

Bacteria produce  $\beta$ -lactamase enzyme which split the  $\beta$ -lactam ring and render the antibiotic ineffective. The enzyme is under plasmid control in Gram+ves, and chromosomally controlled in many Gram-ves. The absence of some penicillin receptors (PBPs) due to chromosomal mutation. Failure of the  $\beta$ -lactam drug to activate the autolytic enzymes in the bacterial cell wall