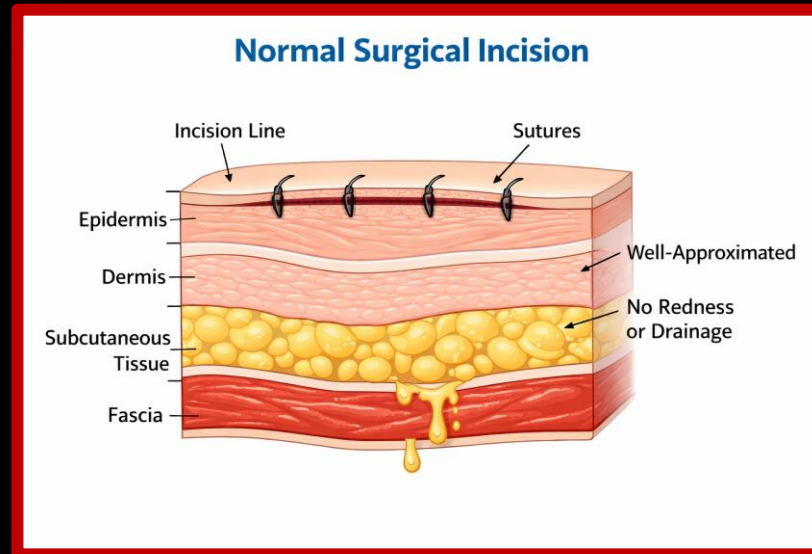


SURGICAL INCISIONAL OUTCOMES: SPEAKING THE SAME LANGUAGE



Maureen Spencer, MEd, BSN, RN, CIC, FAPIC

Independent Infection Preventionist Consultant

www.surgicalinfectionconsultants.com

Email: maureenspencer@gmail.com

DISCLOSURES

Maureen Spencer, M.Ed., BSN, RN, CIC, FAPIC is on the speaker's bureau for:

- Bravida Healthcare
- BreezyMed
- Johnson & Johnson Medtech
- Nanosonics

All the relevant financial relationships for these individuals have been mitigated



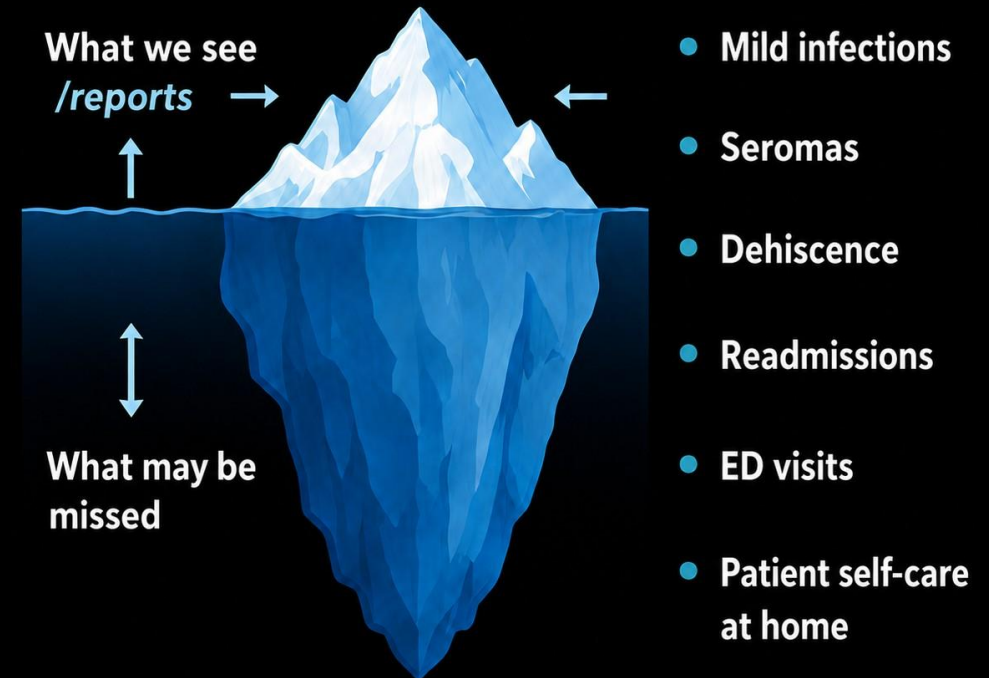
OBJECTIVES

1. Enhance the definition for early identification and standardized documentation of wound outcomes (dehiscence, infection, seroma, hematoma) in clinical assessments and Electronic Health Record notes.
 2. Improve post-discharge surveillance awareness and patient education on the signs of adverse wound outcomes (beyond the traditional SSI focus).
 3. Promote interprofessional consistency in describing incisional wound complications by having clinical teams apply the emerging DISH classification system in $\geq 75\%$ of relevant hand-offs and multidisciplinary rounds.
- 

OVERVIEW

1. Statistics on under-reported complications
 - a) Readmissions
 - b) Costs
2. Current wound definitions
 - a) CDC / NHSN definitions
 - i. Superficial
 - ii. Deep incisional
 - iii. Organ space
 - b) Limitations
 - c) Wound classification
3. Recognizing the GAP with definitions
 - a) Dehiscence
 - b) Infection
 - c) Seroma
 - d) Hematoma

UNDERREPORTING OF INCISION OUTCOMES



If it isn't reported, it can't be improved.

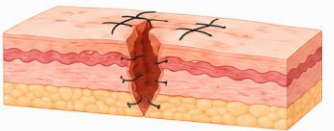
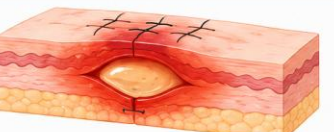
OVERVIEW

4. NEW outcomes classification system

- a) Standardized language on wound outcomes
 - iv. Dehiscence
 - v. Infection/inflammation
 - vi. Seroma
 - vii. Hematoma

5. Global adoption

- a) Inclusive definitions and scoring criteria
 - i. Severity-graded definitions
- d) Impact upon the perioperative team

SURGICAL INCISION OUTCOME CLASSIFICATION		
D		DEHISCENCE Wound separation Partial or complete separation of the incision 
I		INFECTION / INFLAMMATION Superficial, Deep, or Organ/Space - Redness, warmth, swelling, pain - Purulent drainage - May include deep tissue or organ/space infection 
S		SEROMA Fluid collection - Collection of clear serous fluid - May cause swelling or discomfort 
H		HEMATOMA Blood collection - Collection of blood under the skin - May cause swelling, bruising, or increased risk of infection 

NHSN SURGICAL SITE INFECTION DEFINITIONS

CDC Definition for Surgical Site Infections:

... “an infection occurring at the surgical site (the part of the body where surgery took place), typically within 30 days postoperatively (or up to 90 days for certain procedures involving implants/deep tissues).”¹

SSIs are classified as superficial, deep incisional, or organ/space infections.

- Used primarily by the American College of Surgeons National Surgical Quality Improvement Program, is the most widely used criterion in diagnosis of Infection.^{2,3}

1. CDC's NHSN Patient Safety Component Manual, Chapter 9: Surgical Site Infection Event. cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrent.pdf
2. Campwala, I., Unsell, K. and Gupta, S., 2019. A comparative analysis of surgical wound infection methods: predictive values of the CDC, ASEPSIS, and Southampton scoring systems in evaluating breast reconstruction surgical site infections. *Plastic Surgery*, 27(2), pp.93-99.
3. Centers for Disease Control and Prevention; Surgical Site Infection Event (SSI). January 2024. Available from: [Surgical Site Infection \(cdc.gov\)](https://www.cdc.gov/nhsn).

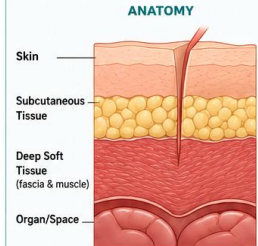
NHSN SSI DEFINITIONS

National Healthcare Safety Network (NHSN) • CDC
Standardized Surveillance for Surgical Site Infections

**SSI Timeframe**
Occurs within 30 days
after the operative
procedure

SUPERFICIAL INCISIONAL SSI

Involves only skin and subcutaneous tissue of the incision



ANATOMY

Skin

Subcutaneous Tissue

Deep Soft Tissue (fascia & muscle)

Organ/Space

REQUIRES AT LEAST ONE OF THE FOLLOWING

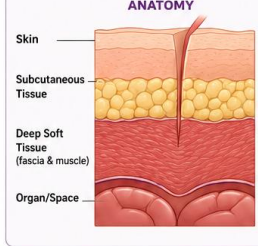
-  Purulent drainage from the superficial incision.
-  Organisms isolated from an aseptically-obtained culture of fluid or tissue from the superficial incision.
-  At least one sign or symptom of infection: pain/tenderness, localized swelling, redness, or heat at the incision.
-  Superficial incision deliberately opened by a surgeon, unless culture negative.

EXAMPLES

- Redness and tenderness at incision site
- Small amount of purulent drainage
- Wound opened in clinic with pus present
- Culture positive from incision drainage

DEEP INCISIONAL SSI

Involves deep soft tissues (e.g., fascia and muscle layers) of the incision



ANATOMY

Skin

Subcutaneous Tissue

Deep Soft Tissue (fascia & muscle)

Organ/Space

REQUIRES AT LEAST ONE OF THE FOLLOWING

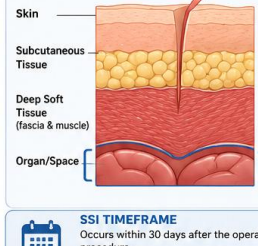
-  Purulent drainage from the deep incision.
-  Organisms isolated from an aseptically-obtained culture of fluid or tissue from the deep incision.
-  A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one sign or symptom of infection.
-  Diagnosis of a deep incisional SSI by a surgeon or attending physician.

EXAMPLES

- Abscess in muscle layer
- Wound drains pus from deep tissues
- Fever, pain, or tenderness with deep incision infection
- CT or imaging shows deep tissue infection

ORGAN/SPACE SSI

Involves any part of the anatomy (e.g., organs or spaces) other than the incision that was opened or manipulated during the operative procedure



ANATOMY

Skin

Subcutaneous Tissue

Deep Soft Tissue (fascia & muscle)

Organ/Space

REQUIRES AT LEAST ONE OF THE FOLLOWING

-  Purulent drainage from a drain placed into the organ/space.
-  Organisms isolated from an aseptically-obtained culture of fluid or tissue in the organ/space.
-  Abscess or other evidence of infection involving the organ/space on direct exam, reoperation, or imaging.
-  Diagnosis of an organ/space SSI by a surgeon or attending physician.

