Introduction. Biofilm represents a survival form of bacteria which is highly resistant against most antibiotics, and can persist over months or years as low-grade prosthetic joint infection (PJI). As a rule, only a combined surgical and antimicrobial management can eradicate biofilms and cure implant-associated infection. In acute infections, implant infections can be cured with early debridement and long-term antibiotic treatment acting against biofilms. Adequate diagnosis. Prosthesis with early loosening (<2 years after implantation) or persistent pain should rise the suspicion of an PJI. Preoperative diagnosis includes aspiration of the synovial fluid for culture and leukocyte count with differential. Swabs of the sinus tract (fistula) should not be performed. Intraoperative diagnosis includes multiple tissue biopsies around the prosthesis (no swabs), histopathology of the periprosthetic tissue and sonication of the removed device (if available). For slow-growing organisms, long incubation is needed (14 days) in order to culture slow-growing pathogens. Antibiotics should be discontinued at least 2 weeks prior to culture sample in order to minimize false-negative results. Novel diagnostic tests include PCR, which can also detect non-growing microorganisms and can be used for tissue specimens, joint aspirate or sonication fluid. Antimicrobial therapy. The identification of the infecting pathogen is paramount for a successful treatment. Therefore, no empiric antibiotic therapy should be administered before diagnosis is microbiologically confirmed. According to a treatment algorithm, antibiotics with biofilm activity should be given after re-implantation. However, rifampin should not be administered as long as there are open wounds or drainage. Other common mistakes are too short duration of antibiotic treatment (3 months are needed for eradication of biofilm), low antibiotic dose (high dosing is needed to achieve sufficient concentration in bone) or switch from intravenous to oral antibiotics with insufficient bioavailability or inactivity against biofilms. Surgical therapy. Immediate debridement is indicated, if there is a suspicion of acute PJI. A revision is needed for diagnostic (adequate microbiological diagnosis) and therapeutic purposes. The implant can be retained, if the symptoms of infection are lasting <3 weeks, the prosthesis is stable and the infecting pathogen is susceptible to anti-biofilm antibiotics (i.e. staphylococci susceptible to rifampin). Importantly, a loose prosthesis can not be retained and needs to be exchanged. Decision to perform the exchange in 1, 2 or more revisions depend on the causative pathogen, its susceptibility and soft/bone tissue. The drainages should be kept in place short, typically not more than 3 days. Conclusion. The outcome of most PJI is favorable, if a standardized diagnostic and treatment algorithm is used.