Non- CF Bronchiectasis Antimicrobial Guidance

(also includes respiratory *Pseudomonas* treatment/investigation pathway)

CONSIDER IF PATIENT REQUIRES DISCUSSION AT COMPLEX RESPIRATORY INFECTION MDT

- This guidance covers antibacterial prescribing for acute exacerbations and prophylaxis of bronchiectasis in non cystic fibrosis patients. There is also guidance for all respiratory patients with a positive *Pseudomonas* isolate.
- See relevant guidance if treating fungal infections or non-tuberculosis infections in bronchiectasis patients
- Doses assume non pregnant adults with normal renal and hepatic function (unless otherwise stated)

ACUTE EXACERBATIONS:

- Patients with an acute exacerbation should receive an antibiotic where there is:
  - acute deterioration (usually over several days)
  - worsening localising symptoms such as cough, increased sputum volume or viscosity or purulence)
    - with or without increased wheeze, breathlessness, haemoptysis
- Refer to hospital if acutely unwell or signs of sepsis
- For each exacerbation send a sputum sample (ideally prior to starting antibiotics) for culture and sensitivity
- Antibiotic choice depends on:
  - severity of exacerbation
  - history of exacerbations/hospital admissions
  - previous sputum culture and results
- Use a narrow spectrum antimicrobial and oral route where possible
- If symptoms are improving but sample result is resistant to antibiotic prescribed there is no need to adjust treatment.
- If symptoms are not improving then adjust antimicrobial therapy based on sputum sample results.
- Seek specialist advice if bacteria are resistant to all oral antibiotic options or if patient may be suitable for OHPAT (Outpatient/Home Parenteral Antibiotic Therapy service)

ANTIMICROBIAL CHOICE/DOSING/DURATION: Usual duration 14 days (in mild exacerbations 7 days may be used)

ORGANISM	FIRST CHOICE	ALTERNATIVE	COMMENTS
Empirical treatment	AMOXICILLIN 1g TDS	DOXYCYCLINE 100mg BD	**In the absence of any previous culture and sensitivity results**
Streptococcus pneumoniae	AMOXICILLIN 1g TDS	DOXYCYCLINE 100mg BD	
Haemophilus influenzae	AMOXICILLIN 1g TDS	DOXYCYCLINE 100mg BD	Check sensitivities - Co-trimoxazole 960mg bd or Co-amoxiclav 625mg tds + amoxicillin 500mg tds may be options if amoxicillin resistant
Moraxella catarrhalis	DOXYCYCLINE 100mg BD	CO-TRIMOXAZOLE 960mg BD	Consider Co-amoxiclav 625mg tds as an alternative
Staphylococcus aureus	FLUCLOXACILLIN 1g QDS	DOXYCYCLINE 100mg BD	If MRSA use doxycycline or co-trimoxazole 960mg bd (if trimethoprim sensitive). If IV required for MRSA use IV Vancomycin as per guidance for hospital inpatients.
Pseudomonas aeruginosa ***(always 14 day course)*** ***PLEASE REFER TO FLOW CHART ON PAGE 2 FOR FURTHER ADVICE IF FIRST ISOLATE***	CIPROFLOXACIN 750mg BD Consider fluoroquinolone warnings and check for interactions	IV Options: CEFTAZIDIME 2G TDS or PIPERACILLIN/TAZOBACTAM 4.5g QDS or GENTAMICIN/TOBRAMYCIN 7mg/kg as per guidance	Ciprofloxacin is the only oral option available. If resistant patient will require IV therapy. If on IV initially and sensitive to ciprofloxacin review patient for IV oral switch every 24 hours, oral ciprofloxacin has good bioavailability. Pip/taz administration: 30min IV infusion as in-patient; IV bolus for home patients; 3 hour infusion recommended in critical illness if possible Tobramycin dosing and monitoring in non CF patients is done in exactly the same way as Gentamicin. **Alternatives on advice of ID/Micro only.**
Stenotrophomonas maltophilia	CO-TRIMOXAZOLE 1440mg BD	As per sensitivities or discuss with ID/Micro	Higher doses of 90-120mg/kg co-trimoxazole in 2-4 divided doses are used in international reference sources

Outpatient IV Therapy Options (Discuss with ID/OHPAT Teams)

- Patient will need assessed for suitability and practical arrangements for administration
  - Please email tay.id@nhs.scot and tay.immohpat@nhs.scot
  - IV options differ depending on whether patient/carer/relative can be trained to self administer
  - District Nurses/Community Hospitals/CIU – once daily administration is preferred
- MRSA – Teicoplanin 6mg/kg every 12 hours for 4 doses then once daily (dosing as per SPC)
- Pseudomonas – Ceftazidime 2g tds or Piperacillin/tazobactam 4.5g qds or aminoglycoside 24-48 hourly

