Scottish Antimicrobial Prescribing Group

Healthcare Improvement Scotland

NHS SCOTLAND

NATIONAL CONCENSUS ON MANAGING SHORTAGE OF PIPERACILLIN/TAZOBACTAM

SITUATION

There is currently a worldwide shortage of piperacillin/tazobactam due to a manufacturing issue and stocks in Scottish hospitals are likely to run out by the end of May. National Procurement has advised that there will be ongoing constraints on stock between May and September 2017.

BACKGROUND

SAPG quality improvement work in 2015 demonstrated variation across boards in permitted indications for piperacillin/tazobactam and laboratory sensitivity reporting. **In some boards this may therefore present an opportunity to improve control on piperacillin/tazobactam use to preserve its activity.**
Initial communications about a potential shortage were shared several months ago. Therefore some board Antimicrobial Management Teams (AMTs) have already restricted piperacillin/tazobactam use to specific conditions and have agreed alternative antibiotic regimens to manage infections where piperacillin/tazobactam may have previously been used. A plan for managing the shortage in NHS Greater Glasgow and Clyde was circulated to boards in mid-April as a template to inform board plans where action had not already been taken.
It was agreed at the SAPG meeting on 20th April 2017 that it was of critical importance that AMTs make every effort to ensure the shortage of piperacillin/tazobactam does not undermine patient safety or the ongoing quality improvement work to limit inappropriate carbapenem prescribing. **Consequently it was agreed that it would be helpful to agree and communicate a national consensus on alternatives to piperacillin/tazobactam to support AMTs in managing its predicted unavailability. The following is applicable to ADULT prescribing but principles also apply to PAEDIATRIC practice. Specific guidance for paediatric practice should be undertaken locally.**

ASSESSMENT

Indications for use of piperacillin/tazobactam

While stock of piperacillin/tazobactam remains available its use should be restricted as detailed below:

- **Empirical use** - piperacillin/tazobactam should be reserved for empirical treatment of neutropenic sepsis. Rapid de-escalation based on clinical response and microbiological results should be considered when appropriate.

- **Targeted use** – piperacillin/tazobactam may also be used on the advice of an Infection Specialist (ID or Microbiologist) for the following conditions:
  - Severe Pneumonia in the immunocompromised
  - Severe lower respiratory infections in patients with bronchiectasis or cystic fibrosis (but consider role of Ceftazidime as an alternative in local guidance)

Alternatives to empirical piperacillin/tazobactam

If stock of piperacillin/tazobactam is not available, suitable alternatives for infections requiring IV therapy (where rationalisation based on microbiology is not possible) are shown in the table. Gentamicin (usually in combination) in the empiric phase (first 72-96 hours) of therapy remains central to the SAPG advice:

Indication	Alternative IV antibiotic regimens
Neutropenic sepsis NEWS ≤ 6	**Ceftazidime & Gentamicin* (preferred)** **Or** **Vancomycin/Teicoplanin & Gentamicin***
Neutropenic sepsis NEWS > 6 OR stem cell transplant / solid organ transplant recipient or are they receiving chemotherapy for acute leukaemia	**Ceftazidime & Gentamicin* (preferred)** **Or** **Vancomycin & Gentamicin* & Ciprofloxacin/Ceftazidime** **Or** **Aztreonam (if available) & Vancomycin & Gentamicin*** If previous confirmed MDRGN infection or stem cell transplant / solid organ transplant recipient or receiving chemotherapy for acute leukaemia **AND Septic Shock**: **Meropenem +/- Amikacin**
Sepsis unknown source	**Amoxicillin/Benzyl Penicillin & Gentamicin*** *+ Flucloxacillin if S.aureus risk* *+ Metronidazole if anaerobic risk*
Intra-abdominal sepsis	**Amoxicillin & Gentamicin & Metronidazole** *If >72-96h IV required switch to Co-amoxiclav monotherapy or Co-trimoxazole & Metronidazole or replace Gentamicin with Temocillin*****
Urinary sepsis	**Gentamicin +/- Amoxicillin** *>72-96h IV required switch Gentamicin to Temocillin*** **Or** **Co-trimoxazole** **Or** **Ciprofloxacin**
Severe Hospital acquired pneumonia	**Amoxicillin/ Co-amoxiclav & Gentamicin*** **Or** **Amoxicillin + Temocillin**** **Or** **Amoxicillin + Ceftazidime (if Pseudomonal cover required)** **Or** **Levofloxacin** *Consider additional atypical cover if Levofloxacin not used*
Aspiration pneumonia	**Amoxicillin/ Benzyl Penicillin + Metronidazole**

**Gentamicin – follow local guidance on duration, monitoring and switch options*
***Temocillin is a **penicillin** antibiotic. It only covers gram-negative bacteria (including ESBLs but not pseudomonas or anaerobes). The usual dose (eGFR ≥30ml/min) is 2g 12 hourly. Refer to Renal handbook or SPC for dosing in renal impairment*

Need for IV therapy should be reviewed daily with IVOST if clinical improvement and assuming no microbiology indicating continuation of IV therapy (e.g. *S. aureus* bacteraemia). In absence of positive microbiology oral Co-amoxiclav is a suitable agent for continuation therapy in most of the above conditions unless clinical indicators of MDRGN infection. Oral ciprofloxacin may be used where Pseudomonal cover is required.

RECOMMENDATION

Antimicrobial Management Teams should:

- **Ensure that local plans for alternatives to piperacillin-tazobactam are developed in line with national consensus guidance and in collaboration with microbiology colleagues**

- **Ensure revised local antimicrobial guidance limiting piperacillin-tazobactam to neutropenic sepsis is available in all wards and departments**

- **Make efforts to ensure that current piperacillin-tazobactam shortages do not result in increase in inappropriate prescribing of carbapenems and consider enhanced surveillance of piperacillin-tazobactam and meropenem use**

- **Communicate local plans to all clinical teams (medical, nursing and pharmacy)**

SAPG/ May 2017