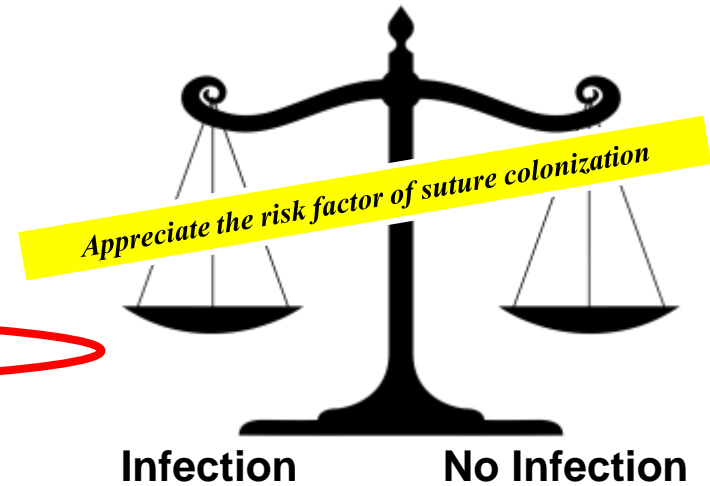


Plus Antibacterial Sutures



Balancing SSI Risk Factors with Interventions^{1,2}

Bacteria on Personnel	Masks, gowns, scrub in
Bacteria on Patient	Pre-op bathing, skin prep
Bacteria in Environment	Sterile surfaces
Bacteria on Tools	Sterile equipment
Bacteria on Suture	Antibacterial suture
Diabetes	?
Obesity	?
Malnutrition	?
Polypharmacy	?

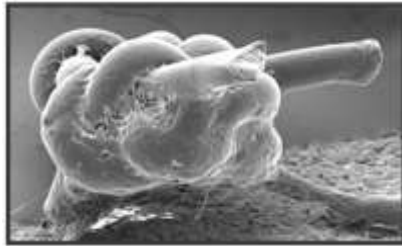


1. National Collaborating Centre for Women's and Children's Health. Surgical site infection: prevention and treatment of surgical site infection. Clinical Guideline. October 2008. 2. World Health Organization. WHO Guidelines for Safe Surgery 2009.

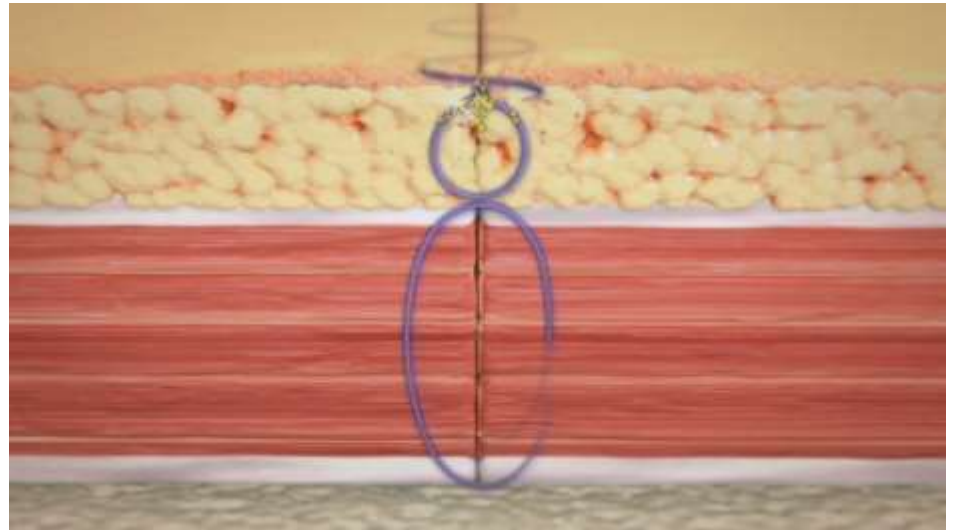
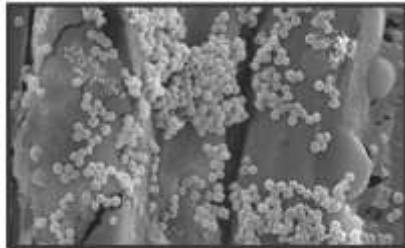
Implants Can Increase Risk of Infection

