MDForLives

THE GLOBAL PULSE OF HEALTHCARE · SURGERY INSIGHT REPORT

Surgical Site Infection Prevention: Where Patient Risk Meets Protocol Adherence

Surgeon perspectives on preoperative risk, antibiotic timing, wound contamination, suspected deep infection, source control, and the protocol gaps that shape SSI prevention.

PATIENT RISK → PREOPERATIVE STRATEGY → PREVENTION EXECUTION → SUSPECTED SSI & SOURCE CONTROL

202	6	71.3%	900180
Survey records	Countries represented USA · UK · Canada · Italy · France · Germany	Completion rate	SGID

WHY THIS REPORT

SSI prevention becomes difficult when standardized safeguards meet patients and procedures that are not standardized.

For a surgeon, infection prevention is not a single perioperative decision. It begins with patient optimization and wound classification, moves through prophylaxis, skin preparation and operative technique, and can rapidly become a diagnostic and source-control problem if infection is suspected after surgery.

The MDForLives survey captures where surgeons place the greatest weight across that pathway. The responses highlight poorly controlled diabetes, wound contamination, timely prophylaxis, protocol adherence, imaging for suspected deep infection, source control, and the continuing challenge of making prevention reliable across different patients and operative contexts.

> **Survey frame:** 202 survey records with a 71.3% completion rate. Country metadata represents the USA, UK, Canada, Italy, France, and Germany. Substantive question bases range from 152 to 156 responses. Internal operational, required-text, after-question, and honeypot fields were excluded from analysis.

CLINICAL CONTEXT

Modern SSI prevention is a bundle of evidence-based steps, but implementation still depends on the operation, the patient, and the reliability of the system around them.

The CDC SSI prevention guideline remains a core US reference, while the SHEA/IDSA/APIC acute-care update emphasizes evidence-based antimicrobial prophylaxis, glucose control, decolonization in selected procedures, bundle adherence, and operating-room infection-prevention practices.

The WHO global SSI guidelines and NICE guidance similarly frame prevention across the pre-, intra-, and postoperative periods. None of these sources removes the need for surgical judgment: wound class, implanted material, host risk, anatomy, diagnostic uncertainty, and source control can change the practical pathway.

The survey therefore sits in the gap between recommendation and execution. It does not test which intervention is clinically superior. It shows which risks and decisions surgeons in this respondent group say most influence their prevention and management choices.

EXECUTIVE SUMMARY

Six findings that show where SSI prevention shifts from protocol to risk-sensitive surgical judgment.

01

69.7%

Protocol adherence is the dominant consistency gap

Protocol non-adherence is the most selected limitation to delivering consistent SSI prevention.

02

52.9%

Timely prophylaxis leads pre-incision prevention

Antibiotic prophylaxis is the prevention measure surgeons most often prioritize before incision.

03

51.9%

Poorly controlled diabetes drives prevention intensity

Diabetes is the patient profile most often selected as increasing SSI prevention efforts.

04

43.8%

Contaminated or dirty surgery changes strategy most

Wound contamination leads the operative scenarios that most alter SSI strategy.

05

49.4%

Imaging leads evaluation of suspected deep SSI

CT or MRI is the most selected next step when a deep surgical site infection is suspected.

06

34.2%

Personalized protocols lead the future outlook

Personalized prevention pathways are the development most often expected to transform SSI prevention.

01

PATIENT RISK

Poorly controlled diabetes is the patient profile most likely to intensify SSI prevention

51.9% say poorly controlled diabetes most increases their SSI prevention efforts.

CONTEXT

A standard prevention bundle begins from a different baseline when wound healing, immune response, or metabolic control is already compromised. Surgeons often need to decide whether additional optimization, counseling, monitoring, or procedural planning is warranted before the operation begins.