EXAMPLES

- Intra-abdominal abscess after colon surgery
- Infected anastomotic leak
- Pelvic abscess after hysterectomy
- Infected fluid collection in body cavity

**SSI TIMEFRAME**
Occurs within 30 days after the operative procedure.
If an implant is placed, the infection is counted within 90 days.

**KEY POINTS**

- These definitions are used by NHSN for surveillance and reporting.
- Must meet at least one criterion in the appropriate category.
- Do not include stitch abscesses that are superficial and minimal.

Source: CDC/NHSN Patient Safety Component Manual (Latest Edition) | <https://www.cdc.gov/nhsn>

SURGICAL WOUND CLASSIFICATION CRITERIA

Determined at the end of the procedure by the surgeon and intraoperative team

WOUND CLASS	CLASS I CLEAN	CLASS II CLEAN-CONTAMINATED	CLASS III CONTAMINATED	CLASS IV DIRTY/INFECTED
 DEFINITION	Uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered .	Operative wound in which the respiratory, alimentary, genital, or uninfected urinary tracts are entered under controlled conditions and without unusual contamination.	Open, fresh, accidental wounds. Operations with major breaks in sterile technique . Gross spillage from the gastrointestinal tract. Incisions with acute, nonpurulent inflammation .	Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera .
 EXAMPLES	• Elective, nontraumatic procedures • No entry into the respiratory, alimentary, genital, or urinary tracts • Primary closure • No infection present 	• Controlled entry into the GI, biliary, respiratory, genital, or urinary tracts • Elective procedures with minimal spillage • Primary closure 	• Open (fresh) accidental wounds • Major breaks in sterile technique • Gross spillage from GI tract • Acute, nonpurulent inflammation 	• Old traumatic wounds with devitalized tissue • Existing clinical infection • Perforated viscera 
 INCLUDE IF THE FOLLOWING ARE PRESENT	None of the criteria for Classes II, III, or IV are met.	Entry into the respiratory, alimentary, genital, or urinary tracts under controlled conditions and without unusual contamination.	Breaks in sterile technique, spillage, or nonpurulent inflammation.	Existing infection, devitalized tissue, or perforated viscera.
 TYPICAL SURGICAL SITE INFECTION (SSI) RISK*	LOW ~1–2% 	LOW-MODERATE ~2–5% 	HIGH ~10–17% 	VERY HIGH ~20–40% 



KEY POINTS:

- Assigned at the end of the procedure
- Based on the degree of contamination present at the time of surgery
- Guides SSI risk assessment, antibiotic prophylaxis, and surveillance (e.g., NHSN)

*Risk varies by procedure type and patient factors.
Source: CDC/NHSN SSI Guidelines | AORN

SURGICAL WOUND CLASSIFICATION

Former Function	Status
SSI rates reported and compared by wound class	✗ Eliminated — SIR replaced this in 2011
NNIS Risk Index (0–3 composite score including wound class)	✗ Retired January 2011 ☐
Wound class as the primary inter-facility SSI risk adjustment tool	✗ Eliminated — multivariate SIR models replaced it
NHSN guidance on how to assign wound class	✗ Explicitly disclaimed — NHSN defers entirely to American College of Surgeons wound class definitions, originally developed through the ACS Committee on Control of Surgical Infections.

NHSN WOUND CLASSIFICATION

Function	Current Status
Wound class collected on Procedure-Level denominator form	• Still required as a data element
Four classes available in the NHSN application (Clean, Clean-Contaminated, Contaminated, Dirty/Infected)	• Still present
Wound class as one covariate in select SIR regression models (e.g., colon, abdominal hysterectomy)	• Still used — but as one variable among many
CDC and ACS are referenced as the authorities for wound class schema	• IP must not modify the wound class assigned by the OR team

AORN WOUND CLASSIFICATION – STERILE TECHNIQUE 2025

Below are the specific AORN locations where wound classification guidance is published:

- **AORN Pocket Guide: Surgical Wound Classification** —A downloadable quick-reference guide describing the four wound classes and how to apply them
- **AORN Surgical Wound Classification Pocket Card** —A concise card listing Clean, Clean-Contaminated, Contaminated, and Dirty/Infected definitions, plus documentation reminders
- **AORN Surgical Wound Classification Decision Tree** — A decision-support tool available through eGuidelines+ that helps perioperative teams determine wound class consistently
- **AORN Sterile Technique Guideline** —The formal guideline includes wound classification as part of sterile technique and SSI prevention



1. Association of periOperative Registered Nurses. Guideline for prevention of surgical site infections. In: Guidelines for Perioperative Practice. AORN, Inc.; 2025
2. Association of periOperative Registered Nurses. Guideline for sterile technique. In: Guidelines for Perioperative Practice. AORN, Inc.; 2025

AHRQ PSI BENCHMARK DATA TABLES: DEHISCENCE AND HEMATOMA RATES

AHRQ releases comprehensive annual benchmark tables that show:

- Numerator counts (number of events)
- Denominator counts (eligible discharges)
- Observed rates per 1,000 discharges
- Stratifications by age, sex, payer, surgical approach, etc.



2025 PSI Benchmark Tables free download here:

https://qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2025/Version_2025_Benchmark_Tables_PSI.pdf

AHRQ PSI Benchmark Data Tables: Dehiscence and Hematoma Rates



AHRQ Patient Safety Indicators (PSIs) use administrative data to identify potential postoperative complications. Rates are shown per 1,000 discharges. **Lower rates indicate better performance.**

PSI 13 – POSTOPERATIVE WOUND DEHISCENCE RATE

Surgical Procedure Category (ICD-10-PCS)	AHRQ Mean Rate (per 1,000 discharges)	10th Percentile (Top Performers)	90th Percentile (Bottom Performers)	Interpretation
Abdominal Hysterectomy (OUTC*)	1.9	0.6	4.3	Lower is better
Colon Resection (ODB7*)	2.9	1.4	6.1	Lower is better
Abdominal Aortic Aneurysm Repair (04V03DZ)	2.4	1.0	5.2	Lower is better
Laparoscopic Cholecystectomy (OFT44ZZ)	0.4	0.1	1.1	Lower is better
ALL SURGERIES (Aggregate)	1.6	0.8	3.5	Lower is better

PSI 12 – POSTOPERATIVE HEMATOMA RATE

Surgical Procedure Category (ICD-10-PCS)	AHRQ Mean Rate (per 1,000 discharges)	10th Percentile (Top Performers)	90th Percentile (Bottom Performers)	Interpretation
Abdominal Hysterectomy (OUTC*)	1.6	0.5	3.4	Lower is better
Colon Resection (ODB7*)	1.6	0.7	3.6	Lower is better
Abdominal Aortic Aneurysm Repair (04V03DZ)	3.1	1.4	6.9	Lower is better
Laparoscopic Cholecystectomy (OFT44ZZ)	0.2	0.1	0.6	Lower is better
ALL SURGERIES (Aggregate)	1.2	0.6	2.7	Lower is better



PSI rates are risk-adjusted for patient demographics, comorbidities, and hospital characteristics. They are based on administrative data and not clinical surveillance data.

Source: AHRQ Quality Indicators (QIs) Portal
<https://qualityindicators.ahrq.gov>
PSI Technical Specifications v2024

CMS: DEHISCENCE AND HEMATOMA DATA

CMS Resources

While CMS doesn't publish a simple national incidence dashboard for individual PSIs, you can find:

- Measure specifications (definitions and ICD-10 coding guidance)
- PSI-90 composite fact sheets
- Related datasets via data.medicare.gov — search for “PSI 09” or “PSI 14” on the site

Notes for Interpretation

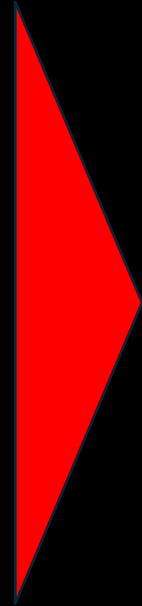
- PSI data is claims-based, meaning it relies on ICD-10 diagnosis/procedure coding captured at discharge, **not clinical chart review**.
- PSI rates can reflect **variation in coding practices**, case mix, and surgical volumes between hospitals.
- These are national benchmark rates, **not hospital-specific performance**.

LANGUAGE: ITS IMPORTANCE TO SURGICAL OUTCOMES

Language enables communication, builds relationships, and creates a sense of community

CHALLENGES WITH LANGUAGE

1. Ability to transfer language:
Language/information is too large or complex
2. Ability to receive language:
Understanding or comprehension
3. Method of communication:
Spoken or written
4. Language has different meanings to different people



CHALLENGES WITH SSI DEFINITIONS

1. Multiple definitions exist
2. Complex
3. Not memorable
4. Not relevant to surgeon / patient
5. Difficult to standardize:
Geographically, by surgical specialty,
by team members, interpretation

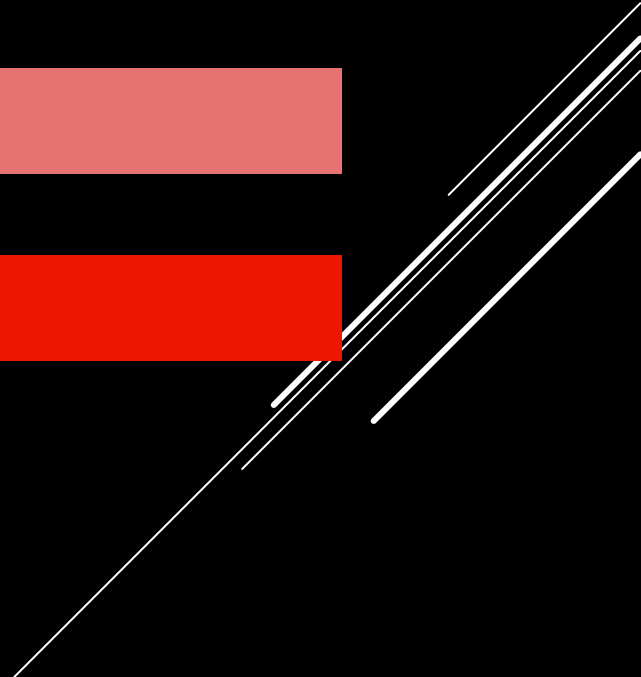
THE TERM – **"COMPLICATION"**

Negative implications

Terrifying to patients

Difficult for surgeons to admit

Difficult to gather reliable data

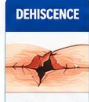
Several thin, white, parallel diagonal lines are drawn across the bottom right corner of the slide, extending from the bottom edge towards the right edge.

