

Healthcare-Associated Infections in General Surgery: Surveillance, Audit, and Evidence-Based Prevention Across the Perioperative Pathway

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Abstract

Healthcare-associated infections (HAIs) remain an important patient-safety problem, and surgical site infection (SSI) is a clinically relevant and measurable perioperative outcome in general surgery. Observed SSI incidence depends on the surveillance definition and the intensity of case finding; approaches restricted to the index admission may miss infections diagnosed after discharge. This structured narrative review critically synthesises current guidance and selected evidence on HAI definitions, surveillance, audit, antimicrobial resistance, and perioperative prevention, with emphasis on general surgical practice. Priority is given to interventions supported consistently by contemporary guidelines and evidence syntheses: appropriate antimicrobial prophylaxis, alcohol-containing skin antisepsis, avoidance of peri-operative hypothermia, aseptic practice, antimicrobial stewardship, and post-discharge case finding. Care bundles can reduce SSI, but their effect depends on the interventions included, adherence, and context; current evidence does not show that larger bundles are inherently more effective. A concise audit dashboard and an adaptable peri-operative prevention bundle are proposed. Digital surveillance and artificial intelligence may reduce surveillance workload, but current evidence supports their use as adjuncts requiring local validation and human case confirmation rather than as replacements for established surveillance systems.

Keywords: healthcare-associated infection, surgical site infection, surveillance, audit, perioperative prevention, anti-microbial prophylaxis, antimicrobial resistance, general surgery