

+ Evidence in focus

Prophylactic use of PICO® Single Use Negative Pressure Wound Therapy System (sNPWT) following cardiac surgery: positive impact on clinical and health economic outcomes of risk assessment based implementation

+ Plus points

A quality improvement audit at a major UK cardiac centre that compared standard dressings (baseline audit) with use of PICO sNPWT in medium- and high-risk patients showed:^{1,2}



PICO sNPWT can be successfully implemented after cardiac surgery using a **risk-based approach**^{1,2}



50% relative reduction in surgical site infections (SSIs) in coronary artery bypass graft (CABG) patients after implementation of PICO sNPWT^{1,2}

£83,271 total cost savings

from reducing SSI incidence using this PICO sNPWT pathway^{1,2}



The problem of SSIs



#2

SSIs are the second most frequent healthcare-associated infection in Europe and the USA³



Up to \$34,000

additional cost due to developing an SSI in Europe⁴ (depending on surgery type)



In the UK, the **cost of treating cardiac SSIs is higher** than treating SSIs for most other surgery types⁵



The Bristol Heart Institute (UK) undertook a **quality improvement project to help reduce SSIs** in CABG and non-CABG patients (January to March 2018)^{1,2}

A quality improvement audit to reduce SSIs

- Baseline SSI incidences were determined at the unit in CABG (n=148) and non-CABG patients (n=161)^{1,2}
- A new pathway was then introduced using the Brompton and Harefield Infection Score (BHIS) to help decide which patients were eligible for prophylactic use of PICO sNPWT^{1,2}

Brompton and Harefield Infection Score (BHIS)
Predictive score for SSIs with CABG (±additional procedures)

Level, score (patients, %)	SSI risk
Low, 0–1 (66%)	2.6%
Medium, 2–3 (26%)	6.0%
High, ≥4 (8%)	16.0%
- Diabetes, 1 point - Left ventricular ejection fraction (LVEF) <45%, 1 point	- BMI ≥35kg/m², 2 points - Female, 2 points - Emergency, 2 points - HbA_{1c} >7.5%, 3 points

Bristol Heart Institute PICO sNPWT pathway

Cardiac surgery pre-assessment

Low risk

BHIS 0–1

Medium risk

BHIS 2–3, or revision surgery

High risk

BHIS ≥4

Standard post-operative dressings

Consider PICO sNPWT

(surgeon discretion)

Implement PICO sNPWT

Results

Utilising risk assessment to determine which patients received PICO sNPWT or standard dressings showed:^{1,2}

- A **50% reduction in the incidence of SSIs** in 148 CABG patients (Figure 1)
- A slight increase in SSI incidence in 153 non-CABG patients (from 3.1% at baseline to 5.2% after implementation)
 - Not all patients had risk assessments, which may have affected the results in non-CABG patients^{1,2}