A NEW CLASSIFICATION SYSTEM WILL...

- Enhance communication on the accurate identification of a surgical incision outcome and report its true severity
- Monitor its progress
- Assist in the removal of barriers healthcare professionals currently face

DEHISCENCE, INFECTION/INFLAMMATION, SEROMA, HEMATOMA (DISH) DISH CLASSIFICATION SYSTEM

A standardized tool to assess and manage common surgical site complications based on clinical presentation and required intervention.



DEHISCENCE

Partial or total separation of the incision edges



INFECTION/INFLAMMATION

Signs of inflammation or infection related to the incision



SEROMA

Collection of clear serous fluid under the incision



HEMATOMA

Collection of blood under the incision or in surrounding tissue



The DISH system evaluates each complication by clinical presentation (severity) and required intervention (management).

CLINICAL INTERVENTION / MANAGEMENT SCALE <i>What is done to manage the complication</i>					CLINICAL PRESENTATION SCALE <i>How the complication presents</i>				
Level	DEHISCENCE	INFECTION/INFLAMMATION	SEROMA	HEMATOMA	Level	DEHISCENCE	INFECTION/INFLAMMATION	SEROMA	HEMATOMA
0 None	None	None	None	None	a MILD	Partial separation of the incision edges with no to minimal fluid discharge	One or more of the following clinical signs of inflammation related to the incision: redness, swelling, heat, pain, or serous exudate	Presence of localized fluid collection related to the surgical incision with no to minimal discomfort or pressure in the affected area	Bruising related to the incision, with or without swelling, but not causing substantial symptoms to the patient
1 Patient Self-Monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	b MODERATE	Substantial separation of the incision edges, without disrupting fascia or the deep tissue	Two or more of the following clinical signs: redness, swelling, heat, pain, non-serous exudate; plus one or more of the following: elevated C-reactive protein, increased serum white blood cell count, temperature over 38°C (100.4°F), positive wound or blood culture, gas in tissues	Large fluid collection causing moderate discomfort or pressure in the affected area	Enlarging hematoma causing swelling and pain
2 Local Treatment / Monitoring	Local treatment, with or without local anesthesia	Healthcare professional monitoring; closed incision management; antibiotics optional	Healthcare professional monitoring with or without radiological imaging	Healthcare professional monitoring	c SEVERE	Extensive separation of the incision edges, involving deep tissue layers	Severe infection related to the incision with systemic signs of sepsis or mono-organ failure	Large, complex fluid collection causing significant symptoms	Significant hematoma causing substantial swelling, pain, and compromising nearby organs or structures
3 Intervention (without Reconstruction)	Surgical re-intervention with general, spinal or regional anesthesia but without reconstruction	Surgical re-intervention with local anesthesia, or percutaneous drainage; antibiotics optional	Local treatment with local anesthesia, or percutaneous drainage	Local treatment with local anesthesia, or percutaneous drainage, or embolization	d MOST SEVERE	Most severe incision dehiscence of all surgical tissue layers with or without organ exposure	Septic shock; Sepsis related multi-organ failure	Large, complex fluid collection causing life-threatening symptoms or a chronic collection	Significant hematoma, with active bleeding
4 Intervention (with Reconstruction)	Surgical re-intervention with general, spinal or regional anesthesia and with reconstruction	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention or radiological intervention with general, spinal or regional anesthesia					



Provides a consistent framework to assess and communicate surgical site complications.



Guides clinicians in selecting the appropriate level of management and intervention.



Supports outcome tracking and quality improvement initiatives.



Promotes clear documentation and better patient communication.



Maureen Spencer, M.Ed, RN, CIC, FAPIC | Peter Graves, CNOR, BSN, RN

SURGICAL INFECTION CONSULTANTS



www.surgicalinfectionprevention.com

WHY IS A NEW CLASSIFICATION SYSTEM NEEDED?

Existing Classification Systems (e.g. CDC, Clavien-Dindo, ASEPSIS)

- Disproportionate focus on infection
- Definition of infection *varies* between systems (*the problem of language*)
- Dehiscence, seroma & hematoma are commonly overlooked

- Previous attempts at scoring systems have **not** been widely adopted
- Difficult to identify **direct** and **indirect costs** of SSO

A new, comprehensive classification system for all surgical outcomes is required, to enable:

- ✓ Standardization of terms
- ✓ Provide a solid framework for surgical outcomes reporting, and reduce variability in reporting
- ✓ Serve as an interventional tool for clinical research, audits and budget planning, across all surgical specialties



GRADING SYSTEMS FOR SURGICAL OUTCOMES



Tools Used to Evaluate and Report Postoperative Outcomes

SCALE / SYSTEM	FOCUS / WHAT IT EVALUATES	PRIMARY USE SPECIALTY	KEY FEATURES / PURPOSE	EXAMPLES OF OUTCOMES MEASURED
1 Clavien-Dindo	General complications	All surgeries	Grades complications by treatment required (I-V) and severity	Any postoperative complication
2 CDC/NHSN Scoring System	Surgical site infection (SSI)	All surgeries	Standardized SSI definitions for surveillance (superficial, deep, organ/space)	Surgical site infections
3 ASEPSIS	Wound infection	Primarily abdominal surgery	Scores wound infection severity after abdominal surgery	Wound infection severity
4 Southampton Wound Score	Wound infection	Abdominal & colorectal surgery	Validated tool for predicting SSI risk and outcomes	Risk of SSI / wound infection
5 SMARt Wounds Assessment Tool	Surgical site infection	Orthopedic surgery	Assesses risk and early signs of SSI	SSI risk and presence
6 National Wound Assessment Form (NAAF)	Surgical site infection	General wound care	Standardized documentation of wound status	Wound status & infection
7 Applied Wound Management (AWM)	Surgical site infection	General wound care	Assesses wound progression and healing	Infection, healing progress
8 T.I.M.E. Wound Assessment Tool	Surgical site infection	General wound care	Evaluates Tissue, Infection/Inflammation, Moisture balance, Edge	Wound status & infection
9 NATVNS Assessment Chart	General wound management	General wound care	Evaluates multiple wound characteristics for management	Infection, size/depth, exudate, tissue type
10 Bates-Jensen Wound Assessment Tool	General wound management	Chronic & general wound healing	Comprehensive tool for multiple wound variables	Size/depth, exudate, tissue type, infection
11 Sandy Grading System	Wound dehiscence	All surgeries	Grades severity of wound dehiscence	Dehiscence severity
12 Bolton Hospitals NHS Trust Chart	Wound infection	Leg/pressure ulcers & diabetic foot	Wound assessment for lower extremity wounds	Infection in ulcers & diabetic foot
13 Sussman Wound Healing Tool (SWHT)	General wound healing	Pressure ulcer healing	Assesses healing progress of pressure ulcers	Pressure ulcer healing
14 Sessing Scale	General wound healing & infection	Pressure ulcer healing	Focuses on healing and infection status	Wound healing & infection
15 Pressure Ulcer Scale for Healing (PUSH Tool)	Size, exudate, tissue type	Pressure ulcer healing	Standardized pressure ulcer healing measurement	Size, exudate, tissue type
16 Photographic Wound Assessment Tool (PWAT)	Size, depth, tissue type	General wounds (photograph required)	Objective documentation with photographs	Size, depth, tissue type
17 Common Terminology for Adverse Events (CTCAE)	Adverse events	All surgeries	Standard language & grades (1-5) adverse events	Dehiscence, infection, seroma, hematoma, etc.
18 CLASSIC ¹ (Intraoperative Complications)	Intraoperative complications by severity	All surgeries	Classifies intraoperative complications	Intraoperative complications
19 Kaafarani et al.	Intraoperative adverse events	All surgeries	Reports adverse events during surgery & their impact	Intraoperative adverse events
20 MSKCC Surgical Secondary Events Grading System	Surgical secondary events	Oncology	Grades postoperative secondary events in cancer surgery	Postoperative secondary events
21 Comprehensive Complication Index (CCI)	General complications	Major urologic surgery	Combines all complications into one score (0-100)	Overall complication burden / severity

WHY THESE SCALES MATTER

Standardize assessment and reporting

Improve communication among clinicians

Drive quality improvement and patient safety

Support research and evidence-based care

NOTES

- Complication Severity
- Infection Assessment
- Wound Assessment & Healing
- Adverse Events
- Specialized /Other



KEY POINT

No single scale captures every outcome. Use the right tool for the right patient, procedure, and purpose.



Accurate assessment leads to better decisions, better outcomes, and better patient care.



REFERENCES

See original publications for details.

1. CLASSIC = Definition and Classification of Intraoperative Complications

A NEW CLASSIFICATION SYSTEM IS NEEDED

The literature review demonstrated the limitations of the existing classification systems used to report surgical outcomes in clinical practice. The key gaps in existing classifications systems were:

1

Fails to fully capture surgical incision outcomes beyond infection

2

Difficult for non-surgical healthcare professionals to interpret

3

Focus solely on the clinical presentation of an incision rather than on its management

Given the limitations identified, a **new, comprehensive classification system, DISH**, has been developed which encompasses definitions for each surgical outcome, includes gradings of severity for clinical intervention/ management and clinical presentation and can be applicable across all surgical specialties

WHAT IS THE DISH CLASSIFICATION SYSTEM?