WHAT THE DATA SHOWS

Poorly controlled diabetes leads at 51.9%, followed by immunosuppression at 23.1%, severe obesity at 15.4%, and previous SSI at 9.6%. In a separate question, poor glycemic control is also selected by 30.3% as the finding that most changes preoperative SSI strategy.

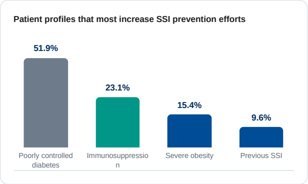
THE INSIGHT

The survey places diabetes in two parts of the pathway: as a patient profile that raises concern and as a preoperative finding that changes action. That makes glycemic status less of a background comorbidity and more of a practical risk-stratification signal.

WHY IT MATTERS

For surgical teams, the implication is not that one metabolic value determines whether surgery proceeds. It is that poorly controlled diabetes can trigger a more deliberate review of optimization, timing, wound risk, follow-up, and the reliability of other prevention measures.

Patient profiles that most increase SSI prevention efforts



02

PREOPERATIVE STRATEGY

Contaminated wound classification changes the prevention plan before surgery starts

36.8% say contaminated wound classification most changes their preoperative SSI strategy.

CONTEXT

Preoperative SSI planning is partly about anticipating microbial burden. A clean elective procedure, an operation involving implanted material, and a contaminated field do not carry the same exposure or consequence profile, even when the same core safety practices are used.

WHAT THE DATA SHOWS

Contaminated wound classification leads at 36.8%, followed by poor glycemic control at 30.3%, MRSA colonization at 18.7%, and active remote infection at 14.2%.

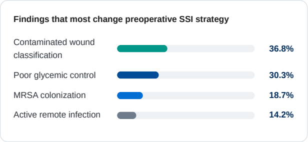
THE INSIGHT

The ranking shows that surgeons weigh local operative contamination slightly more heavily than host metabolic risk when deciding what most changes the preoperative strategy. Colonization and remote infection matter, but they are selected less often as the single dominant trigger.

WHY IT MATTERS

Wound classification can influence prophylaxis, procedural planning, expectations for contamination control, and how closely postoperative infection risk is watched. It also helps explain why prevention cannot be reduced to one universal checklist applied identically to every operation.

Findings that most change preoperative SSI strategy



03

PRE-INCISION PREVENTION

Timely antibiotic prophylaxis remains the pre-incision measure surgeons prioritize most

52.9% prioritize timely antibiotic prophylaxis before incision.

CONTEXT

The minutes before incision compress several prevention tasks into a short operational window. Antimicrobial delivery, skin preparation, patient positioning, equipment readiness, and team checks all compete for attention, which makes reliability as important as knowing the recommendation.

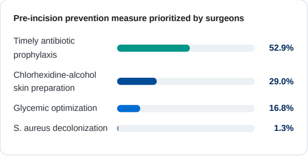
WHAT THE DATA SHOWS

Timely antibiotic prophylaxis leads at 52.9%. Chlorhexidine-alcohol skin preparation follows at 29.0%, glycemic optimization at 16.8%, and S. aureus decolonization at 1.3%.

THE INSIGHT

The result favors a time-critical action that must be completed correctly before the procedure begins. It also reflects that decolonization is selective rather than universal, while skin preparation and glycemic management sit within the broader prevention bundle.

Pre-incision prevention measure prioritized by surgeons



WHY IT MATTERS

Current guidance emphasizes evidence-based prophylaxis timing so effective tissue levels are present at incision. The survey reinforces a practical point for operating-room systems: prevention fails if an essential step is clinically correct on paper but operationally unreliable at the moment it matters.

04

WHY PREVENTION FAILS

SSI prevention failure is seen as a combination of uncontrolled patient risk and process breakdown

40.0% identify uncontrolled patient risk as the most common driver of SSI prevention failure.

CONTEXT

When an SSI occurs despite prevention efforts, the temptation is to search for a single missed step. In practice, infection risk emerges from host factors, contamination, operative complexity, and the reliability of the prevention process across multiple people and handoffs.

