In this context, in clinical practice, the most efficient conventional treatment for the control of chronic infections associated with pathogenic biofilms has been the use of antibiotic monotherapy in precocious, aggressive, and intensive way, that is, the administration of the antibiotic before the establishment infection for a long period (prophylaxis) (Wu et al. 2015). Antimicrobial prophylaxis in clinical practice can be defined as the use of antibiotics in patients who do not show signs or symptoms of infection, with the aim of preventing their onset. It is based on the idea that if the antibiotics can kill the bacteria and/or prevent their growth in established infections, they can also do it in the blood or in specific sites, avoiding the installation of an infectious process (Høiby et al. 2015).

In clinical practice, it is recommended to use high doses of the antibiotic vancomycin (1 $mg.mL^{-1}$), for Gram-positive bacteria, and gentamicin (2 $mg\,l^{-1}$), for Gram-negative bacteria, to prevent infections by pathogenic biofilms in catheters (Wu et al. 2015). As for orthopedic devices, there is evidence that prophylaxis with antibiotics such as gentamicin, tobramycin, and vancomycin may reduce the incidence of biofilm infections associated with the prosthesis (Johannsson et al. 2010; Marschall et al. 2013). In the case of colonization by *P. aeruginosa* at cystic fibrosis patients' lungs, intermittent antibiotic therapy is essential to prevent the establishment of a biofilm infection (Høiby et al. 2015).

In surgical procedures prophylaxis has also been widely used, for example, after heart surgery, collagen implants containing gentamicin have been used to close the sternum (sternotomy) of patients, in order to reduce the incidence of biofilm infection (Mishra et al. 2014). In the case of chronic wounds, debridement is recommended, with subsequent administration of an antibiotic, either by irrigation or instillation to prevent the formation of the pathogenic biofilm (Caputo et al. 2008).

Although the practice of prophylaxis has been progressively used, especially in high-risk patients, some points are still questionable as to the durability of its effect and especially its potential for favoring the resistance of microorganisms to the antibiotics available in the market (Lynch and Robertson 2008). In this sense, combined antibiotic therapy has been widely disseminated as an alternative to prevent or delay the onset of resistance.

20.2.2 Antibiotic Combination Therapy

In the treatment of biofilm-related infections, the combination therapy of antibiotics acquires great relevance. As the pathogenic biofilms present different structural areas and different metabolic states, the combination of some antibiotics appears as an effective alternative to fight the microbial cells of the interior of the biofilm located in the different structural layers with different metabolisms (Ciofu et al. 2017). For example, the combination of some antibiotic agents that target metabolically active strains such as ciprofloxacin,