Antibiotic resistance in common pathogens reinforces the need to minimise surgical site infections

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Surgical site infections (SSIs) remain an important cause of postoperative morbidity and mortality and generate considerable additional healthcare and societal costs. Most SSIs are caused by skin-derived bacteria such as Staphylococcus aureus and coagulase-negative staphylococci. Antimicrobial resistance among these and other clinically important pathogens is an increasing problem. Thus, while the overall risk of SSI is influenced by numerous patient- and procedure-specific characteristics, effective antibiotic prophylaxis and skin preparation are important components of the polymodal approach to SSI prevention. Published guidelines recommend that selection of antimicrobial agents for prophylactic use should take into account the expected flora, the ability of the agent to reach the target tissue at appropriate concentrations, bacterial resistance patterns and drug pharmacokinetics. Consistent with proper antimicrobial stewardship, antibiotic prophylaxis should use an appropriate drug and optimise the dose and duration of treatment to minimise toxicity and conditions for selection of resistant bacterial strains. Because the risk of developing SSI depends in part on the extent of wound contamination with virulent bacteria, efficient preoperative patient skin preparation is essential to decrease the number of potential wound contaminants. A recent development to reduce the risk of surgical site contamination by skin flora is a cyanoacrylate-based microbial sealant that is applied before surgery and dries to immobilise skin bacteria under a breathable film. This novel mechanism of action is not compromised by, and does not promote, bacterial resistance and, with minimal potential to cause skin reactions, the microbial sealant is an innovative addition to available options for SSI prophylaxis.

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