

What is antimicrobial stewardship?

Antimicrobial stewardship promotes the use of the right antibiotic, at the right dose, route and duration, for the right infection at the right time in order to improve patient care whilst reducing antibiotic resistance. In order to do this healthcare providers should develop programs of antimicrobial stewardship in line with the following 7 key areas:

1. The Antimicrobial Stewardship Team

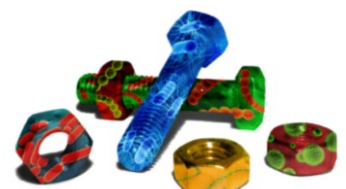
- 1.1. The Clinical Commissioning Groups (CCG) are responsible for ensuring that the appropriate Antimicrobial Stewardship Team is in place in each healthcare setting
- 1.2. Every CCG must have an antimicrobial stewardship team comprising of:
 - Antimicrobial Pharmacist - Band 7 or above Half-time or equivalent
 - Consultant Microbiologist – 1 programmed activity (4 hours) per week
 - Infection Control Nurse – Band 7 or above 4 hours per week
 - Data Analyst – Band 4 or above 4 hours per week
- 1.3. Every Acute Trust must have an antimicrobial stewardship team comprising of:
 - Antimicrobial Pharmacist - Band 7 or above Full-time or equivalent
 - Consultant Microbiologist – 2 programmed activities (8 hours) per week
 - Infection Control Nurse – Band 7 or above 8 hours per week
 - Data Analyst – Band 4 or above 8 hours per week
- 1.4. Every Primary Care GP Practice or specialist community unit (e.g. hospice or rehabilitation unit) should have a designated antimicrobial lead clinician 4 hours per week

2. Antimicrobial Stewardship Groups (ASG)

- 2.1. CCGs are responsible for establishing a community ASG to review the output from the Acute Trusts ASG and which is also specifically responsible for:
 - Developing an antimicrobial stewardship program appropriate for the local patient population and the healthcare services delivered locally
 - Monitoring and reacting to changes in national and local epidemiology and antimicrobial resistance
 - Overseeing the review and development of empirical antimicrobial guidelines and deciding on new formulary requests for antimicrobials
 - Reviewing and conducting Root Cause Analysis of antimicrobial related patient safety incidents
 - Monitoring antimicrobial prescribing by Clinician and feeding back performance on an individual basis to inform Consultant revalidation or Trainee Progression
 - The minimum membership of the ASG should include:
 - Antimicrobial Stewardship Team
 - Designated Primary Care or Community Care Leads
 - CCG Directors or designated representatives
 - Secretarial support
 - The ASG should report and be accountable to the Clinical Governance Committee of the CCG
- 2.2. Acute Trusts are responsible for establishing an ASG which is specifically responsible for:
 - Developing an antimicrobial stewardship program appropriate for the local patient population and the healthcare services delivered locally
 - Monitoring and reacting to changes in national and local epidemiology and antimicrobial resistance
 - Overseeing the review and development of empirical antimicrobial guidelines and deciding on new formulary requests for antimicrobials

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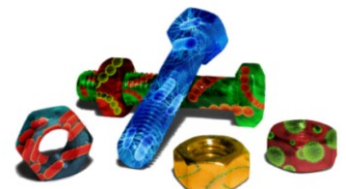
- Reviewing and conducting Root Cause Analysis of antimicrobial related patient safety incidents
 - Monitoring antimicrobial prescribing by Clinician and feeding back performance on an individual basis to inform Consultant revalidation or Trainee Progression
 - The minimum membership of the ASG should include:
 - Antimicrobial Stewardship Team
 - Designated Lead Consultants as Antimicrobial Champions for the Trusts Clinical Directorates e.g. Surgery, Medicine, Women's and Children's Health (representing the views and needs of the clinical services)
 - Secretarial support
 - The ASG should report and be accountable to the Drugs and Therapeutics Committee and the Clinical Governance Committee of the Trust
- 2.3. CCGs are responsible for the establishing of local networks which allow for a minimum of yearly sharing of best practice from all local ASGs