- Like all implants, sutures can be colonized by **bacteria**, which can lead to **biofilm formation**¹

Colonization of a suture knot



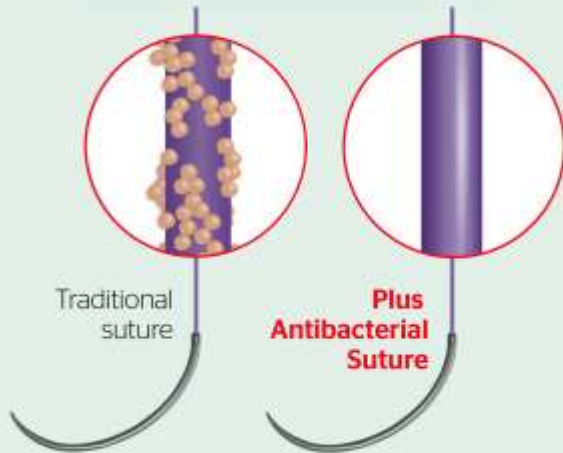
Colonization of a braided suture



1. Mangram et al. Infect Control Hosp Epidemiol. 1999;20:250

Plus Antibacterial Suture

Suture selection provides an important opportunity to address a known risk factor for infection: bacterial colonization of the suture.



Plus Antibacterial Sutures have been shown in vitro to inhibit bacterial colonization of the suture for 7 days or more, for protection against the most common organisms associated with SSI.^{4,9}

- ✓ *Staphylococcus aureus*
- ✓ *Staphylococcus epidermidis*
- ✓ Methicillin-resistant *Staphylococcus aureus* (MRSA)
- ✓ Methicillin-resistant *Staphylococcus epidermidis* (MRSE)
- ✓ *Escherichia coli*[†]
- ✓ *Klebsiella pneumoniae*[†]



[†]PDS Plus Suture and MONOCRYL Plus Suture only

The petri dish image is for illustrative purposes only; zone of inhibition testing results can vary.

4. Hendley JO, Ashe KM. Effect of topical antimicrobial treatment on aerobic bacteria in the stratum corneum of human skin. *Antimicrobial Agents and Chemotherapy*. 1991;35(4):627-631. 5. Ward KH, Olson ME, Lam K, Costerton JW. Mechanism of persistent infection associated with peritoneal implants. *J Med Microbiol*. 1992;36(6):406-413. 6. Kathju S, Nistico L, Hall-Stoodley L, et al. Chronic surgical site infection due to suture-associated polymicrobial biofilm. *Surg Infect (Larchmt)*. 2009;10(5):457-461. 7. Rothenburger S, Spangler D, Bhende S, Burkely D. In vitro antimicrobial evaluation of Coated VICRYL[®] Plus Antibacterial Suture (coated polyglactin 910 with triclosan) using zone of inhibition assays. *Surg Infect (Larchmt)*. 2002;3(Suppl 1):S79-S87. 8. Ming X, Rothenburger S, Yang D. In vitro antibacterial efficacy of MONOCRYL plus antibacterial suture (poliglecaprone 25 with triclosan). *Surg Infect (Larchmt)*. 2007;8(2):201-207. 9. Ming X, Rothenburger S, Nichols M. In vivo and in vitro antibacterial efficacy of PDS plus (polydioxanone with triclosan) suture. *Surg Infect (Larchmt)*. 2008;9(4):451-457.

