GUIDANCE ON INITIAL ANTIBIOTIC MANAGEMENT OF NEUTROPENIC SEPSIS/FEBRILE NEUTROPENIA IN ADULT CANCER PATIENTS (including HAEMATO-ONCOLOGY)

This guidance has been developed for local adaptation to reflect local resistance rates. In addition previous microbiology results should be reviewed for resistance on an individual patient basis.

FEVER: Pyrexia OR Hypothermia (temperature > 38°C OR < 36°C)

SEPSIS: EVIDENCE OF INFECTION + ORGAN DYSFUNCTION i.e. ≥ 2 of hypotension, confusion or tachypnoea (Resp Rate ≥22/minute)

SEPTIC SHOCK: Sepsis induced hypotension requiring inotropic support or hypotension that is unresponsive (within 1hr) to adequate fluid resuscitation i.e. systolic BP <90mmHg or a reduction of >40mmHg from baseline

NEUTROPENIC SEPSIS OR FEBRILE NEUTROPENIA
Neutrophil count < 0.5, or < 1 if recent chemotherapy (usually within 10 days but can persist for up to 21 days) PLUS FEVER/HYPOTHERMIA or SEPSIS/SEPTIC SHOCK

OTHER PATIENT GROUPS INCLUDED:
Cancer patients who are clinically unwell with undifferentiated infection with normal Neutrophil count but known to be immunocompromised e.g. recent stem cell transplant, high dose corticosteroid therapy

In line with current standards for management of sepsis all patients with suspected neutropenic sepsis should be assessed within 15 minutes of presentation to hospital and resuscitation should be commenced following the 'Sepsis 6' care bundle. Sepsis severity should be assessed using an National Early Warning Score (NEWS) and patients assigned as STANDARD RISK or HIGH RISK based on the following criteria:

STANDARD RISK PATIENTS: NEUTROPENIC SEPSIS OR FEBRILE NEUTROPENIA plus NEWS ≤ 6
HIGH RISK PATIENTS: SEPTIC SHOCK or NEWS ≥ 7 plus ALL PATIENTS WITH ACUTE LEUKAEMIA OR ALLOGENEIC TRANSPLANT

STANDARD RISK PATIENTS
NEWS SCORE ≤6

PENICILLIN / beta-lactam ALLERGIC
(Confirm type and severity of previous reaction e.g. rash, anaphylaxis)

NO ↓

Start IV piperacillin/ tazobactam 4.5g every 6 hours
Note: No routine IV gentamicin

YES ↓

Start IV vancomycin or **teicoplanin** (follow local guidelines)
Plus either IV gentamicin or IV ciprofloxacin 400mg every 8 hours or IV aztreonam 2g every 6 hours (local epidemiology dictates choice - follow local guidelines)

- Note **quinolone** not recommended if used as prophylaxis – use alternative. Seek advice if required.
- Alternative regime if non-severe penicillin allergy: IV **ceftazidime** 2g every 8 hours (monotherapy)
- Consider **meropenem** if previous or suspected ESBL

N.B. ALWAYS TAKE BLOOD CULTURES (BEFORE GIVING ANTIBIOTICS) AND OTHER CULTURES AS APPROPRIATE

ADMINISTER FIRST ANTIBIOTIC DOSE WITHIN ONE HOUR + COVER SPECIFIC INFECTION RISKS*

HIGH RISK PATIENTS
SEPTIC SHOCK or NEWS SCORE ≥7
OR Acute Leukaemia or Allogeneic transplant

PENICILLIN / beta-lactam ALLERGIC
(Confirm type and severity of previous reaction e.g. rash, anaphylaxis)

NO ↓

Start IV piperacillin/tazobactam 4.5g every 6 hours
Plus either IV gentamicin or amikacin (local epidemiology dictates choice - follow local guidelines)

- Consider **addition of IV vancomycin** or **teicoplanin**
- Consider **meropenem** in place of piperacillin-tazobactam if previous or suspected ESBL

YES ↓

Start IV vancomycin or **teicoplanin Plus IV gentamicin** or **amikacin** (local epidemiology dictates choice - follow local guidelines)
Plus either IV ciprofloxacin 400mg every 8 hours or IV aztreonam 2g every 6 hours

- Note **quinolone** not recommended if used as prophylaxis – use alternative. Seek advice if required
- Alternative regime if non-severe penicillin allergy: IV **ceftazidime** 2g every 8 hours plus IV **gentamicin**
- Consider **meropenem** if previous or suspected ESBL

In Acute Leukaemia or Allogeneic stem cell transplant patients with sepsis requiring inotropic support or septic shock consider using **IV meropenem 1 – 2 g every eight hours +/- an aminoglycoside** (follow local guidelines)

REVIEW IV THERAPY DAILY - CONSIDER IVOST (as per local guidelines) AND STOP IF INFECTION EXCLUDED - MAXIMUM GENTAMICIN DURATION WITHOUT REVIEW 3 DAYS

***Antimicrobial cover for specific additional infection risks:**

1. **IV vancomycin** or **teicoplanin** (following local guidelines) if recent infection with MRSA, MRSA colonised (current or previous), suspected central line infection or signs of skin/soft tissue infection.
2. **IV clarithromycin** 500mg 12 hourly if Community Acquired Pneumonia suspected and atypical cover required (check drug interactions)

Cautions

1. Suggested antibiotic dosage is based on normal renal function
2. If using gentamicin / vancomycin combination - potential for additive adverse renal effects. Consider teicoplanin in place of vancomycin. Monitor renal function closely
3. Seek early appropriate senior specialist advice and refer patient to specialist haemato-oncology/ transplant unit
4. Seek senior specialist advice before using gentamicin in myeloma patients due to the risk of renal toxicity

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Initial version of guidance developed by the Scottish Antimicrobial Prescribing Group in collaboration with the regional cancer networks and the Scottish Microbiology and Virology Network.

Healthcare Improvement Scotland | SAPG