NHS
Greater Glasgow and Clyde

CLINICAL GUIDELINE

Plastic and Burns Unit Guideline for Surgical Pre-operative Prophylactic Antibiotic use

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.

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Important Note:

The online 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.

Plastics and Burns Unit Guideline for Surgical **Pre-operative Prophylactic Antibiotic** use

Plastics and Burns (Canniesburn) Unit and Antimicrobial Utilisation Committee May 2025
Review Date May 2028

Introduction

Prudent use of antimicrobials is essential with limitation of antimicrobials to those where there are clear symptoms or suspicion of infection. Prudent antimicrobial use is also important in surgical prophylaxis where post-operative antibiotics should only be given to treat active/ongoing infection unless specifically recommended against the surgical procedure. This guideline aims to provide antibiotic use recommendations for the Plastics and Burns (Canniesburn) Unit clinical teams.

Please also be aware of additional guidelines for:

- Plastics and Burns Unit Guideline for Prophylactic Antibiotic use on Wards
- Plastics and Burns Unit Guideline for Empirical Antibiotics in treatment of infections

Please contact the authors of this guideline if there are sections that you think could be improved or updated in view of new evidence. We welcome your thoughts and comments to:
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SPARED: Good antibiotic prescribing practice

Samples	• Send samples for culture, sampling pre-antibiotics whenever possible. • **A minimum of 2 blood culture sets (4 bottles in total) and ensuring that each bottle is filled with 10ml of blood should be obtained in any patient with suspected blood stream infection and preferably before starting antibiotics.** • Check the culture results & review therapy when you have them. Can you NARROW THE SPECTRUM?
Policy	• Comply with local policies (see Clinical Guidelines Platform & GGC Medicines App) for antibiotic CHOICE, ROUTE & DURATION. • Check for drug interactions & cautions (e.g. clarithromycin, rifampicin). • Complete Protected Antibiotic Forms. • Discuss complex or difficult cases with microbiology/ID.
Allergies	• Check & document the patient's allergy status before prescribing. • Document & consider the nature of any 'allergies'. • A blank allergy status DOES NOT = NKDA.
Reason	• Record the indication when starting any antibiotic. • Document other reasoning, for example: ▪ Rationale for any policy deviation ▪ Details of any microbiology/ID discussion
End date	• Document the intended duration and specify duration on HEPMA prescription • Check the GGC Empirical Infection Management Guideline and IVOST policy via Clinical Guidelines Platform for recommended durations.
Daily review	• Monitor & document patient response. • Check culture results & narrow the spectrum if possible. • Review the need for IV therapy DAILY (refer to GGC IVOST guideline). Document a formal review of IV within 72 hours with the outcome (e.g. stop, IVOST, continue IV with reason). • Observe indicated duration & stop if an alternative non-infectious diagnosis is made. • Avoid prolonged (>4 days) gentamicin courses.

NHS Greater Glasgow and Clyde recommendations for antibiotic surgical prophylaxis in Plastic surgery in Adults: Canniesburn Unit

<u>Recommendations are for single dose, IV prophylaxis</u> ≤ 60mins prior to skin incision/ intervention, unless otherwise stated.

- Post-op antibiotics should only be given to treat active/ongoing infection unless specifically recommended against the surgical procedure.
- Guidance is for empirical prophylaxis- prescribers should refer to previous sensitivities and discuss antibiotic choice with microbiology if resistant cultures from previous samples
- For prophylactic gentamicin dosing please see Appendix 1^{Δ}
- Because of the scope of plastic surgery, this list is not comprehensive but offers a guideline for prescribing in similar types of operation.

- <u>In patients with weight >100kg</u>, add 1g IV amoxicillin to 1.2g IV co-amoxiclav
- See Principles of Surgical Prophylaxis guideline for further information on dosing in high bodyweight, re-dosing in prolonged operations and in
- significant blood loss.

- MRSA: <u>decolonise prior to procedure</u> as per NHS GGC infection control guidelines and discuss with microbiology regarding antibiotic choice.
- If a patient has been identified as a CPE (Carbapenemase Producing Enterobacteriaceae) carrier, contact microbiology for advice.

Note: teicoplanin and gentamicin are incompatible when mixed directly- always flush between administration (with sodium chloride 0.9% or glucose 5%).