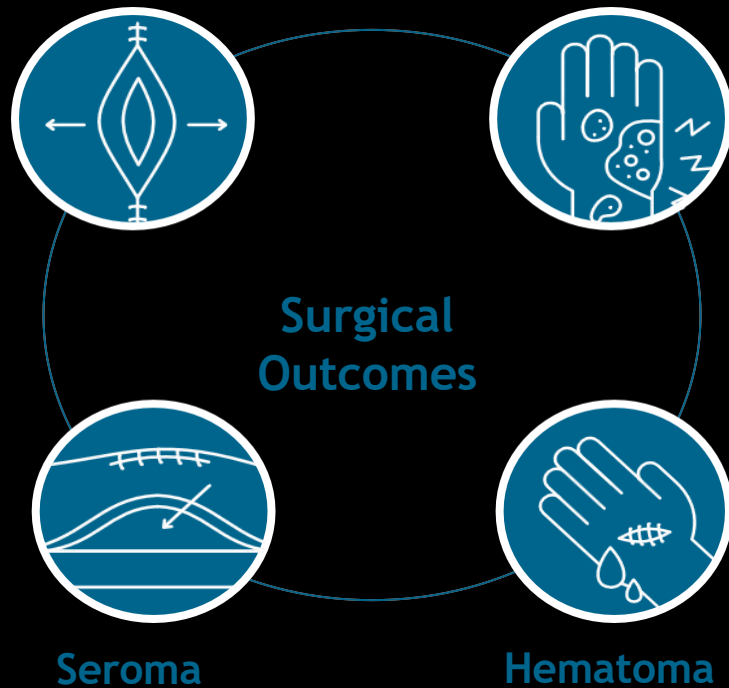
- DISH is a framework to **communicate** how the incision is managed
- DISH is **not prescriptive** on how wounds should be managed, that belongs 100% to the care team
 - It records changes in severity/invasiveness of clinical management within each element
 - With each increment in grading, the complexity of management increases



WHAT MIGHT A UNIVERSAL CLASSIFICATION SYSTEM LOOK LIKE?

Overall Objective

To establish a universal classification system comprising dehiscence, infection/inflammation, seroma, and hematoma, graded by severity, to enable standardization of surgical incision outcome reporting, irrespective of specialty, procedure or setting



The aim was for the classification system to be:

- Relevant across all regions, practices, and surgical specialties
- Simple and easy to use
- Unambiguous and non-prescriptive
- Developed by the community, for the community

DELPHI STUDY STEERING COMMITTEE



Mr. Giles Bond-Smith
Consultant HPB and
Emergency Surgeon and
Clinical Lead for Surgical
Emergency Unit
Oxford University Hospitals,
NHS Foundations Trust



Prof. Dr. Marja Boermeester
Professor, Surgery,
Professor, All - Infectious
diseases, Professor, All -
Inflammatory diseases, Full
Professor, Amsterdam;
Gastroenterology
Endocrinology Metabolism -
Amsterdam University
Medical Center (UMC)



Prof. Dr. David Leaper
DSc MD ChM FRCS FACS FLS;
Emeritus Professor of
Surgery, University of
Newcastle upon Tyne;
Emeritus Professor of Clinical
Sciences, ISlaIP, University of
Huddersfield



Prof. Antonia Chen
Orthopedic surgeon, US



Prof. Phil Russo
Director of Research, Nursing
and Midwifery, Faculty of
Medicine, Nursing and
Health Sciences, and Director
of Nursing Research, Cabrini
Health - Monash University

HOW WAS THE DISH CLASSIFICATION SYSTEM REFINED?

Methodology:

- To evaluate and assess the viability of the proposed universal composite endpoint of surgical incisional outcomes classification, a **Delphi study methodology** was conducted
- Delphi method was used as a structured, anonymous, and systematic technique to gather consensus from a group of experts
- This modified Delphi study was conducted in accordance with the ACCORD guidelines, to develop the proposed endpoint

Process:

- Five-member Steering Committee independent of the Expert Panel
- 32 pan-specialty panelists from across the world
- Likert-based statements sought $\geq 75\%$ agreement
- Statements without consensus were revised for subsequent rounds, guided by panelist's feedback

HOW THE ITERATIVE PROCESS WAS USED FOR DISH

DISH Classification System Development Pathway

Iterative design → clinical testing → reliability measurement → multicenter validation



DELPHI STUDY METHODOLOGY OVERVIEW

Delphi Study Methodology Overview



Dehiscence



Infection



**Surgical
Outcomes**



Seroma



Hematoma

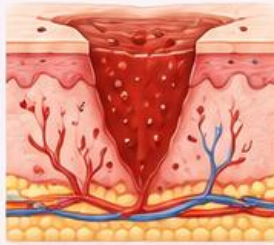
Definitions

NORMAL WOUND HEALING PROCESS

THE 5 PHASES OF WOUND HEALING

1 HEMOSTASIS

Minutes to hours



KEY EVENTS

- Blood vessels constrict
- Platelets aggregate and form a clot
- Stops bleeding and provides a temporary wound barrier

KEY CELLS & FACTORS



Platelets



Clotting factors
(e.g., fibrin)

2 INFLAMMATION

Hours to days



KEY EVENTS

- Immune cells remove bacteria, debris, and damaged tissue
- Redness, warmth, swelling, and pain are common

KEY CELLS & FACTORS



Neutrophils



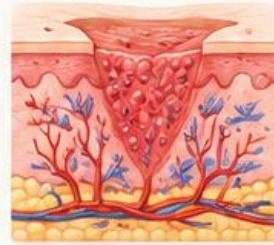
Macrophages



Cytokines

3 PROLIFERATION

Days to weeks



KEY EVENTS

- New tissue (granulation tissue) forms
- New blood vessels grow (angiogenesis)
- Collagen is laid down
- Wound contracts
- Epithelial cells migrate to cover the wound

KEY CELLS & FACTORS



Fibroblasts



Endothelial cells



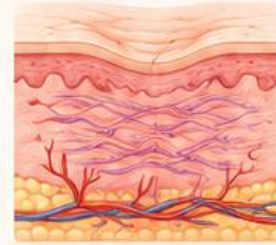
Keratinocytes



Growth factors
(e.g., VEGF, TGF-β)

4 MATURATION (REMODELING)

Weeks to months



KEY EVENTS

- Collagen reorganizes and strengthens
- Scar tissue forms
- Tensile strength increases

KEY CELLS & FACTORS



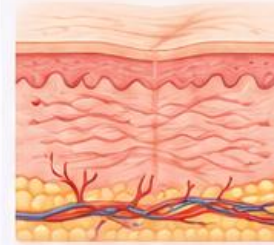
Collagen
remodeling



Matrix
metalloproteinases
(MMPs)

5 FINAL OUTCOME

Months to years



KEY EVENTS

- Scar continues to mature and lighten
- Strength improves but rarely reaches 100% of original tissue

★ Healing time varies based on:

- Wound size & depth
- Location
- Overall health
- Age
- Nutrition
- Infection
- Blood supply

DEHISCENCE DEFINITION

The Common Terminology for Adverse Events describes **dehiscence** as: *'A finding of separation of the approximated margins of a surgical wound'* ¹

- Partial or complete separation of the edges of a previously closed surgical incision, resulting from failure of proper wound healing.
- Can range from superficial skin separation to full-thickness disruption involving deeper layers (e.g., fascia), potentially leading to exposure of underlying tissues, organs, or implants.



1. US Department of Health and Human Services. Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0. November 2017. Available from: https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm [Last accessed: 27 June 2024].

DEHISCENCE: DEFINITION CHALLENGES

Current Definitions and Guidelines

- Multiple publications described the under-reporting of wound dehiscence, primarily due to the lack of clarity around the definition.^{1,4,5}
- Some definitions of dehiscence were reported although varied across publications, with many primarily reporting in relation to abdominal surgery.^{1–3, 9}
- Study by Morgan-Jones *et al.* 2023 described wound dehiscence as separation of closed wound edges after surgery which may be superficial, partial or complete¹

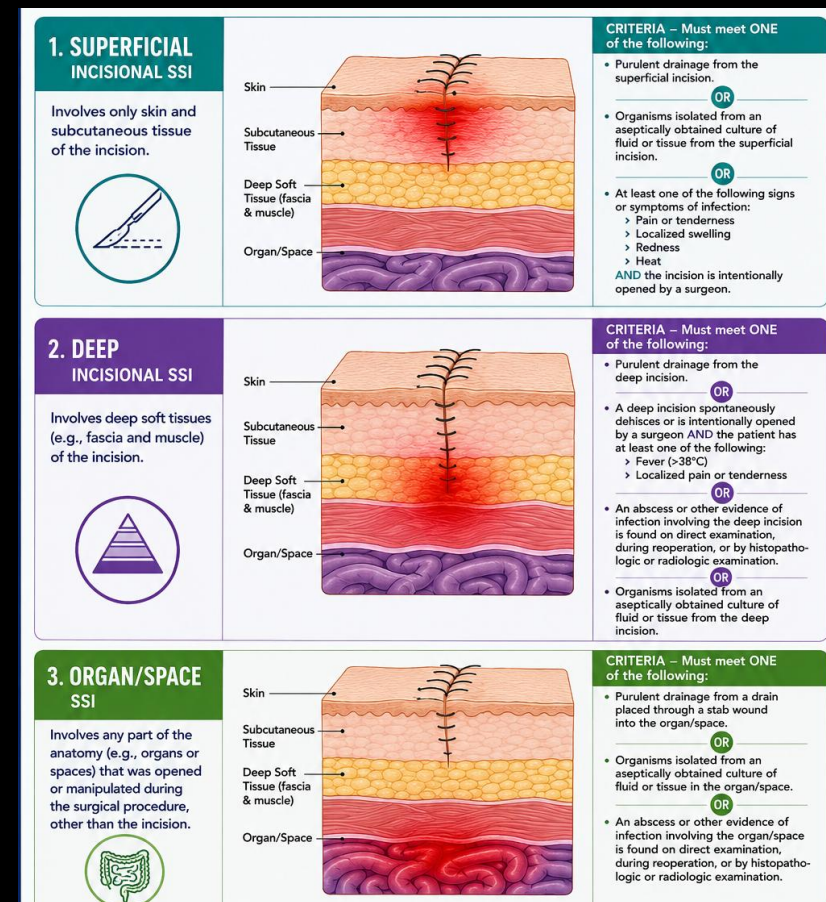
1. Sandy-Hodgetts, K., 2017. Clinical innovation: the Sandy Grading System for surgical wound dehiscence classification—a new taxonomy. *Wounds International*, 8(4), pp.6-11.
2. Gillespie, B.M., Harbeck, E.L., Sandy-Hodgetts, K., Rattray, M., Thalib, L., Patel, B., Andersson, A.E., Walker, R.M., Latimer, S. and Chaboyer, W.P., 2023. Incidence of wound dehiscence in patients undergoing laparoscopy or laparotomy: a systematic review and meta-analysis. *Journal of wound care*, 32(Sup8a), pp.S31-S43.
3. Morgan-Jones, R., Sandy-Hodgetts, K., Bruwer, F., Chabal, L., Clegg, H., Couch, K., Cudmore, A., Lantis, J., LeBlanc, K., Nair, H.K. and Parrat, T., 2023. Harmonised glossary of wound care terms. *Journal of wound care*, 32(Sup7b), pp.1-16.
4. Morgan-Jones R, Downie F, Dowsett C et al (2023) *Prevention, identification and management of surgical wound dehiscence (SWD)*. London: Wounds UK. Available to download from: www.wounds-uk.com
5. Sandy-Hodgetts, K., Carville, K. and Leslie, G.D., 2015. Determining risk factors for surgical wound dehiscence: a literature review. *International wound journal*, 12(3), pp.265-275.
6. Rosen, R.D. and Manna, B., 2019. Wound dehiscence.
7. Afzal, S. and Bashir, M.M., 2008. Determinants of wound dehiscence in abdominal surgery in public sector hospital. *Annals of King Edward Medical University*, 14(3), pp.119-119.
8. Mahey, R., Ghetla, S., Rajpurohit, J., Desai, D. and Suryawanshi, S., 2017. A prospective study of risk factors for abdominal wound dehiscence. *International Surgery Journal*, 4(1), pp.24-28.
9. US Department of Health and Human Services. Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0. November 2017. Available from: https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm [Last accessed: 27 June 2024].

