

ETHICON

SSI



SYMPOSIUM

1st May, 2008
Birmingham

**SUMMARY
REPORT**



**Working Together
to Protect from
Surgical Site Infection**

Surgical Site Infection Symposium

May 1st 2008, Birmingham

Summary

Surgical Site Infections (SSIs) are a major problem in the UK, causing substantial morbidity and mortality and adding an estimated £758 million¹ to healthcare budgets each year.

The burden of SSI and how best to reduce these costly infections was the subject of the *2008 Surgical Site Infection Symposium*² (Birmingham, UK, May 1st). SSI are part of the wider problem of Healthcare Associated Infections (HAI), said symposium chairman, Professor David Leaper, Visiting Professor, Department of Wound Healing, Cardiff University and Chair of the NICE Guideline Group on SSI.

“These infections are a real problem – patients fear coming to see us because of them. Healthcare Associated Infections and MRSA is probably the largest epidemic we have seen in our lifetimes. HCAI causes 50,000 deaths a year in this country, which is staggering,” he told the symposium, which was attended by Theatre Nurses, Infection Control, Managers, and Risk Managers from hospitals across the UK.

Professor Leaper said that overuse of antibiotics had undoubtedly contributed to the current epidemic of HAI and that it was time for a hard line to be taken with more vigilance and monitoring of antibiotic usage.

Cost burden of prolonged hospital stays

Dr Jacqui Reilly, Consultant Epidemiologist, Health Protection Scotland, said that new data from the Scottish National Prevalence Survey of HCAI, will be published next month. “Patients with a Healthcare Associated Infection stay in hospital 70% longer than those without an HCAI,” she explained. These prolonged hospital stays add at least £183 million a year to the costs of treating patients in Scotland. “Just a 30% reduction in HCAs could save £55 million a year. If we could reduce infections in surgical specialties by just one fifth, it would mean that an additional five thousand operations could be performed in Scotland alone.”

“HCAI is an important public health issue. The prevalence of HCAI in surgical specialities is of concern and is a key quality indicator,” said Dr Reilly.

Jennie Wilson, Senior Nurse, Health Protection Agency, stressed the importance of having good surveillance and reporting systems in place in order to get accurate data on SSI – including infections that only manifest post-hospital discharge – and of feeding this data back to surgical staff. “You must have good systems in place and feed back the data to people who can change their practice,” she said.

A study has shown that SSI following coronary artery bypass grafting [CABG] can cost an additional £400,000 a year, said Pat Cattini, Head Infection Prevention and Control Nurse, at Royal Brompton & Harefield NHS Trust. Patients with a superficial infection had an extra length of hospital stay (LOS) of 20 days and cost an extra £10,000, and patients with a deep or organ space infection had an extra LOS of 54 days and cost an extra £40,000. “The study found that on average Surgical Site Infection increase LOS by 20 days and cost of hospitalisation by £13,000” she told the symposium.

Overall, she estimates that a typical acute hospital in England performing 15,000-20,000 operations annually, could incur additional costs of £2.27 million a year due to MRSA SSI and other SSI. She concluded that in order to minimise SSI, Trusts need good preoperative preparation of patients, good surgical practices and techniques, good post operative care and active surveillance.

At national level, The Healthcare Commission has launched (April 24th 2008) a major inspection programme in NHS acute trusts to check whether they are meeting standards on infection control, explained Sandra Calver, Medical Device Coordinator, Central Manchester University Hospital NHS Trust.

“The Commission will inspect all 172 acute trusts annually as part of a drive to reduce death and illness from healthcare-associated infections (HCAIs), to improve the experience of patients in hospital and to increase public confidence in the NHS,” she said.

Innovative solutions

Innovative medical devices, including antibacterial sutures can help the fight against SSI, said Dr Stephen Rothenburger (PhD), Research & Development Microbiology ETHICON. He reviewed Coated VICRYL* Plus Suture in which the broad spectrum antibacterial agent triclosan resides in the outer coating and is effective against the pathogens that most frequently cause Surgical Site Infections such as *S.aureus*, *S.epidermidis* and MRSA.

Dr Rothenburger said that in a recent study Dr Tatjana Fleck and colleagues, Department of Cardiothoracic Surgery, Medical University of Vienna evaluated triclosan-coated sutures for the closure of the sternal incision following cardiac surgery³. A total of 103 patients were closed with triclosan-coated suture material whereas the remaining 376 patients had their incision closed with noncoated sutures. During the study period, 24 patients had superficial or deep sternal wound infections at a cost per patient of \$11,200. All those patients were closed with conventional suture material. In the triclosan group, no wound infection or dehiscence was observed during hospital stay and follow-up visits. The authors concluded that the increased cost of the coated suture material has to be weighed against the enormous cost of sternal wound infections.

The potential of conventional medical implants, such as suture materials, to be a contributing factor to an SSI was also addressed by Professor Roger Bayston, Associate Professor of Microbiology, University of Nottingham. He pointed out that even in 'clean' wounds, sutures become contaminated by passage through the skin, or from skin bacteria in the surgical site at the time of suturing.

"Skin prep 'sterilises' only the surface of the skin but most bacteria live in follicles, and sweat glands," he said. Furthermore the mere presence in the skin of foreign material such as sutures tends to reduce the infective 'dose' of bacteria needed to establish an infection⁴. Many mechanisms are thought to contribute to this increased risk; for example neutrophils in contact with biomaterials generate oxygen free radicals and release human neutrophil peptides (HNP) which suppress the activity of subsequent neutrophils.

Antimicrobial sutures in cerebrospinal shunt surgery

Implantation of a cerebrospinal shunt is associated with a risk of infection of up to 30% (0.17%-30% depending on study). When infections occur, they are costly, adding \$25,000 to treatment costs, said Dr Curtis Rozzelle, Assistant Professor of Neurosurgery, University of Buffalo, USA. In a study due to be published later this year, Dr Rozzelle and his colleagues show that use of an antimicrobial suture in cerebrospinal shunt surgery in paediatric patients reduced the rate of shunt infections almost five fold, compared with controls (4.3% vs 21%). The potential cost savings could be significant because 125,000 people have CSF shunt surgery each year in the United States leading to around 4000 shunt infections. "Treating a shunt infection costs around eight times the cost of putting a new shunt in," said Dr Rozzelle. "Antimicrobial suture wound closure appears to reduce the risk of shunt infections – the very minute added cost of using this suture compared with a conventional suture potentially provides a significant advantage."

¹ Based on 8.6 million surgical procedures performed annually (www.hesonline.nhs.uk 2007) an infection rate of 4.2% (www.icna.co.uk 2006) and treatment costs of approximately £2,100 per infection (Plowman, 2001),

² Sponsored by ETHICON Products, a division of JOHNSON & JOHNSON MEDICAL LIMITED

³ Fleck T et al, Triclosan-coated sutures for the reduction of sternal wound infections: economic considerations. *Ann Thorac Surg* 2007 Jul;84(1):232-6

⁴ Kaplan SS et al Defensins impair phagocytic killing by neutrophils in biomaterial-related infection *Infect Immun* 67: 1999, 1640-5

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ETHICON Products is committed to providing Professional Education to support the advancement of surgical expertise and meet the ever-evolving demands of surgery. In 2007 alone, over 3200 UK Healthcare Professionals attended ETHICON Professional Education events and ETHICON supported over 350 accredited UK surgical training courses.

For more information about the Surgical Site Infection Symposium or other ETHICON Professional Education events, please email: contact@ethgb.jnj.com.

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