Keeping Our Antibiotics Working

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Antimicrobial Resistance

- We rely on antibiotics to treat infections caused by bacteria
- The more we use antibiotics, the more likely bacteria will become resistant and will no longer be effective
- Antimicrobial resistance is a major health threat with common infections becoming harder to treat

Up to 1 in 3 patients receive inappropriate or unnecessary antibiotics

Antibiotic misuse is the biggest driver of antimicrobial resistant infections

Antimicrobial resistant infections are predicted to cause 10M global deaths by 2050 and cost £66 trillion

The Role of a Healthcare Scientist

- To conduct investigations to identify the cause of infection
- To work with the clinical team to guide treatment decisions
- To continually develop and improve diagnostic methods to provide the best possible patient care
- To educate the public and promote responsible use of antibiotics

Testing Methods

Culture

- Relies on bacterial growth
- Cannot detect viruses
- Average turnaround time - 24-72hrs

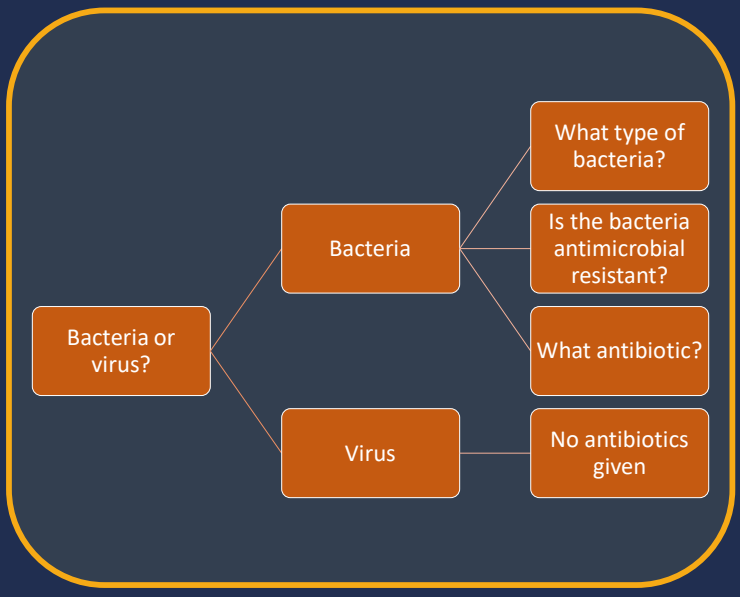
PCR

- Identification of bacteria and viruses
- Can detect microorganisms that cannot be cultured
- Offers a rapid result – 1-3hrs

Sequence

- Identifies microorganisms missed by PCR or culture
- Offers in-depth analysis, useful for infection outbreaks
- Long turnaround time – 7-10 days

Answering Key Questions



The Impact of Rapid Diagnostics

- A new rapid PCR testing platform has been introduced to test respiratory samples in NHS Lothian
  - Enables the most common causes of respiratory illness to be identified within 1 hour 15 minutes
  - Significant positive impact on patient care
    - 40% of patients received earlier optimal antimicrobial therapy based on the rapid testing result

Rapid diagnostics can identify the cause of illness quickly and enable patients to be prescribed the right antibiotic at the right dose, at the right time, for the right duration

Lowering risk of antimicrobial resistant infections

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Reference: O'Neil, J. 2014. Tackling Drug-resistant Infections Globally: final report and recommendations.