Isla Centralised Digital Wound Hub

NHS Guy's and St Thomas' NHS Foundation Trust

NHS Buckinghamshire Healthcare NHS Trust

Centralised Digital Wound Hub: Remote Post-operative Wound Monitoring

Buckinghamshire Healthcare NHS Trust in partnership with Guy's & St Thomas's NHS Foundation Trust and Isla

Jo Shackleton Deputy Director of Infection Prevention & Control (DDIPC)

OUTSTANDING CARE

HEALTHY COMMUNITIES

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Burden of SSI

SSI are one of the most frequent healthcare associated infections (HCAI), affecting up to one third of surgical patients (World Health Organization [WHO] 2016)

In the United States, there are an estimated 158,000 SSI per year (Magill et al, 2014) and estimated cost attributable to SSIs between $3.5 billion to $10 billion (Scott 2009).

In Europe SSIs may affect more than 500,000 patients annually, costing the healthcare system up to 19 billion euros ($20.7 billion USD) (WHO 2016)

SSI also contribute significantly to the spread of antibiotic-resistant bacteria, making SSI prevention a global priority in order to preserve antibiotics for future generations.

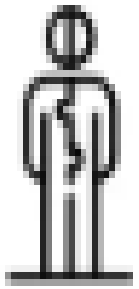
Photo used with kind consent from patient

Burden of SSI

Increases risk of prolonged antibiotic treatment, hospital stay, outpatient and emergency visits, surgical re-operation, readmission and surgical sepsis (WHO, 2018).

Possnet et al. (2009) reported that an acute hospital performing 10,000 surgical procedures annually may have 300–400 surgical infections at a cost of 3300–4400 excess bed-days or approximately £2.09–2.79 million a year (inflated to 2023 costs) ($2.66 to $3.54 million USD)

In England, litigation costs associated with SSIs between 2012 and 2017 were reported to be £35.2 million (NHS Resolution), an estimated $44 million USD.



Patients with SSIs may experience pain, anxiety, delayed wound healing, financial losses (Tanner et al. 2013), and reduced quality of life affecting mental health, (Long et al. 2022) and more susceptible to secondary complications such as sepsis (Neumayer et al. 2007)

Challenges

Barriers and facilitators for surgical site infection surveillance for adult cardiac surgery in a high-income setting: an in-depth exploration

Tanner, Brierley Jones, Rochon et al. 2023

Background

Participation in surveillance is variable, suggesting opportunities to improve wider adoption.

Aim

To gain an in-depth understanding of the barriers and facilitators for SSI surveillance in a high-income European setting.

Methods

Semi-structured interviews with 16 surveillance staff, infection prevention staff, nurses and surgeons from nine cardiac hospitals in England. Data were analysed thematically.

The study was funded by a National Institute for Health Care Research (NIHR) programme development grant (NIHR202620).
The views expressed are those of the authors and not necessarily those of the NIHR.

Barriers to SSI Surveillance

Resource burden of surveillance
[Surveillance nurse] visits all sites, she links with the theatres, she collects the forms and then sits at the computer and inputs the data by hand and we thought oh my goodness this is not effective use of our time, it takes forever. (Participant [P]15, IPC Lead Nurse)

Modernising surveillance
We phone the patients, it's very labour intensive. We used to send out a questionnaire with a stamped addressed envelope but that was rather futile. (P14, Surveillance Lead Nurse)

Engagement with surveillance
We see [receptive and unreceptive responses towards SSI data], and also sometimes unguarded animosity towards the people involved in the surveillance programme and the findings of the programme. (P10, Director of IPC).

Priority and awareness of SSIs
We ran a study day for our link practitioners, and I asked what they thought the patient safety issues were. Predictably they all said pressure ulcers, falls and medication errors. Not one person said infections. (P16, IPC Lead Nurse)

If you were to allocate this task, which is clearly quite arduous, to clinical sisters on the wards, in terms of their lists of priorities, it comes at the very bottom … especially if it is the surveillance aspect of it rather than the clinical management of it. (P9, Consultant Surgeon)

Quotes from: Tanner, Brierley Jones, Rochon et al. 2023

Facilitators for Surveillance

Data systems for downloading/uploading data that link between databases	Digital methods for data collection (remote wound monitoring platforms and Apps)	Relevant SSI definitions	Ownership of data by clinicians	More resources
Increase SSI awareness	Supportive managers	Local and national champions	Mandatory surveillance	Reliable benchmarking data
	Integrate surveillance within routine clinical work	Focus on primary care and wider health economy	Demonstrate/strengthen the link between surveillance and reduced SSIs (including current patients)	

Tanner, Brierley Jones, Rochon et al. 2023

Surgical Site Infection (SSI): current state

Surveillance of surgical wounds for early signs of site infection is vital to preventing surgical patient readmission, corrective surgery and even mortality. Wound surveillance remains variable across hospitals and largely reliant upon in-person or telephone follow up at 30 days post-discharge, or review by GPs.

