

Use of ETHICON **PLUS Antibacterial Sutures** funded by the Innovation and Technology Payment (ITP) to support a reduction in **Surgical Site Infection (SSI)** within an NHS Trust

Number of patients treated using PLUS Antibacterial Sutures

5,086^{1,i}

A statistically significant SSI reduction

25.7%^{2,i,ii}
In all eligible specialties

66^{2,iii} SSIs avoided in all specialties

Estimated savings from reduced SSI rate:

£206,109^{2,3,iv}
In all eligible specialties

Additional analysis in colorectal demonstrated a statistically significant SSI reduction of

32.4%^{4,v}

About the NHS Trust

The subject NHS trust is one of the largest integrated care trusts in the country and comprises four hospitals in the south of England serving a population of approximately 1 million people.⁵

The Trust wanted to reduce its SSI rate, and the Innovation and Technology Payment (ITP) funding enabled them to implement PLUS Antibacterial Sutures within their infection prevention care bundle to support them in achieving this goal.

About the ITP

The Innovation and Technology Payment (ITP) programme supports the NHS to adopt innovations by removing financial and procurement barriers to introduce new technologies, where the existing evidence supports a clear benefit to the NHS.⁶ The subject NHS trust had access to reimbursement of the additional premium of PLUS Antibacterial Sutures to the value of £35,000⁷, making the switch cost neutral.

ETHICON PLUS Antibacterial Sutures were successfully awarded funding ITP by NHS England in 2018-19, 2019-20⁶ and again in 2020-21.⁸

The Burden of Surgical Site Infection (SSI)

- SSI is a type of healthcare-associated infection where a wound infection occurs after an invasive (surgical) procedure.⁹
- Patients with an SSI are **2X** as likely to spend time in an **intensive care unit**.¹⁰
- Patients with an SSI are **5X** more likely to be **readmitted after discharge**.¹⁰
- Patients with an SSI are **2X** as likely to **die**.¹⁰
- Get It Right First Time (GIRFT), an NHS improvement programme, also acknowledge the SSI burden stating that *'post-surgery infections can cause significant harm to patients and result in increased hospital stay, readmissions and re-operations. They are also a significant cost to the NHS'*.¹¹

ETHICON Plus Antibacterial Sutures

- ETHICON PLUS Antibacterial Sutures were developed to address the challenge of SSI.
- PLUS Antibacterial Sutures are coated with triclosan which has been shown in vitro to inhibit bacterial colonisation of the suture for 7 days or more, including bacteria commonly associated with SSIs.^{12,13,14}
- In the UK, triclosan coated sutures have been recommended for use by NICE in their SSI Clinical Guidelines to reduce the risk of SSI within the NHS.¹⁵
- PLUS Antibacterial Sutures are also supported by a NICE Medtech Innovation Briefing.¹⁶
- Multiple meta-analyses support the use of PLUS Antibacterial Sutures to reduce the risk of SSI by up to 28%.^{17,18}



The Approach

- ETHICON engaged with the subject NHS trust theatre and procurement teams on PLUS Antibacterial Sutures, which included reviewing the evidence and guidelines to ensure clinical acceptance.
- The desire to improve their reported SSI rates, patient and clinical outcomes, and the understanding of how PLUS Antibacterial Sutures could support this objective, led to the subject NHS trust applying for access to ITP funding.
- PLUS Antibacterial Sutures were therefore incorporated into the trusts theatre suture stock to become the standard of care. Non-PLUS Antibacterial Suture equivalent sutures were removed and ETHICON credited their return.
- The ETHICON team, in collaboration with trust theatre management, then ensured all departments received training on PLUS Antibacterial Sutures and the background of the project. This included conversion charts so staff could track code changes and update suture orders.
- SSI data were then tracked over a 12 month period using Health Episode Statistics (HES) across the 15 eligible specialties¹⁹ and compared to the baseline SSI rate of 5.11%.¹⁹ The new SSI rate for the subject NHS trust was 3.79%.²

For further information contact:

Tom Lennon | ETHICON Wound Closure Product Manager
Tel: 0788 030 3427 | Mail: tlennon2@its.jnj.com

The results shown are situation and circumstance specific, Johnson & Johnson does not guarantee such results can be reproduced for any given customer.

