Microbiology Fact Sheet

This Fact Sheet is intended as a guide only and does not equate to expert opinion. Interpretation of results should always be taken in context with the patient’s current condition and clinical review.

Sputum MC&S – interpretation of results

- Sputum microscopy, culture and susceptibility (MC&S) is used in the detection of a lower respiratory tract infection, usually pneumonia (infection in the lungs).
- A healthy respiratory tract has a mixture of different bacteria which are harmless and do not require treatment, this is called colonisation.
- It is important to consider carefully the likely significance of culture results from sputum to avoid over-treating patients with antibiotics; there is no need to treat everything that is cultured.

Microscopy

- If sputum is described as purulent or mucopurulent, or there is a high white cell, polymorph or pus cell count ++ or +++, this suggests that a bacterial infection is more likely to be present.
- If squamous epithelial cells are present ++ or +++ this is likely to be saliva rather than sputum and is not a good sample.
- If ++ or +++ Gram negative or Gram positive bacteria are seen on microscopy, there is more likely to be a true infection.

Culture

- If there is a colony count of >10^6/L, ++ or +++, this is more likely to be a true infection.
- “Mixed upper respiratory tract flora” is normal and does not usually need treatment.
- Common bacteria likely to cause pneumonias include: Streptococcus pneumoniae, Haemophilus influenza and Moraxella catarrhalis.

Susceptibility

- If the patient is taking an antibiotic to which the bacteria are reported as resistant (R) or intermediate (I), then this treatment may need to be changed to an antibiotic to which the bacteria is reported as susceptible (S).
- If there is more than one antibiotic reported as susceptible (S), the patient should be prescribed the one with the narrowest spectrum

Note:

Staphylococcus aureus: in sputum usually reflects colonisation. They do not normally need treatment if the patient is otherwise well, although may cause a pneumonia following influenza, respiratory burns or respiratory abscesses with septicaemia; these patients are often extremely unwell.

Gram-negative bacilli: (e.g. Escherichia coli, Pseudomonas aeruginosa) in sputum usually reflects colonisation and often seen in those who have taken recent antibiotics. They do not normally need treatment if the patient is otherwise well, although they may cause a lung infection, especially in people with a chronic lung disease, so careful clinical judgement is required.