<10%

Hospitals Know Their SSI Rate

Few hospitals track SSI rates, missing chances to improve patient safety and care.

40%

Reduction in LOS

Drive for day surgery and shorter length of stay shift focus from inpatient surveillance

50%

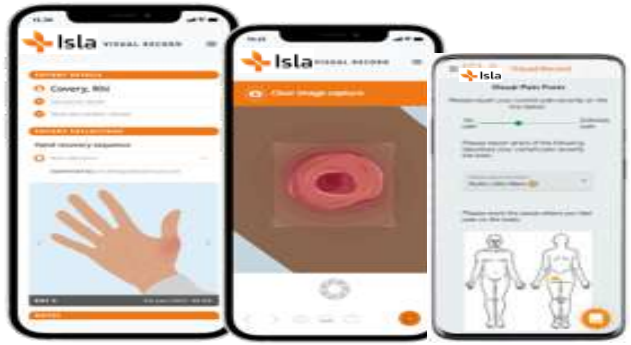
SSI require Readmission

With rising surgery backlogs and heavy service pressures, preventing complications is crucial.

75%

SSI occur post-discharge

Few community or home-based measures for SSI prevention .



Remote surgical wound monitoring

1. Patient submits photos of wound and symptoms form to the Isla platform, no need to download or install
2. A central expert team of Clinical Nurse Specialists review and either send bespoke advice to patient or make referrals
3. Wound Hub team monitor and report back to services on SSI trends and patient outcomes

Isla

Supported by Guy's & St Thomas' Charity

Remote Wound Monitoring

- Use of digital health interventions for postoperative monitoring, including surgical monitoring, remains at an early stage of innovation. *Armstrong KA, et al. Remote Monitoring in Postoperative Care: A Systematic Review of Digital Health Interventions. Journal of Medical Internet Research. 2022;24(3):e32543.*
- Patient acceptability, accessibility, needs and preferences need to be taken into account for routine use. *Marsh JD, et al.Patient Acceptability, Accessibility and Preferences in Digital Health for Postoperative Recovery: A Mixed-Methods Review.BMJ Open. 2021;11:e045596.*
- TWIST RCT study
  - Almost 4x more patients diagnosed with SSI in the first 7 days
  - Community healthcare attendances were halved
  - Patients reported more positive experience

McLean KA, Mountain KE, Shaw CA, Drake TM, Ots R, Knight SR, Fairfield CJ, Sgrò A, Skipworth RJE, Wigmore SJ, et al.Tracking wound infection with smartphone technology (TWIST): a randomised controlled trial in emergency surgery patients.British Journal of Surgery. 2021;108(Suppl 5): znab282.013.

Previous Surveillance Pathway at BHT

Surgery

Resource heavy & fragmented cover

Manual coordination

- Limited staff
- Reactive, with poor systems
- Separate to care pathway

Weak oversight limits scale & raises risk

Limited data for decision making

- Disconnect across care settings
- Missed opportunities to act on early deterioration

Discharged

No monitoring

Once the patient leaves hospital, discharged from surveillance without follow up.

New Surveillance Pathway at BHT

Surgery

Proactive weekly follow up and PIFU

Safety net for early discharges

- 7-day service, dedicated team
- Timely advice, review and referral
- High patient satisfaction and engagement
- Proactive identification and treatment of wound concerns

Efficient healthcare processes

Releases time to focus on prevention and care improvement

- MDT collaboration
- Timely and comprehensive reporting of wound outcomes and identification of outbreaks

Reduces pressures on the healthcare system as a whole

Sits at the intersection between acute and primary care

- Reduces ambulatory and primary care visits
- Reduces readmissions for SSI
- Promotes patient self-management

Discharged

Proactive monitoring

Once the patient leaves hospital, they are followed up proactively (Patent initiated follow up [PIFU] also supported) for 30 days or one year, depending on specialism

Clinical Review Workflow

ISLA

Continue weekly monitoring advice and reassure	Refer to local GP, increase monitoring to every 4-5 days	Refer to Hospital Team/ Clinic/Assessment Unit for review	Instruct patient to attend local A&E
Clear improvement of previous wound concern	Minor SSI* (skin and subcutaneous tissue only)	Major SSI*	Sepsis signs and symptoms
Resolving haematoma	Non-purulent exudate (major)	Dehiscence (beyond skin and subcutaneous tissue + signs/ symptoms of infection) OR heamatoma or seroma likely to require surgical revision	Haemorrhage
Tingling and/or numbness	Dissolvable suture material evident		Catastrophic dehiscence (with visible internal organs)
Suture material under skin	Problem with drain sites	Spreading cellulitis	
Non-visual symptoms (pain / heat / fever)	Staples/non-absorbable sutures (> day 14)		
Non-purulent exudate (minor)	Dehiscence (skin and subcutaneous tissue, no other symptoms)		
	Purulent exudate (minor, skin only)		

