- When blood cultures are taken, 2 sets of blood cultures with 10mls of blood in each bottle (40mls total) are required.
- If no Microbiology cultures available, start treatment as follows:

Indication	Recommended antibiotic regimen	Comments
Mild burn cellulitis (no systemic symptoms or patients managed as outpatients)	**Consider oral antibiotics:** If <4 days since burn: PO Flucloxacillin 1g 6-hourly If ≥4 days since burn: PO Co-amoxiclav 625mg 8-hourly *If severe penicillin allergy:* *Doxycycline 100mg 12-hourly regardless of burn onset*	Duration: Minimum 5 days and then review with clinical response and microbiology results
Moderate to severe cellulitis	IV Flucloxacillin 2g 6-hourly + IV Gentamicin* as per NHSGGC Calculator & Guidelines *If severe penicillin allergy:* IV Vancomycin + IV Gentamicin* as per NHSGGC Calculators & Guidelines	Consider IVOST after 48 hours once culture results are available.
Systemic sepsis	Discuss with Microbiology	

*If a Gentamicin peak level has been requested, this should be taken 60 minutes after the end of the dose administration. Timing of this level is crucial and must be used carefully when interpreting levels. Please discuss Gentamicin peak levels with a pharmacist once available prior to the next dose administration.

In severe sepsis where Gentamicin peak levels are low (i.e. <10mg/L at 60 minutes from the end of administration), switch Flucloxacillin and Gentamicin to Piperacillin/Tazobactam 4.5g 6-hourly in the absence of cultures. If the patient has cultures available, contact microbiology including out of hours.

Devised by Burns team, Microbiology, Antimicrobial Pharmacist
Approved by AUC Aug 2024
Review Date Aug 2027

Δ Appendix 1: Gentamicin dosing regimens for surgical prophylaxis in adult male and female patients

- Avoid gentamicin if CrCl < 20 ml/min: seek advice on alternative from microbiology.
- In renal transplant or dialysis patients, avoid gentamicin and seek advice from microbiology or renal team.
- Use GGC CrCl calculator to assess renal function. Do not use eGFR in patients at extremes of body weight.
- Use the patient's actual body weight and height to calculate the gentamicin dose, using table below. This prophylactic gentamicin dosing table is based on approximately 5 mg/kg actual body weight/ adjusted body weight.[5]
- Doses of up to 600 mg gentamicin can be given undiluted by slow IV injection over 3 – 5 minutes, or diluted to 20 ml with 0.9 % saline and given slowly over 3-5 minutes, administer via large peripheral vein or central line. [1-4]
- Monitor for signs of extravasation or infiltration e.g. swelling, redness, coolness or blanching at the cannula insertion site.

HEIGHT \ WEIGHT	30 – 39.9 kg	40 – 49.9 kg	50 – 59.9 kg	60 – 69.9 kg	70 – 79.9 kg	80 – 89.9 kg	90 – 99.9 kg	100 – 109.9 kg	110 - 119.9 kg	120 - 129.9 kg	130 - 139.9 kg	140 - 149.9 kg	150 - 159.9 kg	160 - 169.9 kg	170 - 179.9 kg	180 - 189.9 kg	≥190 kg
142 - 146 cm 4'8'' - 4'9''	180 mg	200 mg	220 mg	240 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg							
147 - 154 cm 4'10'' - 5'0''	180 mg	200 mg	240 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg						
155 - 164 cm 5'1'' - 5'4''	180 mg	200 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg	420 mg	440 mg	480 mg				
165 - 174 cm 5'5'' - 5'8''		200 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg	420 mg	460 mg	480 mg	480 mg	520 mg	540 mg		
175 - 184 cm 5'9'' - 6'0''		200 mg	280 mg	320 mg	360 mg	380 mg	400 mg	420 mg	440 mg	460 mg	480 mg	500 mg	520 mg	540 mg	560 mg	580 mg	600 mg
185 - 194 cm 6'1'' - 6'4''			280 mg	320 mg	360 mg	400 mg	420 mg	440 mg	460 mg	480 mg	500 mg	540 mg	560 mg	580 mg	600 mg	600 mg	600 mg
≥195 cm ≥6'5''				320 mg	360 mg	420 mg	460 mg	480 mg	500 mg	520 mg	540 mg	560 mg	580 mg	600 mg	600 mg	600 mg	600 mg

References

1. Metro South Antimicrobial Stewardship Network (2019) *Gentamicin Dosing, Administration & Monitoring Guidelines for Adults for Empirical Therapy*. Available at: Fact sheet template (portrait) | Metro South Health (mshprescribe.com) (Accessed: 07 July 2022).
2. Spencer S et al, Intravenous Push Administration of Antibiotics: Literature and Considerations, *Hosp Pharm.* 2018 Jun; 53(3): 157–169.
3. Loewenthal MR, Dobson PM. Tobramycin and gentamicin can safely be given by slow push. *J Antimicrob Chemother*. 2010;65(9):2049–2050.
4. Gentamicin Injection 40mg/ml SPC, eMC, (Gentamicin 40mg/ml Solution for Injection/Infusion - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)) (Accessed 30 August 2023)
5. Bratzler, D.W., Dellinger, E.P., Olsen, K.M., Perl, T.M., Auwaerter, P.G., Bolon, M.K., Fish, D.N., Napolitano, L.M., Sawyer, R.G., Slain, D., Steinberg, J.P. and Weinstein, R.A. (2013) 'Clinical practice guidelines for antimicrobial prophylaxis in surgery'. *American Journal of Health-System Pharmacy*, 70(3), pp. 195-283.
6. Co-amoxiclav SPC, Co-Amoxiclav 1000 mg/200 mg Powder for Solution for Injection/Infusion - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk) (Accessed 30 August 2023)

Devised by Burns team, Microbiology, Antimicrobial Pharmacist
Approved by AUC Aug 2024
Review Date Aug 2027