Triclosan-coated sutures now recommended

Three globally recognized health authorities now recommend the use of triclosan-coated sutures for SSI prevention

Ethicon Plus Sutures are the only sutures with triclosan available worldwide



Centers for Disease Control and Prevention (CDC)
Consider the use of triclosan-coated sutures for the prevention of SSI.^{1*}

World Health Organization (WHO)
The panel suggests the use of triclosan-coated sutures for the purpose of reducing the risk of SSI, independent of the type of surgery.^{2*}

American College of Surgeons & Surgical Infection Society
Triclosan antibacterial suture use is recommended for wound closure in clean and clean-contaminated abdominal cases when available.^{3*}

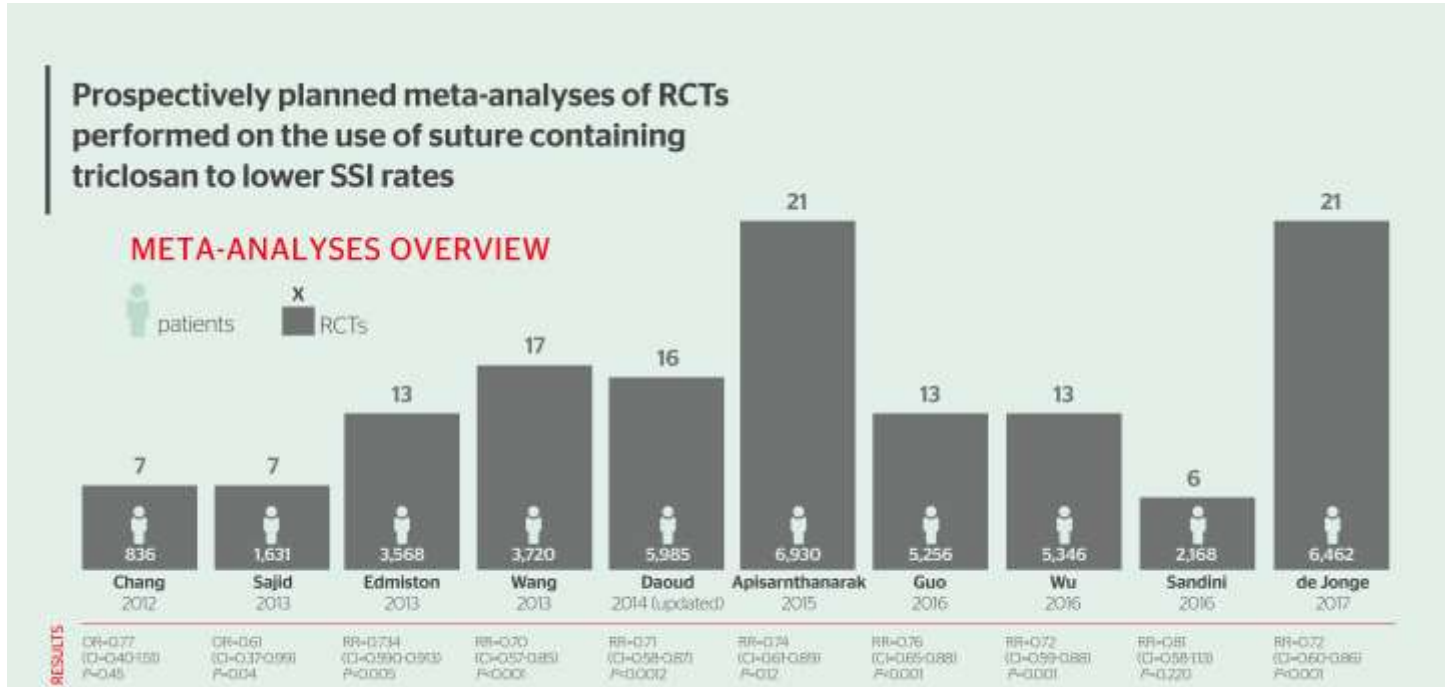
*CDC, WHO, and ACS/SIS guidelines on reducing the risk of surgical site infections are general to triclosan-coated sutures and are not specific to any one brand