Supported by Guy's & St Thomas' Charity & ISLA

Financial Benefits

- Fewer SSI-related readmissions (~2,000 bed days / £640k)
- Fewer ED, GP, 111 and ambulatory visits
- Reduced antibiotic use
- Safer early discharge
- Avoided wound complications
- Economies of scale

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High-Value Non-Cash Benefits

- ➡ Improved pathway routing
- Reduced workload pressure
- Protection of oncology and other pathways
- ⚙ Workflow gains
- Workforce resilience
- Particularly important for maternity & orthopaedics

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First Three Months

Summary Table	September			October			November		
	CS	HIP	KNEE	CS	HIP	KNEE	CS	HIP	KNEE
Unique patients (n)	24	7	11	149	21	37	166	16	36
Response rate (%)	**87.5%**	**100%**	**100%**	**95.3%**	**90.5%**	**94.6%**	**91%**	**93.8%**	**91.7%**
Patient-reported surgical site infection (SSI) (n)	2	0	0	7	0	1	13	0	2
Patient reported SSI rate (%)	**8.3%**	0%	0%	**4.7%**	0%	**2.7%**	**7.8%**	0%	**5.6%**
Readmission for SSI (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%
Patient reported SWD (any depth) rate (%)	**12.5%**	0%	0%	**8.7%**	0%	**2.7%**	**6.0%**	0%	0%
Antibiotics prescribed for the wound after discharge rate (%)	**12.5%**	0%	0%	**12.8%**	0%	**2.7%**	**15.1%**	0%	**5.6%**

Referrals to BHT (Ortho) Dec 2025

Continued low rates of hospital re-referral indicate that the monitoring approach is safe and does not require frequent in-person review. Total of 12 emails sent to-date (two emails for same patient).

Referral pathway: The updated BHT orthopaedic referral pathway using end-of-list clinic slots rather than A&E review is working well and the Hip re-admission was done without delay due to this.

BHT TAU referrals for December:
2 Knee patients and 1 Hip – which resulted in re-admission.

	Patients operated in Sept 2025	Patients operated in Oct 2025	Patients operated in Nov 2025	Patients operated in Dec 2025
Referrals/ advice request emails sent to TAU	2	4	1	3
Number of Submissions on Isla for Ortho	8	175	324	347
Referral rate (as a percentage)	25%	2.3%	0.3%	0.9%

Patient feedback

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Voluntary C-section and Orthopaedic patient surveys sent out to patients from October – December 2025 asking about the CDWH service.

- 20 responses received for C-section
- 32 responses received for Orthopaedics

100%
of C-section and Ortho patients reported very timely responses received.

100%
of Ortho patients reported responses were very helpful or helpful

95%
of C-section patients reported responses were very helpful or helpful

95%
of C-section patients reported they are very likely to recommend service to others.

90%
of C-section patients stated advice received prevented GP contact

84%
of Ortho patients reported they are very likely to recommend service to others.

91%
of Ortho patients stated advice received prevented GP contact.

Patient feedback

Ortho Patient Feedback:

- The service provided was very prompt and reassuring, answering any questions I had. I found it helpful to have the reassurance online as my mobility was not great for some time following the surgery.
- This is a very good service. It saves time and effort of visiting surgery nurses . Thanks for your quick responses. All has been very reassuring.
- Amazing service. Knowing there is someone who can answer any questions that I might have and not having to wait in a queue.
- Reassuring to know that there is help available if needed.

Patient feedback

C-section Patient Feedback:

- What i found most helpful about this new service, is that i didn't have to attend a hospital appointment each week for a review. The feed back by text was really fast and reassuring that everything should be as they should be. This stopped me, from accessing services that I didn't need.
- This service is invaluable, I felt like I was being cared for past my postnatal period and that was a relief to know someone was checking my wound progress. It was good to know what to check for and what was normal.
- Personalised responses and very quick responses with great medical feedback on my concerns

BHT staff comments on the new service

"I have found this to be easy to manage overall, patients enjoy the contact and we have caught infections early. Continuity of care within the trust has been upheld better than what it would have been had the patient been seen via ED/GP services. Patients feel comfortable with the use of the platform and feel that they are well connected if they become unwell.

I don't feel this has added a great amount of work to my day-to-day duties; however, it ties in well with TAU's ethos of an assessment unit, a good string to the bow!."

Trauma Assessment Unit Manager

BHT Trust Chair

"The monitoring request came weekly and always received a prompt response offering helpful advice. My view is that a service such as this is valuable as the rapid response helps reassure as to whether progress is in line with expectations. It also is likely to reduce visits to primary care in the rehabilitation phase."

David Highton, Buckinghamshire Healthcare NHS Trust Chair

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Centralised Digital Wound Hub

For BHT queries kindly email:
bht.ssis@nhs.net

For GSTT questions, please contact gstt.buckscdwh@nhs.net

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