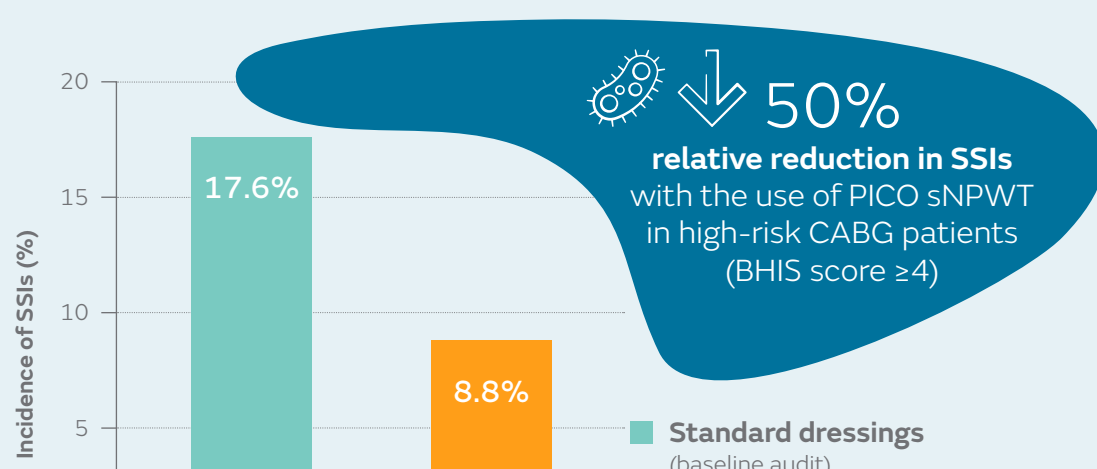


Figure 1. Incidence of SSIs before (n=26) and after (n=13) implementation of PICO sNPWT based on risk score^{1,2}

During the audit, **total cost of managing SSIs was reduced** from £268,745 to £185,474 (Figure 2)^{1,2}

- Use of PICO sNPWT resulted in an overall cost saving, despite being more expensive than standard dressings

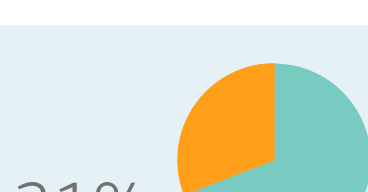


Figure 2. Reduction from baseline (n=31) in total costs of managing SSIs using this PICO sNPWT pathway (n=21)^{1,2}

PICO sNPWT can help to reduce SSI incidence with cost savings

The UK National Institute for Health and Care Excellence (NICE) **recommends PICO sNPWT** as an option to help reduce the incidence of SSIs in **high-risk patients**⁶

“The outcomes from our study highlight the clinical effectiveness of both PICO and the NICE recommendations, which benefitted both patients and our hospital Trust.”⁷

Sarah Battaglia
Clinical Nurse Specialist, Bristol Heart Institute, UK



Accurate identification of appropriate patients, based upon a **pre-operative risk assessment**, can drive best practice with PICO sNPWT, help to reduce the incidence of SSIs and reduce costs^{1,2}

For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.

References: 1. Battaglia S. Implementation of the Brompton and Harefield Infection Score (BHIS) and PICO® Single-Use Negative Pressure Wound Therapy (sNPWT) pathway at the Bristol Heart Institute. Poster presented at the Wounds UK Annual Conference, 5–7 November 2018. Available at: <https://www.nice.org.uk/sharedlearning/university-hospitals-bristol-implementation-of-pico-incision-management-negative-pressure-wound-therapy-in-the-high-risk-cardiac-surgery-patient-group> Accessed 12 November 2020. 2. NICE shared Learning Database, University Hospitals Bristol Implementation of PICO Incision Management Negative Pressure Wound therapy in the high-risk Cardiac Surgery Patient Group. Available at: <https://www.nice.org.uk/sharedlearning/university-hospitals-bristol-implementation-of-pico-incision-management-negative-pressure-wound-therapy-in-the-high-risk-cardiac-surgery-patient-group> Accessed 12 November 2020. 3. World Health Organization. Global guidelines on the prevention of surgical site infection. November 2016. Available at: <https://www.who.int/gpsc/ssi-guidelines/en/> Accessed 12 November 2020. 4. Monahan M, Jowett S, Pinkney T, et al. Surgical site infection and costs in low- and middle-income countries: A systematic review of the economic burden. PLoS One. 2020;15(6):e0232960. 5. Jenks PJ, Laurent M, McQuarry S, Watkins R. Clinical and economic burden of surgical site infection (SSI) and predicted financial consequences of elimination of SSI from an English hospital. J Hosp Infect. 2014;86(1):24–33. 6. NICE Guidance. PICO negative pressure wound dressings for closed surgical incisions. Medical technologies guidance [MTG43]. May 2019. Available at: <https://www.nice.org.uk/guidance/MTG43> Accessed 12 November 2020. 7. Dowling R. SSI prevention: how can we strive for zero? Clinical Services Journal. October 2020; 71–4.

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