WHAT THE DATA SHOWS

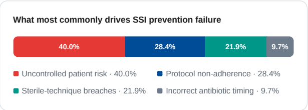
Uncontrolled patient risk leads at 40.0%, followed by protocol non-adherence at 28.4%, sterile-technique breaches at 21.9%, and incorrect antibiotic timing at 9.7%.

THE INSIGHT

Surgeons do not attribute failure only to technical breaches. The largest share points to residual patient risk, while almost three in ten point to protocol non-adherence. The pattern suggests that preventability is distributed across factors with different degrees of modifiability.

WHY IT MATTERS

A useful SSI review needs to separate what was difficult to change from what should have been reliable. That means auditing risk optimization and case context alongside prophylaxis timing, sterile practice, and whether the prevention bundle was actually completed.


What most commonly drives SSI prevention failure

05

SUSPECTED DEEP SSI

When deep SSI is suspected, imaging is the most selected first move

49.4% select CT or MRI evaluation as their primary next step for suspected deep SSI.

CONTEXT

Deep infection changes the clinical question from “Was prevention adequate?” to “Where is the infection, how extensive is it, and is there a source that needs drainage, debridement, washout, or another intervention?” The answer can alter both antimicrobial and surgical management.

WHAT THE DATA SHOWS

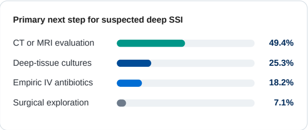
CT or MRI evaluation leads at 49.4%, followed by deep-tissue cultures at 25.3%, empiric IV antibiotics at 18.2%, and surgical exploration at 7.1%.

THE INSIGHT

The ordering suggests that many surgeons prioritize defining anatomy and depth before moving immediately to operative exploration. Culture acquisition and empiric treatment remain important, but they occupy different places depending on stability, access to the source, and the likelihood that imaging will change management.

WHY IT MATTERS

Deep SSI management is often a source-control problem as much as an antimicrobial problem. Imaging and microbiology can clarify whether antibiotics alone are likely to be insufficient and whether drainage or operative management should move earlier in the pathway.


Primary next step for suspected deep SSI

06

OPERATIVE SCENARIO

Contaminated or dirty surgery and prosthetic implants create the biggest strategic shifts

43.8% say contaminated or dirty surgery most changes their SSI strategy; 38.6% select prosthetic implant surgery.

CONTEXT

Procedure type changes the consequences of infection. Contaminated fields increase microbial exposure, while implanted material can make infection harder to eradicate and can turn a postoperative complication into a threat to prosthesis retention, revision burden, or long-term function.

WHAT THE DATA SHOWS

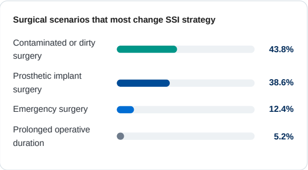
Contaminated or dirty surgery leads at 43.8%, followed by prosthetic implant surgery at 38.6%. Emergency surgery accounts for 12.4% and prolonged operative duration for 5.2%.

THE INSIGHT

Two very different mechanisms dominate the responses: higher contamination at the time of surgery and the presence of foreign material that raises the stakes if infection occurs. Both push prevention beyond routine execution toward case-specific planning.

WHY IT MATTERS

This is where standardized SSI prevention most clearly needs a procedural lens. The baseline bundle stays important, but contamination, implanted material, and the feasibility of source control can change prophylaxis, follow-up intensity, diagnostic thresholds, and the consequences of even a small lapse.


Surgical scenarios that most change SSI strategy

07

ANTIBIOTIC NARROWING

Clinical improvement and source control carry more weight than a negative culture alone

35.5% say clinical improvement most supports narrowing or stopping SSI antibiotics; 33.6% select adequate source control.