INFECTION DEFINITION CHALLENGES

Common Terminology for Adverse Events describes wound infection as '**A disorder characterized by an infectious process involving the wound**'¹

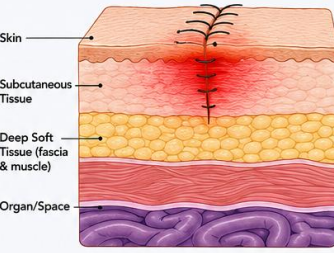
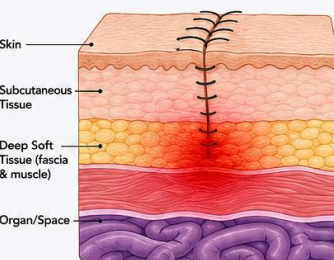
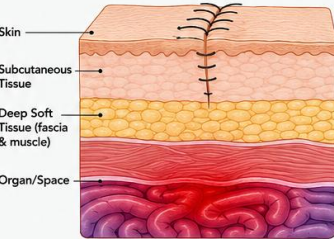
- Barriers to implementing successful SSI surveillance programs are driven by a lack of standardized definitions and a need for alignment in SSI definitions.²⁻⁶
- Definitions of SSIs were reported in the literature, however, were inconsistent and devised decades ago.⁸

1. US Department of Health and Human Services. Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0. November 2017. Available from: https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm [Last accessed: 27 June 2024].
2. Li, C.N., Bonebrake, A., Schroeder, S., Lam, S.K. and Raskin, J.S., 2023. Challenges in defining surgical-site infections following hydrocephalus surgeries. *Infection Control & Hospital Epidemiology*, 44(12), pp.2065-2067.
3. Sliepen, J., Onsea, J., Zalavras, C.G., Depypere, M., Govaert, G.A., Morgenstern, M., McNally, M.A., Verhofstad, M.H., Obremskey, W.T., IJpma, F.F. and Metsemakers, W.J., 2021. What is the diagnostic value of the Centers for Disease Control and Prevention criteria for surgical site infection in fracture-related infection?. *Injury*, 52(10), pp.2879-2885.
4. Nota, S.P., Braun, Y., Ring, D. and Schwab, J.H., 2015. Incidence of surgical site infection after spine surgery: what is the impact of the definition of infection?. *Clinical Orthopaedics and Related Research*, 473(5), pp.1612-1619.
5. Russo, P.L., Saguil, E., Chakravarthy, M., Lee, K.Y., Ling, M.L., Morikane, K., Spencer, M., Danker, W., Yu, N.Y.C. and Edmiston Jr, C.E., 2021. Improving surgical site infection prevention in Asia-Pacific through appropriate surveillance programs: Challenges and recommendation. *Infection, Disease & Health*, 26(3), pp.198-207.
6. Tanner, J., Jones, L.B., Rochon, M., Westwood, N., Wloch, C., Vaja, R., Rogers, L., Dearling, J., Wilson, K., Magboo, R. and Aujla, H., 2023. Barriers and facilitators for surgical site infection surveillance for adult cardiac surgery in a high-income setting: an in-depth exploration. *Journal of Hospital Infection*, 141, pp.112-118.
7. Daniel, V.T., Hanley, A.M. and Mahmoud, B.H., 2021. 26786 Delphi method study in defining surgical site infection following Mohs surgery. *Journal of the American Academy of Dermatology*, 85(3), p.AB25.
8. Sawyer, R.G., Evans, H.L. and Hedrick, T.L., 2019. Technological advances in clinical definition and surveillance methodology for surgical site infection incorporating surgical site imaging and patient-generated health data. *Surgical Infections*, 20(7), pp.541-545



CDC INFECTION DEFINITION

- "An infection occurring after an NHSN operative procedure where the infection occurs in the part of the body where the surgery took place and meets the CDC/NHSN surveillance criteria for a superficial incisional, deep incisional, or organ/space surgical site infection during the defined surveillance period."
- SSI surveillance is 30 or 90 days after the operative procedure, depending on the specific NHSN operative procedure category. (The previous 1-year surveillance period for implants is no longer used.)
 - Superficial Incisional SSI:
 - Involves only the skin and subcutaneous tissue of the incision
 - Deep Incisional SSI:
 - Involves the deep soft tissues, such as fascia and muscle layers
 - Organ/Space SSI:
 - Involves any part of the anatomy (organs or spaces) that was opened or manipulated during the operative procedure, excluding the incision itself.

1. SUPERFICIAL INCISIONAL SSI Involves only skin and subcutaneous tissue of the incision. 		CRITERIA – Must meet ONE of the following: • Purulent drainage from the superficial incision. - OR • Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision. - OR • At least one of the following signs or symptoms of infection: > Pain or tenderness > Localized swelling > Redness > Heat AND the incision is intentionally opened by a surgeon.
2. DEEP INCISIONAL SSI Involves deep soft tissues (e.g., fascia and muscle) of the incision. 		CRITERIA – Must meet ONE of the following: • Purulent drainage from the deep incision. - OR • A deep incision spontaneously dehisces or is intentionally opened by a surgeon AND the patient has at least one of the following: > Fever (>38°C) > Localized pain or tenderness - OR • An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination. - OR • Organisms isolated from an aseptically obtained culture of fluid or tissue from the deep incision.
3. ORGAN/SPACE SSI Involves any part of the anatomy (e.g., organs or spaces) that was opened or manipulated during the surgical procedure, other than the incision. 		CRITERIA – Must meet ONE of the following: • Purulent drainage from a drain placed through a stab wound into the organ/space. - OR • Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space. - OR • An abscess or other evidence of infection involving the organ/space is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

Centers for Disease Control and Prevention. National Healthcare Safety Network (NHSN). **Surgical Site Infection (SSI) Event**. Patient Safety Component Manual. January 2026.
<https://www.cdc.gov/nhsn/pssc/ssi/index.html>

SEROMA DEFINITION

The Common Terminology for Adverse Events describes Seroma as

'A finding of tumor-like collection of serum in the tissues,' with a grading scale (Grade 1–5) related to the clinical presentation and intervention.¹