Footnotes:

- i. Eligible specialties: Bariatric, Breast Augmentation, Breast Reconstruction, CABG, Cardiac, Colorectal, General Surgery, Gynaecology, Hernia, HPB, Hysterectomy, Oncological Ablations, Thoracic, UGI, Urology.
- ii. Based on a Chi-square test; p value = 0.0016. Calculated using the total number of procedures in eligible specialties and the number of surgical site infections recorded in the implementation period and compared to the agreed SSI rate, procedure number and surgical site infections in the baseline period as defined in the ITP contract.
- iii. Based on the relative risk reduction of SSI with PLUS Antibacterial Sutures in the subject NHS trust (25.74%), the SSI rate in the subject NHS trust with PLUS Antibacterial Sutures (3.79%) and the number of patients during July 18 – June 19 (5086).
- iv. Number of surgical site infections AVOIDED in eligible specialties multiplied by £3122.86 – NICE's estimation of the average cost of managing a single patient with an SSI.³
- v. Based on a Chi-squared test; p value = 0.033. Calculated using the number of colorectal procedures and the number of colorectal surgical site infections recorded in the implementation period and compared to the agreed SSI rate, colorectal procedure numbers and colorectal surgical site infections in the baseline period as defined in the ITP contract.

References:

1. ETHICON, SSI Report 201906, June 2019, Data on File.
2. ETHICON, NHS SSI Analysis, April 2020, Data on File.
3. NICE. Surgical site infection: prevention and treatment. [D] Evidence review for the effectiveness of closure materials and techniques in the prevention of surgical site infection. NICE guideline NG125. Evidence reviews - April 2019. Available from <https://www.nice.org.uk/guidance/ng125/evidence/closure-materials-and-techniques-in-the-prevention-of-surgical-site-infection-pdf-6727104401> [accessed on 18th June 2020].
4. ETHICON, subject NHS trust specialty analysis, May 2020, Data on File.
5. ETHICON. Subject NHS trust overview, February 2020, Data on File.
6. ETHICON, NHS England Innovation and Technology Payment Technical Notes, October 2019, Data on File.
7. ETHICON, Value of Innovation Technology Payment purchase orders raised by NHS England for PLUS Antibacterial Suture use, July 2019, Data on File.
8. ETHICON, Innovation Technology Payment for PLUS Sutures 2020-2021, August 2020, Data on File.
9. NICE. Surgical site infections: prevention and treatment; page 25, 2019. Available from <https://www.nice.org.uk/guidance/ng125/resources/surgical-site-infections-prevention-and-treatment-pdf-66141660564421> [accessed on 18th June 2020].
10. World Health Organization. Safe surgery saves lives. WHO Guidelines for Safe Surgery 2009. Available from https://apps.who.int/iris/bitstream/handle/10665/44185/9789241598552_eng.pdf?sequence=1 [accessed on 18th June 2020].
11. Get It Right First Time (GRIFT). Surgical Site Infection Audit; 2019. Available from <https://gettingitrightfirsttime.co.uk/cross-cutting-stream/surgical-site-infection-audit/> [accessed on 18th June 2020].
12. Rothenburger S, Spangler D, Bhende S, Burkley D. In vitro antimicrobial evaluation of coated Vicryl Plus Antibacterial Suture (coated polyglactin 910 with triclosan) using zone of inhibition assays. *Surg Infect.* 2002;3(suppl):S79-S87.
13. Ming X, Rothenburger S, Yang D. In vitro antibacterial efficacy of Monocryl Plus Antibacterial Suture (poliglecaprone 25 with triclosan). *Surg Infect.* 2007;8:201-207.
14. Ming X, Rothenburger S, Nichols M. In vivo and in vitro antibacterial efficacy of PDS Plus (polidioxanone with triclosan) suture. *Surg Infect.* 2008;9:451-457.
15. NICE, Surgical Site Infections: prevention and treatment; NICE Guideline, published 11th April 2019. Available from <https://www.nice.org.uk/guidance/ng125/chapter/Recommendations#intraoperative-phase> [accessed on 18th June 2020].
16. NICE, Plus Sutures for preventing surgical site infection; Medtech Innovation Briefing, published 3th February 2020. Available from <https://www.nice.org.uk/advice/mib204/resources/plus-sutures-for-preventing-surgical-site-infection-pdf-2285965391082181> [accessed on 18th June 2020].
17. de Jonge S, Atema J, Solomkin J, Boermeester M. Meta-analysis and trial sequential analysis of triclosan-coated sutures for the prevention of surgical-site infection. *Brit J Surg.* 2017; 104: e118-e133.
18. Ahmed I, Boulton A, Rizvi S, et al. The use of triclosan-coated sutures to prevent surgical site infections: a systematic review and meta-analysis of the literature. *BMJ Open.* 2019;9:e029727.
19. ETHICON, NHS England Innovation Technology Payment Baseline Data, March 2018, Data on File.