CONTEXT

Once an SSI is being treated, the decision to narrow or stop therapy is rarely based on one laboratory result. Culture quality, anatomy, source control, systemic features, clinical trajectory, and the original operation all influence how much confidence a team has in de-escalation.

WHAT THE DATA SHOWS

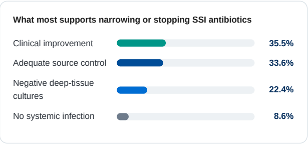
Clinical improvement leads at 35.5%, closely followed by adequate source control at 33.6%. Negative deep-tissue cultures account for 22.4%, while absence of systemic infection accounts for 8.6%.

THE INSIGHT

The near tie between clinical response and source control is clinically coherent: antibiotics become easier to rationalize when the patient is improving and the correctable source has been addressed. A negative culture helps, but does not automatically exclude deep infection or prove that source control is adequate.

WHY IT MATTERS

For surgeons working with infectious-disease or stewardship teams, the practical question is not simply whether a culture is positive. It is whether the infection has been anatomically controlled, whether the patient is improving, and whether the remaining antimicrobial spectrum and duration still match the clinical problem.


What most supports narrowing or stopping SSI antibiotics

08

CONSISTENCY GAP

Protocol non-adherence is the dominant barrier to consistent SSI prevention

69.7% identify protocol non-adherence as the biggest limitation to consistent SSI prevention.

CONTEXT

Hospitals can have strong written policies and still deliver variable prevention. Timing, documentation, handoffs, local culture, role clarity, and the number of steps compressed into the perioperative workflow can all determine whether a bundle is reliably completed.

WHAT THE DATA SHOWS

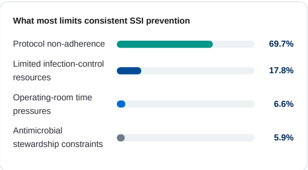
Protocol non-adherence dominates at 69.7%. Limited infection-control resources follow at 17.8%, operating-room time pressures at 6.6%, and antimicrobial-stewardship constraints at 5.9%.

THE INSIGHT

The gap is striking because resource and time limitations are real, yet respondents overwhelmingly identify adherence itself as the main consistency problem. That points toward implementation design, measurement, feedback, and team accountability rather than assuming that another written protocol will solve the problem.

WHY IT MATTERS

Current acute-care guidance explicitly supports bundles and strategies that promote adherence. The survey suggests that the next operational gain may come from making essential prevention steps observable, auditable, and difficult to bypass during routine and high-pressure cases.


What most limits consistent SSI prevention

09

WHAT PRACTICE NEEDS NEXT

Surgeons expect personalization to matter more than a single new prevention technology

34.2% select personalized prevention protocols as the development most likely to transform SSI prevention within 3–5 years.

CONTEXT

SSI prevention innovation is moving in several directions at once: better risk prediction, faster pathogen information, antimicrobial surfaces or materials, and care pathways that adapt to individual patient and procedure characteristics.

WHAT THE DATA SHOWS

Personalized prevention protocols lead at 34.2%, followed by antimicrobial-coated surgical materials at 24.3%, rapid pathogen detection at 21.7%, and AI-based SSI risk prediction at 19.7%.

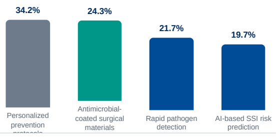
THE INSIGHT

The leading answer is not a device or diagnostic test. It is a more individualized prevention pathway. That is notable beside the earlier adherence finding: surgeons appear to want greater personalization without abandoning the reliability of core protocols.

WHY IT MATTERS

The future challenge will be deciding which elements should remain invariant and which should change with risk. A useful personalized pathway would make additional prevention proportional to patient and procedural risk while keeping the essential bundle simple enough to execute consistently.

Developments expected to transform SSI prevention within 3–5 years



OPEN RESPONSE LENS

Challenging SSI cases repeatedly move from prevention into source control, microbiology, wound management, and patient adherence.