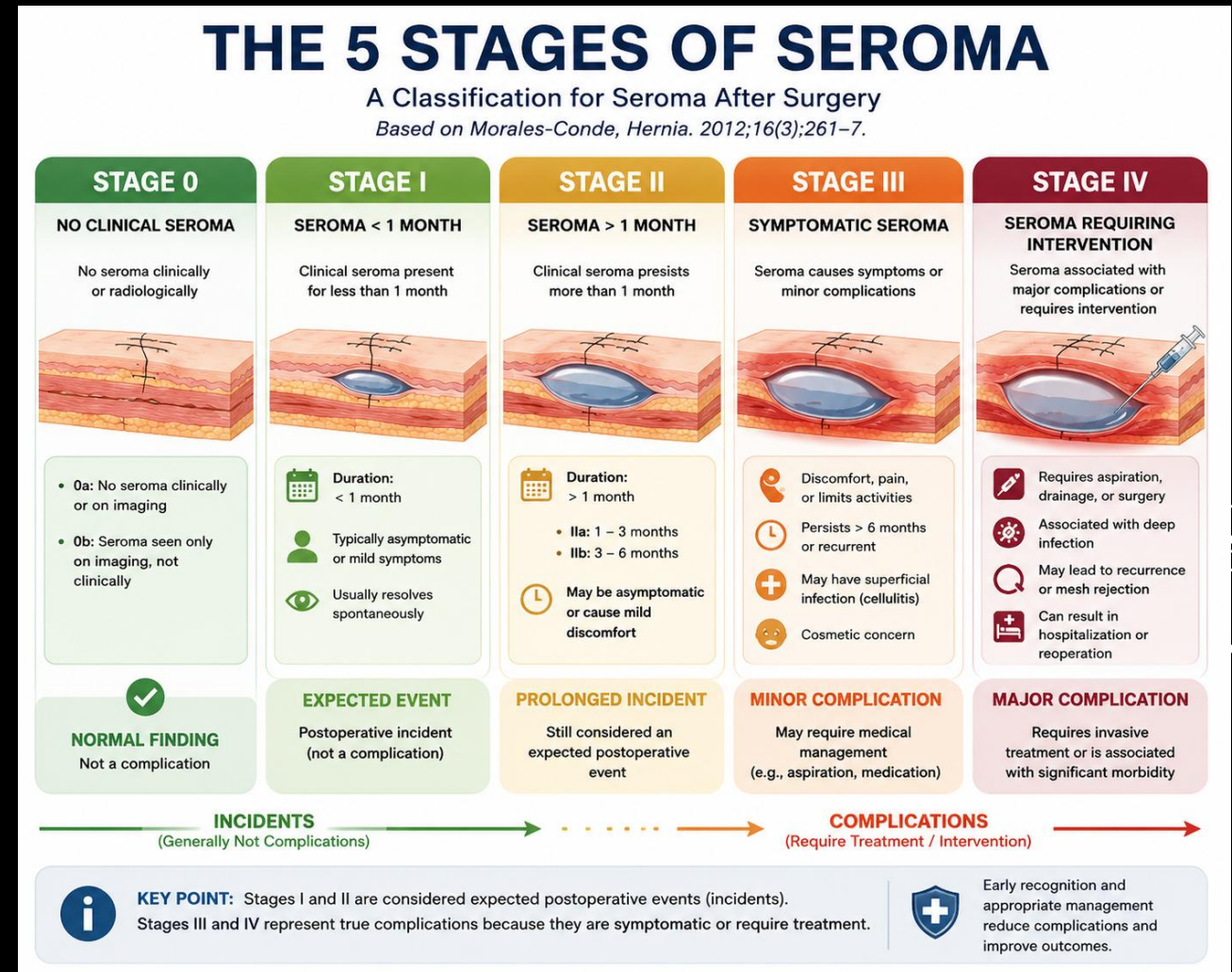


- Seroma definitions were predominantly reported for breast procedures but have been found to be highly variable across different studies.^{2–8}

1. US Department of Health and Human Services. Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0. November 2017. Available from: https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm [Last accessed: 27 June 2024].
2. Tollefson MK, Boorjian SA, Leibovich BC. Chapter 20 - COMPLICATIONS OF THE INCISION AND PATIENT POSITIONING. In: Taneja SS, ed. Complications of Urologic Surgery (Fourth Edition). Philadelphia: W.B. Saunders, 2010:225-236.
3. Dieter S. Treating a Post-Surgical Seroma or Hematoma. 2021. Available from: <https://sanamedtech.com/blog/treating-post-surgical-seroma-hematoma/> [Last accessed: June 2024].
4. De Rooij L, Bosmans JWAM, van Kuijk SMJ, et al. A systematic review of seroma formation following drain-free mastectomy. European Journal of Surgical Oncology 2021;47:757-763.
5. Van Bommel AJM, van de Velde CJH, Schmitz RF, et al. Prevention of seroma formation after axillary dissection in breast cancer: A systematic review. European Journal of Surgical Oncology (EJSO) 2011;37:829-835.
6. Srivastava V, Basu S, Shukla VK. Seroma Formation after Breast Cancer Surgery: What We Have Learned in the Last Two Decades. jbc 2012;15:373-380.
7. Kuroi K, Shimozuma K, Taguchi T, et al. Pathophysiology of seroma in breast cancer. Breast Cancer 2005;12:288-293.
8. Agrawal A, Ayantunde AA, Cheung KL. Concepts Of Seroma Formation And Prevention In Breast Cancer Surgery. ANZ Journal of Surgery 2006;76:1088-1095.

SEROMA DEFINITION CHALLENGES

- Morales-Conde *et al.* provided a classification system and definitions for seroma, after laparoscopic ventral hernia repair
- System included five grades (Type 0–Type IV) relating to severity of clinical presentation¹



1. Morales-Conde, S., *A new classification for seroma after laparoscopic ventral hernia repair*. Hernia, 2012. 16(3): p. 261–7.

HEMATOMA DEFINITION

Common Terminology for Adverse Events describes Hematoma as '*a disorder characterized by a localized collection of blood, usually clotted, in an organ, space, or tissue, due to a break in the wall of a blood vessel*', with a grading scale related to the clinical presentation and intervention.¹

- Additional definitions for hematoma were reported in the literature, with one publication describing it as "*a collection of blood outside of blood vessels*"
- This publication indicated that this definition of hematoma is '*generally*' used in clinical practice, emphasizing that it is not a standardized way of reporting the outcome²



1. US Department of Health and Human Services. Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0. November 2017. Available from: https://ctep.cancer.gov/protocolDevelopment/electronic_applications/ctc.htm [Last accessed: 27 June 2024].
Deiter et al. 2021.

HEMATOMA DEFINITION CHALLENGES

- Unlike postoperative seroma, there is no widely accepted, procedure-independent grading system for postoperative hematoma comparable to the Morales-Conde seroma classification
- However, a standardized grading scale such as this – with clinical intervention and clinical manifestations has been developed

1. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6,336 patients and results of a survey. *Ann Surg.* 2004;240(2):205-213.
2. Clavien PA, Barkun J, de Oliveira ML, et al. The Clavien-Dindo classification of surgical complications: five-year experience. *Ann Surg.* 2009;250(2):187-196.
3. Morales-Conde S. A new classification for seroma after laparoscopic ventral hernia repair. *Hernia.* 2012;16(3):261-267.
4. O'Connor SC, Carbonell AM. Management of post-operative complications in open ventral hernia repair. *Mini-invasive Surg.* 2019;3:38.

Clinical Intervention	
Level	DEHISCENCE
0 None	None
1 Patient Self-Monitoring 	Patient self-monitoring
2 Local Treatment / Monitoring 	Local treatment, with or without local anesthesia
3 Intervention (without Reconstruction) 	Surgical re-intervention with general, spinal or regional anesthesia but without reconstruction
Intervention (with Reconstruction)	Surgical re-intervention with general, spinal or regional anesthesia and with reconstruction

Clinical Manifestation	
Level	DEHISCENCE
a MILD 	Partial separation of the incision edges with no to minimal fluid discharge
b MODERATE 	Substantial separation of the incision edges, without disrupting fascia or the deep tissue
c SEVERE 	Extensive separation of the incision edges, involving deep tissue layers
d MOST SEVERE 	Most severe incision dehiscence of all surgical tissue layers with or without organ exposure

DISH Classification System: Complete Scale

Clinical Intervention/Management Scale

Dehiscence		Inflammation/Infection	Seroma	Hematoma
0	None	None	None	None
1	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring
2	Local treatment, with or without local anesthesia	Healthcare professional monitoring; closed incision management; antibiotics optional	Healthcare professional monitoring with or without radiological imaging	Healthcare professional monitoring
3	Surgical re-intervention with general, spinal or regional anesthesia but without reconstruction	Surgical re-intervention with local anesthesia, or percutaneous drainage; antibiotics optional	Local treatment with local anesthesia, or percutaneous drainage	Local treatment with local anesthesia, or percutaneous drainage, or embolization
4	Surgical re-intervention with general, spinal or regional anesthesia and with reconstruction	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention or radiological intervention with general, spinal or regional anesthesia

Clinical Presentation Scale

Dehiscence		Inflammation/Infection	Seroma	Hematoma
a	Partial separation of the incision edges with no to minimal fluid discharge	One or more of the following clinical signs of inflammation related to the incision: redness, swelling, heat, pain, or serous exudate	Presence of localized fluid collection related to the surgical incision with no to minimal discomfort or pressure in the affected area	Bruising related to the incision, with or without swelling, but not causing substantial symptoms to the patient
b	Substantial separation of the incision edges, without disrupting fascia or the deep tissue	Two or more of the following clinical signs: redness, swelling, heat, pain, non-serous exudate; plus, one or more of the following: elevated C-reactive protein, increased serum white blood cell count, temperature over 38°C (100.4°F), positive wound or blood culture, gas in tissues	Large fluid collection causing moderate discomfort or pressure in the affected area	Enlarging hematoma causing swelling and pain
c	Extensive separation of the incision edges, involving deep tissue layers	Severe infection related to the incision with systemic signs of sepsis or mono-organ failure	Large, complex fluid collection causing significant symptoms	Significant hematoma causing substantial swelling, pain, and compromising nearby organs or structures
d	Most severe incision dehiscence of all surgical tissue layers with or without organ exposure	Septic shock; Sepsis related multi-organ failure	Large, complex fluid collection causing life-threatening symptoms or a chronic walled-off collection	Significant hematoma, with active bleeding

