

Surgical Wound Classification

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The Operative Review of Surgery. 2023; 1:59-62.

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Surgical Wound Classification

History

- Originally Developed by the National Academy of Sciences and the National Research Council Cooperative Research Study in 1964 ²
- Later Modified by the Centers for Disease Control (CDC) in 1982 ³



Class I: Clean

- “These are uninfected operative wounds in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered. In addition, clean wounds are primarily closed, and if necessary, drained with closed drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria.” ³
 - No Evidence of Infection
 - No Inflammation
 - Do Not Enter the Respiratory, Alimentary (GI), or Genitourinary (GU) Tracts
- Examples:
 - Mastectomy
 - Thyroidectomy
 - Herniorrhaphy
 - Nissen Fundoplication
 - Splenectomy
 - Vascular Procedures
 - Cardiac Procedures
- *Class ID:* Otherwise Clean with a Prosthetic Graft (Mesh, Valve, etc.) ⁴

Class II: Clean-Contaminated

- “These are operative wounds in which the respiratory, alimentary, genital, or urinary tract is entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.”³
 - **Enters the Respiratory, Alimentary (GI), or Genitourinary (GU) Tracts**
 - Under Controlled Conditions with No Unusual Contamination
 - No Evidence of Infection
- Examples:
 - Bowel Resection
 - Cholecystectomy
 - Pancreatectomy
 - Liver/Renal Transplant
 - Nephrectomy
 - Cesarean Section

Class III: Contaminated

- “These include open, fresh, accidental wounds, operations with major breaks in sterile technique or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered.”³
 - **Gross GI Spillage**
 - Major Break in Sterile Technique
 - Acute **Non-Purulent Inflammation**
- Examples:
 - Bowel Resection with Gross Spillage
 - Unsterile Instruments
 - Open Cardiac Massage
 - Gunshot Wound to the Abdomen
 - Diverticulitis
 - Appendectomy with Purulent Rupture

Class IV: Dirty

- “These include old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.”³
 - Through **Existing Clinical Infection** (Purulence)
 - Perforated Viscera
 - Old Wound with Retained Devitalized Tissue (Gangrene/Necrosis)
 - Trauma with Devitalized Tissue
- Examples:
 - Abscess Incision and Drainage
 - Wound Debridements
 - Perforated Bowel

Interpretation

Poor Reliability

- Classification Scheme Has Low Inter-Rater Reliability ^{5,6}
- Incorrect Classifications are Most Commonly Under-Classified ⁷
- Abdominal Wounds are the Most Likely to Be Incorrectly Classified as Clean Wounds ⁸
- Do Not Accurately Approximate Risk in Pediatrics ⁹

Risk of Surgical Site Infection (SSI) – Classic Teaching ¹⁰

- Class I: 1-5%
 - Most Common Source: The **Patient** Themselves
- Class II: 3-11%
- Class III: 10-17%
- Class IV: > 27%

Risk of Surgical Site Infection (SSI) – Newer NSQIP Data ¹¹

Class	Superficial SSI	Deep SSI	Organ/Space SSI
Class I	1.76%	0.54%	0.28%
Class II	3.94%	0.86%	1.87%
Class III	4.75%	1.31%	2.55%
Class IV	5.16%	2.1%	4.54%

- Newer Data Show Lower Rates in Modern Practice Than Previously Seen

Preoperative Antibiotics

- ***See Preoperative Antibiotics**

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