The open-ended question asked surgeons to describe a challenging SSI case, what increased infection risk, how management changed, and what remained unresolved. The responses were not formally coded, so the themes below are qualitative rather than percentage estimates.

Metabolic and immune risk made prevention less forgiving

Respondents described poorly controlled diabetes, obesity, immunosuppression, steroid exposure, and difficult wound healing as recurring background risks. Several cases required attempts at glycemic optimization or more intensive monitoring before or after re-operation.

Implants and contaminated fields raised the stakes

Prosthetic joint, vascular graft, mesh, and other implant-related infections appeared alongside contaminated bowel surgery and complex postoperative wounds. These cases often carried difficult decisions about washout, reimplantation, hardware retention, or prolonged treatment.

Source control repeatedly changed management

Debridement, washout, drainage, drains, VAC dressings, and re-operation were recurring themes. In several comments, the practical challenge was not simply choosing an antibiotic but determining whether infected or necrotic material had been adequately controlled.

Microbiology did not always provide a clean answer

Responses mentioned polymicrobial infection, negative cultures, fungal growth, antibiotic allergies, prior antimicrobial exposure, and resistance concerns. Some cases required infectious-disease involvement because the microbiology and the clinical picture did not align neatly.

Patient adherence and follow-up remained unresolved

Several comments described non-compliance with glycemic control, prolonged outpatient treatment, wound care, or follow-up. These cases underline that prevention and treatment plans can fail after discharge even when the inpatient strategy is appropriate.

A minority of responses were brief or non-specific

Some open responses were short, stated that no case came to mind, or did not provide enough detail for interpretation. They are retained as part of the qualitative record rather than being forced into a stronger theme.

PEOPLE ALSO ASK · TOPIC FAQ

Frequently asked questions about surgical site infection prevention.

What is a surgical site infection?

A surgical site infection is an infection related to an operative procedure that develops at the incision or deeper tissues and organs involved in the surgery. Surveillance definitions distinguish superficial incisional, deep incisional, and organ/space SSI.

When should antibiotic prophylaxis be given before surgery?

Timing depends on the antimicrobial and procedure, but current prevention guidance generally aims for adequate tissue concentrations at the time of incision. Many commonly used prophylactic agents are started within the hour before incision, with timing adjusted for drugs that require longer infusion.

How does diabetes affect surgical site infection risk?

Poor glycemic control can increase infection risk and can influence perioperative planning. SSI prevention guidance therefore includes attention to perioperative glucose management alongside procedure-specific prevention measures.

When is Staphylococcus aureus decolonization used before surgery?

Decolonization is not identical for every operation. Current guidance supports targeted or procedure-specific approaches, particularly in settings such as selected cardiothoracic and orthopedic procedures, according to local protocols and patient risk.

How is a suspected deep surgical site infection evaluated?

Evaluation depends on the operation and clinical presentation and may include examination, imaging, microbiology, and assessment for a drainable or surgically correctable source. Deep infection often requires decisions about both diagnosis and source control.

When can antibiotics be narrowed or stopped after a surgical site infection?

Antibiotic decisions depend on the clinical course, culture information, source control, systemic features, and the site and depth of infection. Narrowing or discontinuation should follow the patient’s response and applicable antimicrobial-stewardship and treatment guidance.

SURGICAL SITE INFECTION PREVENTION LENS

What this means at four points in the surgical pathway.

The survey suggests that SSI prevention is strongest when the core bundle is reliable, while patient and procedural risk determine where the pathway needs additional attention.

1. Stratify risk before incision

Make risk actionable: review diabetes control, immune status, obesity, previous SSI, remote infection, wound classification, and implanted material early enough for the findings to change planning.

2. Protect the time-critical prevention steps

Make the bundle reliable: ensure prophylaxis timing, skin preparation, sterile practice, and other procedure-specific prevention steps are visible, assigned, and auditable rather than assumed.