Hierarchy of Scientific Evidence



Supported by a wealth of clinical evidence

10 meta-analyses of 24 RCTs involving over 7,000 patients¹⁰⁻²⁰



10. Apisarnthanarak A, Singh N, Bandong AN, et al. Triclosan-Coated Sutures Reduce the Risk of Surgical Site Infections: A Systematic Review and Meta-Analysis. *Infection Control & Hospital Epidemiology* 2015;36:169179. 11. Chang WK, Srinivasa S, Morton R, et al. Triclosan-Impregnated Sutures to Decrease Surgical Site Infections: Systematic Review and Meta-Analysis of Randomized Trials. *Ann Surg* 2012; 255:854859. 12. Daoud FC, Edmiston CE Jr, Leaper D. Meta-analysis of prevention of surgical site infections following incision closure with triclosan-coated sutures: Robustness to new evidence. *Surg Infect (Larchmt)* 2014;15:165181. 13. Daoud FC. Systematic Literature Review Update of the PROUD Trial: Potential Usefulness of a Collaborative Database. Letter to Surg Infect (Larchmt) 2014;15:857858. 14. Edmiston CE, Daoud FC, Leaper D. Is there an evidence-based argument for embracing an antimicrobial (triclosan)-coated suture technology to reduce the risk for surgical-site infections?: A meta-analysis. *Surgery* 2013;154:89100. 15. Guo J, Pan LH, Li YX, et al. Efficacy of triclosan-coated sutures for reducing risk of surgical site infection in adults: a meta-analysis of randomized clinical trials. *J Surg Res* 2016; 201:105117. 16. Sajid MS, Craculian L, Sains P, et al. Use of antibacterial sutures for skin closure in controlling surgical site infections: a systematic review of published randomized, controlled trials. *Gastroenterol Rep* 2013;1:4250. 17. Sandini M, Mattavelli I, Nespoli L, Uggeri F, Gianotti L. Systematic review and meta-analysis of sutures coated with triclosan for the prevention of surgical site infection after elective colorectal surgery according to the PRISMA statement. *Medicine*. 2016;95:35(4057). 18. Wang ZX, Jiang CP, Cao Y, et al. Systematic review and meta-analysis of triclosan-coated sutures for the prevention of surgical-site infection. *Brit J Surg* 2013;100:465473. 19. Wu X, Kublay NZ, Ren J, et al. Antimicrobial-coated sutures to decrease surgical site infections: a systematic review and meta-analysis. *Eur J Clin Microbiol Infect Dis*. 2016. DOI: 10.1007/s10096_016_2765-y. 20. de Jonge SW, Atems JJ, Solomkin JS, Boermeester MA. Meta-analysis and trial sequential analysis of triclosan-coated sutures for the prevention of surgical site infection. *Brit J Surg*. 2017;ePub-DOI: 10.1002/bjs.10445. 21. Ford HR, Jones P, Gaines B, Reblock K, Simpkins DL. Intraoperative Handling and Wound Healing: Controlled Clinical Trial Comparing Coated VICRYL® Plus Antibacterial Suture (Coated Polyglactin 910 Suture with Triclosan) with Coated VICRYL® Suture (Coated Polyglactin 910 Suture). *Surg Infect (Larchmt)*. 2005;6(3):313-321.

2017 de Jonge Meta-analysis

Results

Meta-analysis demonstrates **28%**
reduction in SSI risk with the use of
triclosan-coated sutures¹

- 21 RCTs, 6462 patients, 95% CI: (14, 40%), $P < 0.001$
- All triclosan-coated sutures in these RCTs were Ethicon Plus Antibacterial Sutures (Monocryl Plus, Vicryl Plus and PDS Plus)



2017 de Jonge Meta-analysis

Results

Meta-regression analyses demonstrated that the effect of triclosan-coated sutures in reducing the risk of SSI **does not vary by CDC wound classification* or suture type#**¹



Thank you