3. Education

- 3.1. All members of the ASG should have personal development plans that reflect their roles and which support the antimicrobial stewardship agendas of the ASGs they are members of
- 3.2. Medical Schools, CCGs, Acute Trusts and Primary Care GP Practices and Specialist Community Units are responsible for ensuring the appropriate delivery of training in Antimicrobial Stewardship
- 3.3. Educational programs should be developed to teach medical and allied health professionals about the following areas of antimicrobial stewardship:
- Basic concepts
 - What is infection? infection vs. colonisation
 - Source of Infection: endogenous vs. exogenous
 - What is normal flora and why is it important?
 - Circumstances affecting normal flora
 - How does antibiotic prescribing influences normal flora and the clinical environment?
 - Microbiology
 - How to take microbiology specimens
 - Why bother completing request forms?
 - What is relevant clinical information for a request form?
 - How to interpret microbiology results
 - Which bacteria cause what infection?
 - Infection Control
 - What is infection control?
 - Clostridium difficile associated disease
 - Multiple antibiotic resistant Gram-negative bacteria
 - Meticillin resistant Staphylococcus aureus
 - Glycopeptide resistant Enterococcus
 - Antimicrobials
 - How to choose an antibiotic
 - Prophylaxis vs. treatment
 - How to prescribe an antibiotic
 - The daily review of antibiotic therapy
 - Reasons for failing antibiotic therapy
 - Intravenous to oral switching of antibiotics
 - Therapeutic drug monitoring
 - Antibiotics in renal failure

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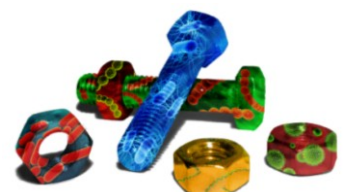
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- What is antibiotic resistance?
- How does antibiotic resistance spread?
- Antimicrobial spectrum of activity
- Antimicrobial tissue penetration
- Antimicrobial dosing in obesity

4. Empirical Antimicrobial Guidelines

- 4.1. Every healthcare facility should have evidence based empirical antimicrobial guidelines covering the common or serious infections that might present under their care, which are available at the point of prescribing e.g. there is no point having electronic guidelines if there are no computers available to allow them to be accessed!
- 4.2. Empirical guidelines should be expressly used for the initial management of infections where the causative microorganism is UNKNOWN and specific reference should be made to NARROWING DOWN and targeting treatment once laboratory results indicate the causative microorganism (see section Pathology Laboratories)
- 4.3. Where clinically appropriate all empirical guidelines should support and encourage no prescribing or delayed prescribing of antimicrobials
- 4.4. All empirical guidelines should advise and encourage the taking of appropriate clinical samples before administering antimicrobials, if clinically safe to do so, e.g. urine samples in urinary tract infections, blood cultures in sepsis. This is crucial to inform later prescribing decisions
- 4.5. All empirical guidelines should indicate who wrote them, the date they were written and when are they due for review, and they should be reviewed at least yearly. Review should take account of critical incident analysis, local epidemiology, changes to national policy and whether the guideline remains fit for purpose. Changes should be made according to evidence; if there is no evidence to suggest a change is required they can remain unaltered with a new review date
- 4.6. All empirical guidelines should include:
 - The clinical indication for the prescription
 - A 1st line choice for treatment
 - A 2nd line choice where the 1st line choice is inappropriate e.g. drug allergy
 - A suitable choice for oral switching
 - A standard duration of therapy for the condition
 - Aide memoires to help with severity assessment e.g. CURB65 for Community acquired pneumonia
- 4.7. Recommended empirical guidelines for Acute Trusts:
 - Emergencies
 - Sepsis
 - Neutropaenic Sepsis
 - Meningitis
 - Meningococcal sepsis
 - Encephalitis
 - Epiglottitis
 - Epidural abscess
 - Necrotising fasciitis
 - Toxic Shock Syndrome
 - Respiratory infections
 - Pneumonia – community acquired, hospital-acquired, aspiration, ventilator-associated
 - Exacerbation of COPD



