Use of aminoglycosides in combination therapy

- As combination therapy with narrower spectrum beta-lactams such as ampicillin in order to save use of broader spectrum alternatives. e.g. co-amoxiclav, in an attempt to slow down the development of resistance. Mixed results were found in trials, but the more robust trials appeared to show that patient outcomes were worse with the combination approach.
- To obtain an additive effect, known as synergism, when aminoglycosides are used with beta-lactam antimicrobials. In the laboratory, beta-lactams can increase the amount of aminoglycoside that enters the bacterial cell, with a smaller amount of cell growth being required for them to kill bacteria. However, in clinical practice, this effect may only be useful for treating *Pseudomonas* bacteria often seen in those with chronic respiratory conditions. Combinations are still used, based on the synergy seen in vitro, in treatment of infective endocarditis.
- Increasing the range of bacteria covered by using combined treatment with aminoglycosides. Unfortunately, with the exception of urinary tract infections, there is not yet enough trial data to provide an answer to that question. In fact in many cases use of aminoglycosides leads to more side effects without any added benefit to the patient.