Empiric antimicrobial therapy

Empiric antimicrobial therapy is typically broad-spectrum, in that it treats both a multitude of either Gram-positive and/or Gram-negative bacteria, diverse fungi, or parasites respectively. When more information is known (as from a blood culture), treatment may be changed to a narrow-spectrum antimicrobial which more specifically targets the bacterium or fungus known to be causing disease. Empiric antimicrobial therapy is a fairly sophisticated process that includes considering data such as a person's age, immune status, comorbidities, the likelihood for a certain microbial etiology and pre-test probability for antimicrobial resistance prior to therapy, risk of bad outcomes, and to name a few.

Specimens are collected from affected body sites, preferably before antibiotics are given. For example, a person in an intensive care unit may develop hospital-acquired pneumonia. There is a chance the causal bacteria, or its sensitivity to antibiotics, may be different from community-acquired pneumonia.

Treatment is generally started empirically, on the basis of surveillance data about the local common bacterial causes. This first treatment, based on statistical information about former patients, and aimed at a large group of potentially involved microbes, is called empiric treatment.

The advantage of indicating antibiotics empirically exists where a causative pathogen is likely albeit unknown and where diagnostic tests will not be influential to treatment. In this case, there may be little if any perceived benefit of using what may be costly and inconclusive tests that will only delay treatment of the same antibiotics. The empirical use of broad-spectrum antibiotics increases, by the selection, the prevalence of bacteria resistant to several antibiotics. However, the delay and expense that would be required to perform definitive species identification in every single clinical case are not affordable, so some degree of trade-off is accepted on the principle of the benefits outweighing the risk.