<table>
<tr><th>Procedure</th><th>Recommended Antibiotic</th><th>Penicillin Allergy</th></tr>
<tr><td>• Superficial elective surgery to any non-contaminated site
• Surgery for minor clean trauma wounds</td><td>Not recommended</td><td>Not recommended</td></tr>
<tr><td>Excision of ulcerated lesion
(squamous cell/basal cell carcinoma)</td><td colspan="2">If positive swab results from Clinic/Pre-assessment or concerns of infection discuss with microbiology regarding antibiotic choice</td></tr>
<tr><td colspan="3">Breast Surgery
For full guidance, see: <u>https://rightdecisions.scot.nhs.uk/gqc-clinical-guideline-platform/adult-infection-management/secondary-care-prophylaxis/antibiotic-prophylaxis-in-breast-surgery-1073/</u>
Note: There is no evidence to support continued prophylaxis after wound closure and whilst surgical drains are in place. Post op antibiotics should only be given to treat active/ongoing infection.</td></tr>
<tr><td>Procedure:
• Re excision of margins
• Nipple / duct surgery
• Targeted axillary dissection
• Axillary node clearance
• Re-do axillary operation</td><td>IV Flucloxacillin 1g</td><td>IV Teicoplanin 400mg</td></tr>
<tr><td>• Partial breast reconstruction
• Implant based reconstruction
• Autologous whole breast reconstruction.
• Therapeutic mammoplasty
• Breast reduction
• Previous Abscess</td><td>IV Co-amoxiclav 1.2 g</td><td>IV Teicoplanin 400 mg
And IV Gentamicin$^{\Delta}$
And IV Metronidazole 500mg</td></tr>
<tr><td>• Excision of benign lump
• Simple Wide Local Excision
• Wire / magseed localised wide local excision
• Simple mastectomy
• Stand-alone sentinel lymph node biopsy</td><td>Antibiotics not routinely recommended.
Meta-analysis does not support routine prophylaxis.
Consider in patients with obesity, diabetes, smoker or post chemotherapy or other risk factors for surgical site infection.

If prophylaxis indicated:
IV Flucloxacillin 1g</td><td>If prophylaxis indicated:
IV Teicoplanin 400mg</td></tr>
</table>

Procedure	Recommended Antibiotic	Penicillin Allergy
Open fractures (lower/upper limb)		
1. <u>At presentation</u> Antibiotics ideally within 1 hour of injury. Continue antibiotics for 24 hours post initial debridement (excision) *If > 48 hours between presentation in hospital and skeletal stabilisation with definitive tissue closure, continue antibiotic until skeletal stabilisation with definitive tissue closure.*	IV Co-amoxiclav 1.2 g 8 hourly **If high risk of MRSA** add IV Teicoplanin 800mg- Single intra-operative dose, followed by IV vancomycin on the ward[#].	IV Clindamycin 600 mg 6 hourly **If high risk of MRSA** add IV Teicoplanin 800mg- Single intra-operative dose, followed by IV vancomycin on the ward[#]. **If Gustilo grade III fracture** add IV gentamicin[Δ] *If the patient is already prescribed gentamicin for treatment of an infection prior to surgery, contact antimicrobial pharmacist*
2. <u>At surgery for skeletal stabilisation and definitive tissue closure</u>	**If no teicoplanin in the last 12 hours:** IV Teicoplanin 800mg Plus IV Gentamicin[Δ] **If Teicoplanin in the last 12 hours:** IV Co-amoxiclav 1.2 g	**If no teicoplanin in the last 12 hours:** IV Teicoplanin 800mg Plus IV Gentamicin[Δ] **If Teicoplanin in the last 12 hours:** IV Clindamycin 600 mg
Single dose only – do not continue post-surgery unless concerns about a deep seated infection, in which case: continue gentamicin, add vancomycin[#] and metronidazole and discuss with microbiology.	**If concerns about a deep seated infection**, check gentamicin level 6-14 hours post prophylactic dose and start treatment with IV Gentamicin for 72 hours (– dosing info here) - prescribe on GGC Gentamicin Prescription, Administration and Monitoring form) + IV Vancomycin[#] (see dosing info here) + IV Metronidazole 500mg 8-hourly	**If concerns about a deep seated infection**, check gentamicin level 6-14 hours post prophylactic dose and start treatment with IV Gentamicin for 72 hours (– dosing info here) - prescribe on GGC Gentamicin Prescription, Administration and Monitoring form) + IV Vancomycin[#] (see dosing info here) + IV Metronidazole 500mg 8-hourly