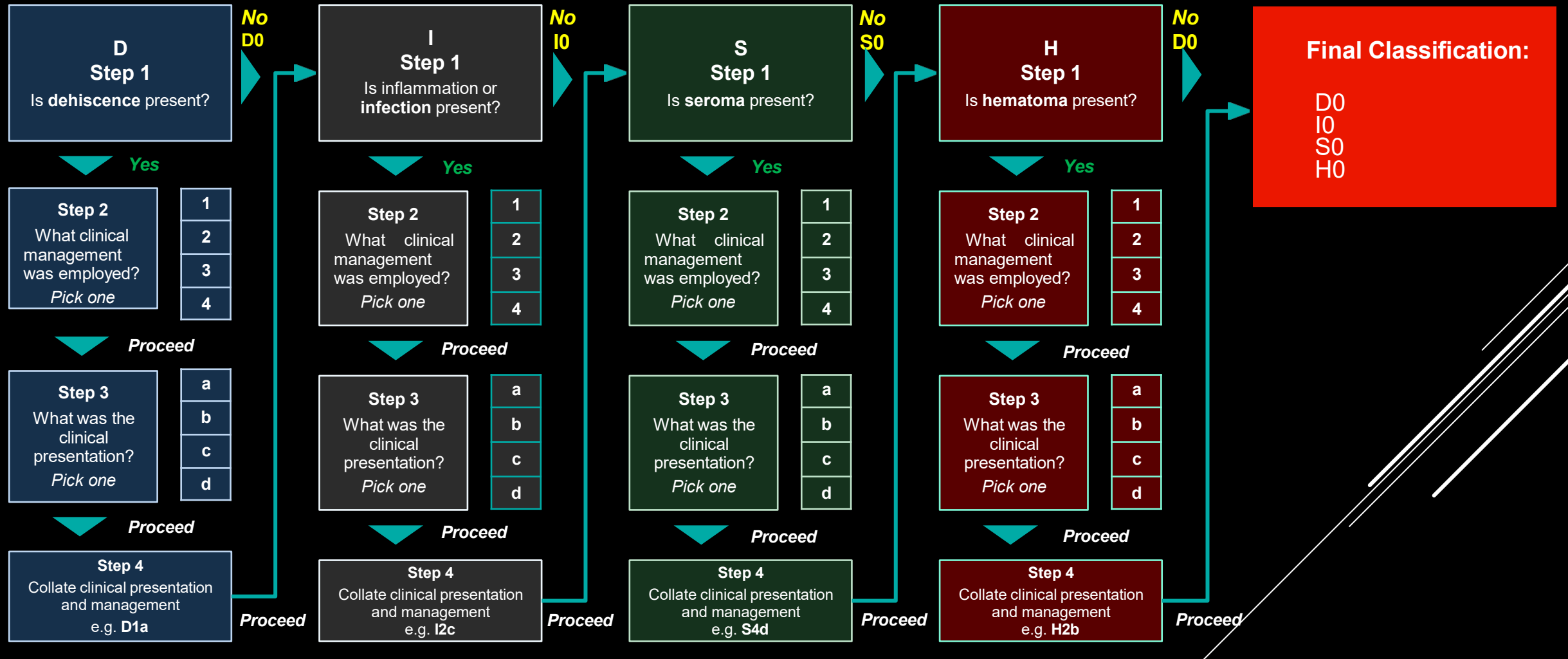
DISH **CLINICAL MANAGEMENT** SCALE

	Dehiscence	Infection	Seroma	Hematoma
0	None	None	None	None
1	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring
2	Local treatment	Healthcare professional monitoring	Healthcare professional monitoring	Healthcare professional monitoring
3	Surgery without reconstruction	Surgery with local anaesthesia	Local treatment	Local treatment
4	Surgery with reconstruction	Surgery with general, spinal or regional anaesthesia	Surgery with general, spinal or regional anaesthesia	Surgery or radiological intervention

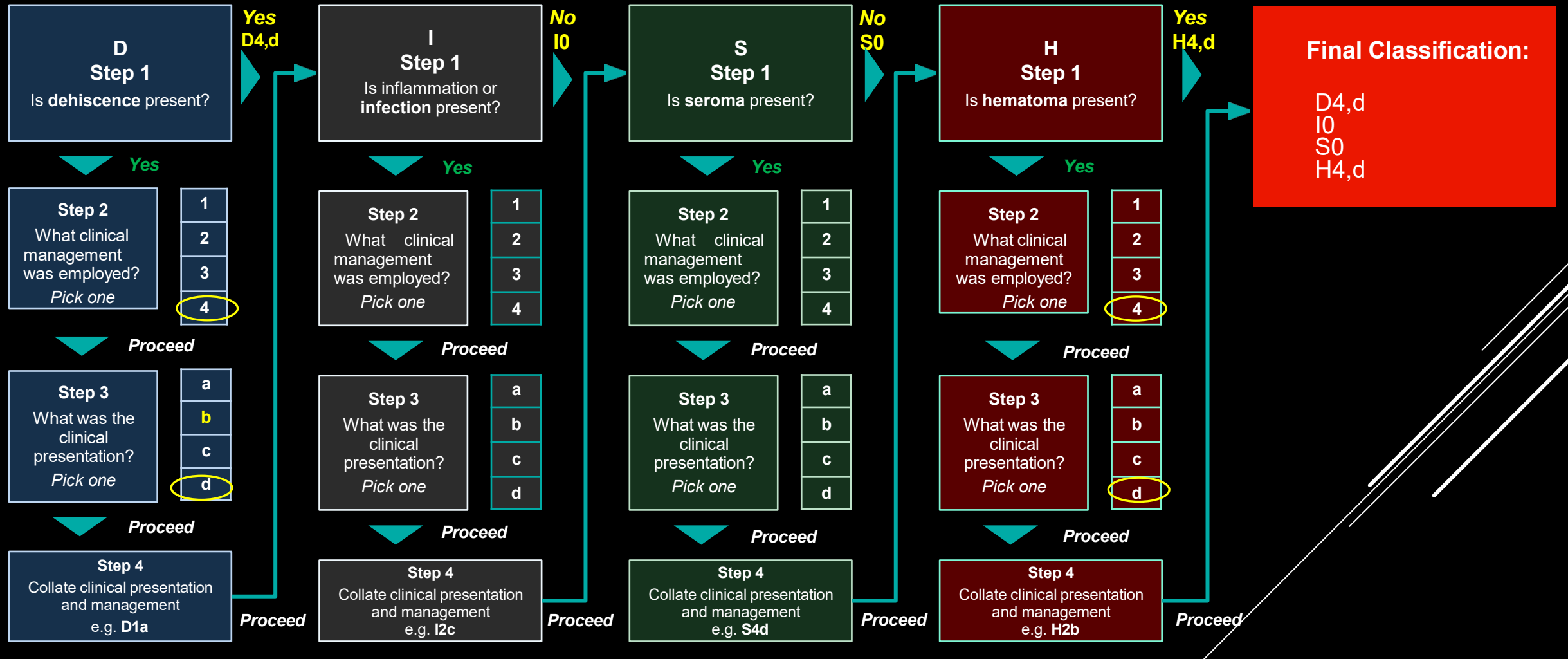
DISH **CLINICAL PRESENTATION** SCALE

	Dehiscence	Inflammation/Infection	Seroma	Hematoma
a	Partial separation of the incision edges	≥1 sign of inflammation	Presence of localised fluid collection with minimal discomfort/pressure	Bruising related to the incision, without causing substantial symptoms
b	Substantial separation of the incision edges	≥2 signs of inflammation and ≥1 sign of infection	Large fluid collection causing moderate discomfort or pressure	Enlarging haematoma causing swelling and pain
c	Extensive separation of the incision edges	Severe infection with systemic signs of sepsis or mono-organ failure	Large, complex fluid collection causing significant symptoms	Significant haematoma compromising nearby organs or structures
d	Dehiscence of all surgical tissue layers	Septic shock; Sepsis related multi-organ failure	Large, complex fluid collection causing life-threatening symptoms or a chronic walled-off collection	Significant haematoma, with active bleeding

DISH CLASSIFICATION SYSTEM IN PRACTICE: CASE 1



DISH CLASSIFICATION SYSTEM IN PRACTICE: CASE 2



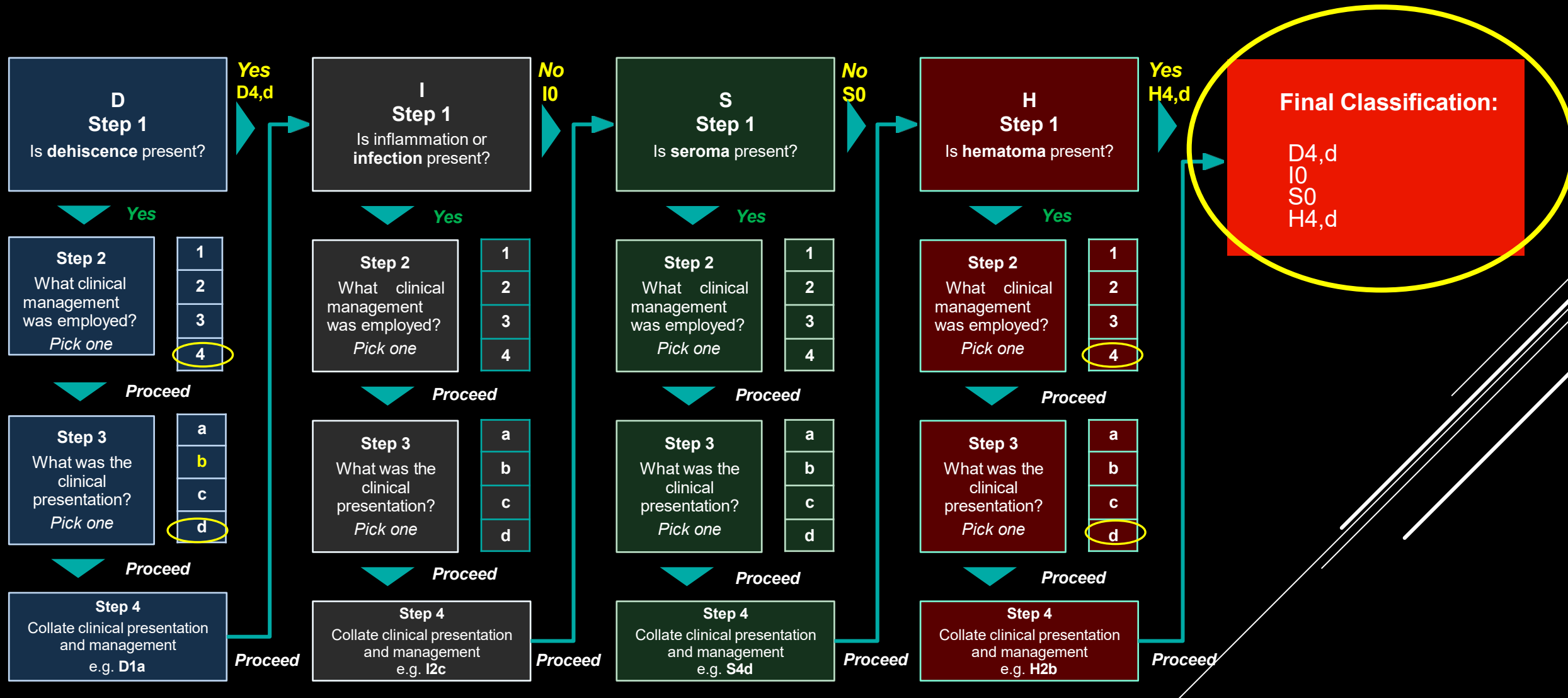
DISH **CLINICAL MANAGEMENT SCALE:** D4, H4