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*if resistant to ciprofloxacin refer to IV options on p1 or seek advice

Sputum/BAL Pseudomonas pathway

(on Respiratory Specialist advice only)

1st sample in patient WITH bronchiectasis and NO deterioration in clinical condition

Send 2nd sample – organism may clear spontaneously

If second sample positive for Pseudomonas – offer eradication

1st sample in patient WITH bronchiectasis and deterioration in clinical condition

Oral ciprofloxacin 750mg BD for 2 weeks*

FOLLOWED BY 3 months nebulised antibiotic

Send sputum at end of treatment

If ongoing exacerbation and pseudomonas cultured treat with 2 weeks of IV as per guidance/sensitivities

1st sample in patient WITHOUT bronchiectasis and deterioration in clinical condition e.g. COPD patient

1. Repeat sample and concurrently treat with oral ciprofloxacin 750mg BD for 2 weeks*

2. Assess patient for bronchiectasis (screen on ICE)

If bronchiectasis diagnosed for 3 months nebulised antibiotic

Follow Non CF Bronchiectasis Treatment and Prophylaxis Guidance

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NHS Tayside

ANTIMICROBIAL PROPHYLAXIS to reduce frequency of exacerbations (RESPIRATORY SPECIALIST ADVICE ONLY)

Discuss with patient benefits and risks of harm from long term treatment e.g. resistance, adverse effects

Review patients 6 monthly

If 3 or more exacerbations per year and on muco-active therapy

- **NOT Colonised with *Pseudomonas***
  - Consider long term Azithromycin** – ensure baseline evaluation completed including mycobacterial cultures
- **Colonised with *Pseudomonas***
  - Consider long term Azithromycin** OR nebulised antibiotics (see below for details)

If continues to have 3 or more exacerbations/year

- Consider long term Azithromycin** AND long term nebulised antibiotic

If on long term azithromycin and long term nebulised antibiotic and continues to have 5 or more exacerbations/year

- Consider IV antibiotic course every 2-3 months (to be agreed at MDT)

If long term azithromycin or nebulised antibiotic not appropriate/tolerated – ON RESPIRATORY CONSULTANT ADVICE ONLY

- *Consider long term doxycycline 100mg daily*
- review 6 monthly (as per azithromycin guidance)
- warn patient re:
  - photosensitivity
  - avoid antacids and vitamin/mineral supplements within 2 hours before or after taking dose
  - take with a full glass of water while sitting upright/standing

**Patients requiring IV or second line oral antibiotics should continue the azithromycin prophylaxis - unless treated with ciprofloxacin, which has been associated with sudden cardiac death as a consequence of co-prescription, in which case the azithromycin must be withheld

NEBULISED ANTIBIOTICS

NOTE: *Pseudomonas* is not routinely tested against colistimethate but if gentamicin sensitive consider isolate as also colistimethate sensitive

- **First line:** colistimethate 2 MU BD first line
  - prescribe as Colomycin® brand
  - Reconstitute each 2MU with 5ml 0.9% sodium chloride prior to nebulisation
- **Second line:** gentamicin 80mg BD
  - *may be used first line in non pseudomonas patients with recurrent gram negative cultures and frequent exacerbations – RESPIRATORY CONSULTANT ADVICE ONLY*
  - avoid brands containing ethanol
  - dilute with further 2ml 0.9% sodium chloride prior to nebulisation
- Can cause bronchospasm and dysphonia
- If patient experiences bronchospasm, treat with nebulised salbutamol 5mg and on subsequent doses give nebulised salbutamol prior to antibiotic nebuliser
- Test dose for outpatients and inpatients must be given in NW or PRI CIU (unless patient is in current inpatient in acute respiratory ward)
- Patient requires training to administer at home (add link to pathway and PILs)
- Secondary care will supply initial 2 months of medicine, further prescribing and supplies from primary care
- Further supplies of sundries detailed on nebuliser pathway (add link)

If patient is on IV gentamicin/tobramycin for exacerbation of bronchiectasis – withhold nebulised antibiotics until IV course complete

NON ANTIMICROBIAL INTERVENTIONS

- Physiotherapy/airway clearance techniques
- Pulmonary Rehab
- Vaccination
  - ensure flu vaccine offered annually
  - offer pneumococcal vaccine (PPV23) - antibody titres and revaccination as advised by respiratory specialist
- Hypertonic saline (NHST guidance currently under development)

References:
NICE Guidance 2018
BTS Guidance 2018

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