	#Vancomycin loading dose should be given 6-12 hours after intra-operative teicoplanin, use the GGC vancomycin dose calculator and prescribe vancomycin on GGC prescription chart	
Procedure	**Recommended Antibiotic**	**Penicillin Allergy**
Hand Surgery Elective • Surgery without implant (clean)	Not recommended	Not recommended
• Surgery involving insertion of implant/ percutaneous K-wires	IV Flucloxacillin 2 g	IV Teicoplanin 400mg
Hand Surgery Trauma • Clean	Not recommended	Not recommended
• Requiring wires/fixation (closed fractures/ligament injuries)	IV Flucloxacillin 2 g	IV Teicoplanin 400mg
• Contaminated/dirty/open fractures Antibiotics within 3 hrs of injury. Continue antibiotics until first debridement. Following debridement continue until soft tissue closure up to maximum duration of 72 hours. If colonized with MRSA or considered high risk of MRSA, discuss with microbiology regarding antibiotic choice	IV Co-amoxiclav 1.2 g 8 hourly	IV Clindamycin 600 mg 6 hourly if grossly contaminated add IV Gentamicin (dose as per **treatment** guidelines – dosing info here)
Contaminated/dirty lacerations Antibiotics within 3 hrs of injury. Continue antibiotics until first debridement. Following debridement continue for max duration 72 hrs (or stop when soft tissue closure, whichever is sooner).	IV Co-amoxiclav 1.2 g 8 hourly	IV Clindamycin 600 mg 6 hourly if grossly contaminated add IV Gentamicin (dose as per **treatment** guidelines – dosing info here)

Procedure	Recommended Antibiotic	Penicillin Allergy
Abdominoplasty	IV Co-amoxiclav 1.2 g	IV Teicoplanin 400mg Plus IV Gentamicin$^{\Delta}$
Surgery in the femoral triangle Groin dissection Sentinel node biopsy Hidradenitis (groin) (If positive swab results from Clinic/Pre assessment discuss with microbiology regarding antibiotic choice)	IV Co-amoxiclav 1.2g	IV Teicoplanin 400mg + IV Gentamicin$^{\Delta}$ + IV Metronidazole 500mg
Axilla dissection Sentinel node biopsy Hidradenitis (axilla) (If positive swab results from Clinic/Pre assessment discuss with microbiology regarding antibiotic choice)	IV Flucloxacillin 1g	IV Teicoplanin 400mg
Vulval surgery Gynae / perineal procedures including those with mesh placement	IV Co-amoxiclav 1.2g	IV Clindamycin 600mg + IV Gentamicin$^{\Delta}$

Procedure	Recommended Antibiotic	Penicillin Allergy
Head/Neck Surgery Head and neck surgery (clean, benign, sentinel node biopsy)	Not recommended	Not recommended
Head and neck (contaminated/clean-contaminated; clean, malignant, neck dissection)	IV Co-amoxiclav 1.2g	IV Teicoplanin 400mg + IV Metronidazole 500mg
Nasal surgery requiring an osteotomy	IV Co-amoxiclav 1.2g	IV Teicoplanin 400mg + IV Metronidazole 500mg
Facial surgery (clean)	Not recommended	Not recommended
Facial plastic surgery with implant	IV Flucloxacillin 2g	IV Teicoplanin 400mg +IV Metronidazole 500mg
Extensive facial surgery	IV Flucloxacillin 1g	IV Teicoplanin 400mg
Surgery involving nasal/oral cavities	IV Co-amoxiclav 1.2g	IV Teicoplanin 400mg + IV Metronidazole 500mg
Major malignant bone resection requiring reconstruction with flaps Excision of soft tissue sarcoma requiring reconstruction with flaps	IV Co-amoxiclav 1.2g + IV Gentamicin (prophylactic dose$^{\Delta}$) Post op IV Co-amoxiclav 1.2 g 8 hourly (for 2 doses only) then switch to oral co-amoxiclav 625 mg 8 hourly	IV Clindamycin 600 mg + IV Gentamicin$^{\Delta}$ Post op IV Clindamycin 600 mg 6 hourly (for 2 doses only) then switch to oral clindamycin 600 mg 8 hourly + oral ciprofloxacin 500 mg 12 hourly
	Post Operation Duration: up to 24 hours (The surgeon may wish to extend duration based on surgical patient risk factors. If prophylaxis is extended, please record rationale and intended duration)	

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 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)
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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)