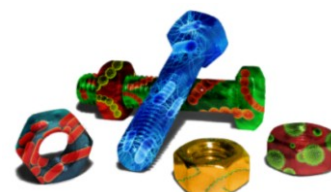
- Head and neck infections
 - Otitis media and externa
 - Orbital cellulitis
 - Tonsillitis
 - Sinusitis – acute and chronic
 - Urogenital infections
 - Urinary tract infections – simple, complicated, catheter-associated, pyelonephritis, prostatitis, pelvic inflammatory disease
 - Skin, soft tissue, bone and joint infections
 - Cellulitis
 - Bites
 - Intravenous device associated infection
 - Osteomyelitis
 - Septic arthritis
 - Prosthetic joint infection
 - Gastrointestinal
 - Clostridium difficile associated diarrhoea
 - Peritonitis
 - Diverticulitis
 - Cholecystitis and ascending cholangitis
 - Prophylaxis
 - Related to local surgical and medical specialties
- 4.8. Recommended empirical guidelines for Primary Care Practices and Specialist Community Units
- Emergencies
 - Meningococcal sepsis
 - Respiratory infections
 - Pneumonia – community acquired
 - Exacerbation of COPD
 - Head and neck infections
 - Otitis media and externa
 - Tonsillitis
 - Sinusitis – acute and chronic
 - Urogenital infections
 - Urinary tract infections – simple, complicated, catheter-associated, pyelonephritis, prostatitis, pelvic inflammatory disease
 - Skin, soft tissue, bone and joint infections
 - Cellulitis
 - Bites
 - Gastrointestinal
 - Clostridium difficile associated diarrhoea
 - Cholecystitis

5. The Antimicrobial Ward Round (AWR)

- 5.1. The Acute Trusts are responsible for ensuring that an antimicrobial ward round takes place at least twice per week to review any patient where a ward pharmacist has concerns about antimicrobial prescribing
- 5.2. Membership of the AWR should include the following:
- Antimicrobial Pharmacist
 - Consultant Microbiologist

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- Infection Control Nurse
- 5.3. Minimum requirements for referral to the AWR should include:
- Patient name
 - Hospital or NHS number
 - Date of Birth
 - Location and Specialty of Patient
 - Antimicrobial prescribed and indication
 - Reason for referral e.g. incorrect choice of antimicrobial for indication, no stop or review date, inappropriate choice of antimicrobial for specific patient, prolonged course of treatment
- 5.4. Outcomes of the AWR should be recorded in the patients notes, the outcome should be fed back to the referring Pharmacist and formally to the patient's ward Consultant. The data should be analysed to identify trends in poor prescribing that may inform future antimicrobial stewardship strategies
- 5.5. The AWR should be audited to ensure that referrals are appropriate and that correct action is being taken as a result of the referrals

6. Audit

- 6.1. CCGs should be responsible for ensuring that all Acute Trusts and Primary Care Practices or Community Care Units conduct quarterly audits into compliance with antimicrobial stewardship
- 6.2. Quarterly point prevalence audits of compliance with empirical guidelines should be conducted using the bundle approach (where ALL items need to be present to comply). The standard should be set high; >95% of antibiotic prescriptions should include:
- Indication for prescription or deviation from guideline
 - Stop or review date within 7 days
 - Is the choice and dose of antimicrobial appropriate for the documented indication in the patient?

7. Pathology Services

- 7.1. CCGs are responsible for ensuring that Pathology Service Providers establish Clinical Infection Diagnostic Groups (CIDG) who are responsible for ensuring that pathology services provide the most relevant, cost effective and up-to-date infection diagnostic services to the populations they serve in relation to antimicrobial stewardship objectives
- Areas that should specifically be covered include laboratory standard operating procedures to ensure they remain relevant, result reporting procedures to ensure they meet the needs of the empirical antimicrobial guidelines, review of new or future diagnostics in relation to service development in order to better meet the needs of users. This should include the implementation of services or testing which benefits the future use and preservation of antibiotics even if there is an additional financial cost in the short term
- 7.2. CIDGs should meet quarterly and include the following minimum membership:
- Microbiology Laboratory Manager
 - Microbiology Specialty Lead Consultant
 - Antimicrobial Pharmacist (expressing needs of the ASG)
 - Microbiology Consultant (expressing needs of the ASG)
 - Data analyst
 - Senior Biomedical Scientist Band 7 or above
 - Secretarial Support

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