3. Separate diagnosis from source control

When deep SSI is suspected: define the anatomy, obtain meaningful microbiology where feasible, and decide whether drainage, debridement, washout, or another source-control intervention is required.

4. Review the system, not only the complication

After an SSI: examine residual patient risk, protocol adherence, sterile-practice issues, antibiotic timing, handoffs, and follow-up so the learning reaches beyond the individual case.

CLOSING PERSPECTIVE

The prevention opportunity is not choosing between standardization and personalization; it is making them work together.

The MDForLives findings describe a surgical infection pathway in which core prevention measures remain recognizable, yet their importance changes with the patient and the procedure. Poorly controlled diabetes raises prevention intensity, contaminated wound classification changes the preoperative plan, timely prophylaxis leads the pre-incision priorities, and contaminated or prosthetic surgery changes strategy once again.

The strongest operational finding is the size of the adherence gap. Nearly seven in ten respondents identify protocol non-adherence as the biggest limitation to consistent prevention. That matters because many SSI safeguards are already known; the practical challenge is ensuring they are executed at the right time, in the right patient, across routine and high-pressure operating-room conditions.

At the same time, the survey does not reduce infection to process failure. Uncontrolled patient risk is the most selected driver of prevention failure, and open responses describe diabetes, immunosuppression, complex wounds, implants, resistant organisms, and difficult follow-up. These are reminders that an SSI can emerge even when a checklist is completed, and that case review needs to distinguish residual risk from avoidable variation.

The future signal is therefore balanced: preserve a dependable baseline bundle, then personalize around patient risk, procedure type, microbiology, and source-control needs. That combination is more likely to make SSI prevention both consistent and clinically credible than either uniform protocol or individualized improvisation alone.

Make risk factors visible early

Use diabetes control, immune status, wound class, previous SSI, and implanted material to trigger planning before the day of surgery.

Audit the prevention bundle

Measure whether time-critical steps actually happened, not only whether a policy exists.

Treat deep SSI as an anatomic problem too

Link imaging and microbiology to a deliberate source-control decision rather than viewing antibiotics as the whole treatment pathway.

Personalize without creating avoidable variation

Keep essential prevention steps invariant, then add risk-sensitive measures where patient or procedural context justifies them.

Help future surgical safety insights reflect the realities of SSI prevention in practice.

Join MDForLives to share clinical perspectives on perioperative risk, infection prevention, source control, antimicrobial decisions, and surgical outcomes.

Join the Panel

REFERENCES AND DATA SOURCE

1. **MDForLives internal survey report.** All Markets Report for SGID 900180, Project: Engagement Campaign | Surgeons Insight Survey. 202 survey records, 71.3% completion rate. Country metadata: USA, UK, Canada, Italy, France, and Germany. Substantive question bases range from 152 to 156 responses.
2. **Centers for Disease Control and Prevention.** Surgical Site Infection (SSI) Prevention Guideline. CDC Infection Control.
3. **SHEA/IDSA/APIC.** Strategies to prevent surgical site infections in acute-care hospitals: 2022 Update. Infection Control & Hospital Epidemiology, 2023.
4. **World Health Organization.** Global guidelines for the prevention of surgical site infection, second edition. WHO, 2018.
5. **National Institute for Health and Care Excellence.** Surgical site infections: prevention and treatment (NG125). NICE recommendations.
6. **Centers for Disease Control and Prevention, NHSN.** Surgical Site Infection (SSI) Event protocol, 2026. CDC NHSN SSI resources.

External sources provide clinical context. Survey percentages represent MDForLives respondent selections and are reported separately from external evidence.

MDForLives

MDForLives is a global healthcare insights platform where healthcare professionals, patients, and caregivers discover, share, and shape the future of healthcare. This report presents aggregated professional perspectives for educational and insight purposes.

The Global Pulse of Healthcare

© MDForLives