

INTRA-ABDOMINAL INFECTIONS (IAI) & SKIN AND SKIN STRUCTURE INFECTIONS (SSSI)

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According to the Community and Hospital Infection Control Association, 8,500 Canadians die each year due to complications arising from infections acquired in hospital¹. Infections can occur both internally (intra-abdominal infections (IAI)) as well as externally (skin and skin structure Infections (SSSI)), and can be caused by one or more types of pathogens. Increasingly, bacterial infections are caused by resistant strains that do not respond to traditional antibiotic therapies.

INTRA-ABDOMINAL INFECTIONS (IAI)

- **Intra-abdominal infections (IAI)** are common problems that can range in severity from acute appendicitis to serious infections of the abdominal area. Severe abdominal infections can include peritonitis, which can be a bacterial-related inflammation of the mucosal membrane (peritoneum) that lines the abdominal region.²
- **Complicated intra-abdominal infections (cIAI)** include appendicitis complicated by rupture or abscess, cholecystitis, diverticulitis, intra-abdominal abscess and perforation of the intestine with fecal contamination of the peritoneum.³

- **Nosocomial, or Hospital-Acquired, Intra-Abdominal Infections (nIAI)** most commonly result from complications from elective or emergency surgery. The causative organisms are particular to the site of the operation and to the specific hospital and unit.⁴

INTRA-ABDOMINAL INFECTIONS (IAI) AND ANTIBIOTIC RESISTANCE

- Antimicrobial therapy should be started immediately after appropriate specimens are obtained for culture. This means that antimicrobial therapy is usually started before completion of laboratory-based sensitivity tests. Therefore, initial therapy is usually empiric, that is, therapy is determined by which antimicrobials are most likely to be effective against the bacteria thought to be causing the infection.⁵
- Because these infections are commonly caused by multiple species of bacteria, a broad spectrum of antimicrobial activity is required. Susceptibility patterns of the organisms involved in the IAI influence the success or failure of empiric antimicrobial therapy.^{6,7}
- Intra-abdominal infections can be difficult to treat, with mortality rates ranging from 3.5 per cent in patients with early infection following a penetrating abdominal trauma to over 60 per cent in patients with well-established infection coupled with secondary organ failure.⁸



- Complicated intra-abdominal infections consume substantial hospital resources, including imaging services, operating rooms, laboratories and antimicrobial therapies. Outcomes are heavily influenced by the rapidity of diagnosis and appropriate intervention and by the timeliness and effectiveness of antimicrobial therapy.⁹

SKIN AND SKIN STRUCTURE INFECTIONS (SSSI)

- Skin and skin structure infections (SSSI) encompass a range of bacterial-related illnesses that can manifest in a variety of symptoms. The extent of the disease can range from mild to severe.
- Common skin structure infections include post-surgical wound infections, carbuncles, and traumatic wound infections.
- The organisms causing SSSI are typically gram-positive bacterial pathogens, such as *Staphylococcus aureus* and *Streptococcus pyogenes*. However, gram-negative and anaerobic organisms are also isolated within patients afflicted by SSSI.¹⁰
- Aside from the general complications associated with skin infections, such as the swelling and discharge common with carbunculosis, other more serious symptoms can occur. For example, streptococcal infections of cutaneous and soft tissue can range from localized impetigo to invasive fasciitis with associated toxic shock that can rapidly lead to death.

SKIN AND SKIN STRUCTURE INFECTIONS (SSSI) AND ANTIBIOTIC RESISTANCE

- Skin structure infections are classified as “complicated” when surgical intervention is required and the infection involves deeper soft tissues, such as muscle layers.
- Several bacterial species can cause complicated skin infections, and many of the bacterial agents seen in these types of infections demonstrate resistance to commonly used antibiotics. For instance, over 90 per cent of *Staphylococcus aureus* isolates are resistant to penicillins and aminopenicillins, which make complicated SSSI more difficult to combat.¹¹
- Methicillin-resistant *Staphylococcus aureus*, or MRSA, has also been recognized as a major hospital-acquired pathogen that causes approximately 21 per cent of skin infections and 28 per cent of surgical wound infections.¹²
- Complicated SSSI, including surgical site infections, remain a significant cause of morbidity and mortality in the hospital setting. With the emergence of antibiotic-resistant bacteria, attention is focused once again on the need for better prevention of postoperative infection as well as effective infection control.¹³



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