	Dehiscence	Infection	Seroma	Hematoma
0	None	None	None	None
1	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring
2	Local treatment	Healthcare professional monitoring	Healthcare professional monitoring	Healthcare professional monitoring
3	Surgery without reconstruction	Surgery with local anaesthesia	Local treatment	Local treatment
4	Surgery with reconstruction	Surgery with general, spinal or regional anaesthesia	Surgery with general, spinal or regional anaesthesia	Surgery or radiological intervention

DISH **CLINICAL PRESENTATION SCALE:** Dd, Hd

	Dehiscence	Inflammation/Infection	Seroma	Hematoma
a	Partial separation of the incision edges	≥1 sign of inflammation	Presence of localised fluid collection with minimal discomfort/pressure	Bruising related to the incision, without causing substantial symptoms
b	Substantial separation of the incision edges	≥2 signs of inflammation and ≥1 sign of infection	Large fluid collection causing moderate discomfort or pressure	Enlarging haematoma causing swelling and pain
c	Extensive separation of the incision edges	Severe infection with systemic signs of sepsis or mono-organ failure	Large, complex fluid collection causing significant symptoms	Significant hematoma compromising nearby organs or structures
d	Dehiscence of all surgical tissue layers	Septic shock; Sepsis related multi-organ failure	Large, complex fluid collection causing life-threatening symptoms or a chronic walled-off collection	Significant hematoma, with active bleeding

DISH CLASSIFICATION SYSTEM IN PRACTICE: CASE 2



DISH Classification System: Complete Scale

Clinical Intervention/Management Scale

	Dehiscence	Inflammation/Infection	Seroma	Hematoma
0	None	None	None	None
1	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring	Patient self-monitoring
2	Local treatment, with or without local anesthesia	Healthcare professional monitoring; closed incision management; antibiotics optional	Healthcare professional monitoring with or without radiological imaging	Healthcare professional monitoring
3	Surgical re-intervention with general, spinal or regional anesthesia but without reconstruction	Surgical re-intervention with local anesthesia, or percutaneous drainage; antibiotics optional	Local treatment with local anesthesia, or percutaneous drainage	Local treatment with local anesthesia, or percutaneous drainage, or embolization
4	Surgical re-intervention with general, spinal or regional anesthesia and with reconstruction	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention, with general, spinal or regional anesthesia	Surgical re-intervention or radiological intervention with general, spinal or regional anesthesia

Clinical Presentation Scale

	Dehiscence	Inflammation/Infection	Seroma	Hematoma
a	Partial separation of the incision edges with no to minimal fluid discharge	One or more of the following clinical signs of inflammation related to the incision: redness, swelling, heat, pain, or serous exudate	Presence of localized fluid collection related to the surgical incision with no to minimal discomfort or pressure in the affected area	Bruising related to the incision, with or without swelling, but not causing substantial symptoms to the patient
b	Substantial separation of the incision edges, without disrupting fascia or the deep tissue	Two or more of the following clinical signs: redness, swelling, heat, pain, non-serous exudate; plus, one or more of the following: elevated C-reactive protein, increased serum white blood cell count, temperature over 38°C (100.4°F), positive wound or blood culture, gas in tissues	Large fluid collection causing moderate discomfort or pressure in the affected area	Enlarging hematoma causing swelling and pain
c	Extensive separation of the incision edges, involving deep tissue layers	Severe infection related to the incision with systemic signs of sepsis or mono-organ failure	Large, complex fluid collection causing significant symptoms	Significant hematoma causing substantial swelling, pain, and compromising nearby organs or structures
d	Most severe incision dehiscence of all surgical tissue layers with or without organ exposure	Septic shock; Sepsis related multi-organ failure	Large, complex fluid collection causing life-threatening symptoms or a chronic walled-off collection	Significant hematoma, with active bleeding

CONCLUSIONS

The DISH Classification System is a standardized framework developed to assess and manage common surgical incision complications.

1. Provides a unified language for wound complications
 - Addresses a major gap in surgical care by offering consistent terminology and grading (from 0 = none to 4 = most severe, requiring major intervention)
2. Integrates clinical presentation with management escalation
 - Each category uses a dual scale:
 - One for **observable clinical signs** (a–d, from mild/localized to severe/systemic/life-threatening) and
 - One for **intervention level** (0–4, from self-monitoring to surgical/radiological re-intervention under anesthesia, with or without reconstruction).
3. It promotes improved surgical incision outcomes through standardization
 - It captures the full spectrum of wound issues (including milder cases often overlooked), the system supports:
 - Earlier detection,
 - Consistent documentation, and
 - Shared metrics for evaluating recovery

FUTURE USE OF THE DISH SYSTEM

For Surgeons (and Fellows, Residents)

- Standardized assessment of postoperative incision outcomes.
- Earlier recognition of wound deterioration before progression to surgical site infection (SSI).
- Improved communication during postoperative handoffs and multidisciplinary rounds.
- More consistent documentation in the electronic health record (EHR).
- Better decision-making regarding observation, intervention, or reoperation.
- Objective comparison of outcomes among surgeons and surgical techniques.

For Healthcare Quality Departments

- Standardized quality metrics for all surgical services.
- Benchmarking of wound complications across departments and hospitals.
- Identification of trends in dehiscence, inflammation, seroma, and hematoma.
- Measurement of the effectiveness of SSI prevention bundles and new technologies.
- Root cause analysis using standardized severity categories.
- Monitoring performance improvement initiatives over time.

FUTURE USE OF THE DISH SYSTEM

For Infection Prevention Programs

- Differentiate inflammatory wound complications from true SSIs.
- Identify patients at increased risk of progression to infection.
- Improve postoperative wound surveillance beyond CDC/NHSN SSI definitions.
- Facilitate collaboration between infection preventionists and surgical teams.

For Nursing/PAs/NPs

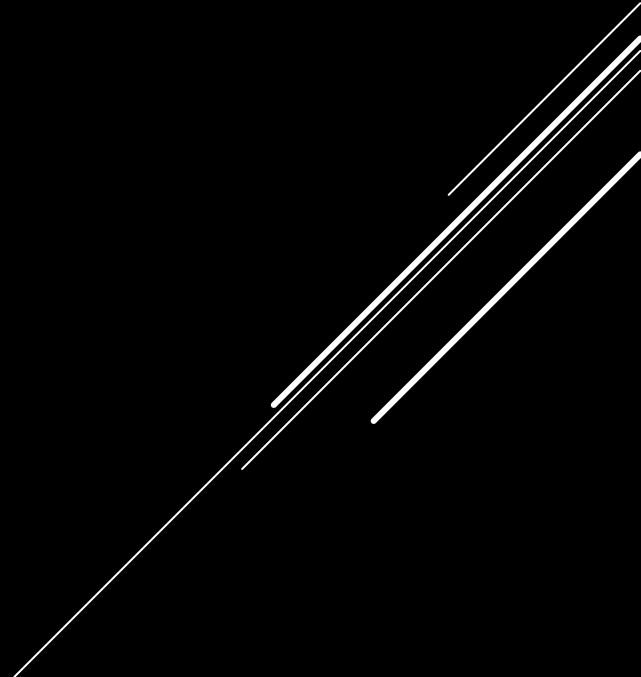
- Standardize wound assessments across inpatient and outpatient settings.
 - Improve consistency in nursing documentation.
 - Guide escalation of care based on severity.
 - Enhance patient education regarding warning signs after discharge.
- 

FUTURE USE OF THE DISH SYSTEM

For Research

- Establish common outcome definitions across clinical trials.
- Compare closure techniques, dressings, sutures, tissue adhesives, and negative-pressure dressings.
- Evaluate new surgical technologies using standardized endpoints.
- Enable multicenter registries with consistent outcome reporting.
- Improve the quality of meta-analyses by reducing variability in outcome definitions.

For Medical Device and Pharmaceutical Companies

- Assess the effectiveness of wound closure products.
 - Compare advanced dressings, antimicrobial sutures, tissue adhesives, and hemostatic agents.
 - Support post-market surveillance and real-world evidence studies.
 - Provide standardized endpoints for FDA-regulated clinical investigations.
- 

FUTURE USE OF THE DISH SYSTEM

For Electronic Health Records (EHRs)

- Incorporate structured DISH scoring into postoperative documentation.
- Generate automated alerts when wound severity progresses.
- Populate quality dashboards and benchmarking reports.
- Facilitate automated reporting for quality improvement initiatives.

For Professional Organizations

A validated DISH system could potentially be incorporated into educational resources and quality initiatives by organizations such as:

- CDC (as a complementary clinical tool—not a replacement for NHSN surveillance definitions)
 - AORN
 - APIC
 - ACS
 - SHEA
 - WHO
 - NICE
 - International surgical societies
- 

FUTURE USE OF THE DISH SYSTEM

For Global Surgery

- Create a common language for reporting incision outcomes across countries.
- Improve comparability of international research studies.
- Support global quality improvement initiatives in surgery.
- Facilitate training in both high-resource and low-resource healthcare settings.

Long-Term Vision

The DISH Classification System could become for **surgical incision outcomes** what the **Clavien-Dindo Classification** is for postoperative complications: a simple, reproducible, and universally understood framework that improves communication, clinical decision-making, research, benchmarking, and quality improvement.

One important distinction is that DISH focuses specifically on **incision-related outcomes**—dehiscence, infection/inflammation, seroma, and hematoma—which are not comprehensively captured by current systems

Rather than replacing existing classifications, it could complement tools such as CDC/NHSN SSI definitions and Clavien-Dindo by providing a standardized method for documenting and grading surgical wound complications throughout the continuum of postoperative care.

WHAT WE COVERED

1. A discussion on a new classification system called DISH for early identification and standardized documentation of surgical incision outcomes (dehiscence, infection/inflammation, seroma, hematoma) in clinical assessments and Electronic Health Record notes.
 2. How this will improve post-discharge surveillance awareness and patient education on the signs of surgical incision outcomes.
 3. The importance of promoting interprofessional consistency in describing surgical incisional complications by having clinicians apply the DISH classification system in $\geq 75\%$ of relevant hand-offs and multidisciplinary rounds.
- 

Thank You!

Maureen Spencer, M.Ed, BSN, RN, CIC, FAPIC

Email: maureenspencer@gmail.com

www.infectionpreventionistconsultant.com

A series of several parallel white lines of varying lengths and slopes, located in the bottom right corner of the slide, creating a modern, abstract graphic element.