

Issues in surgical site infection

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England

Surgical site infection (SSI)



Leicester

Patients' experience of SSI

- 3 hospitals in England
- Interviews with patients
- 17 patients with SSI following cardio-thoracic, orthopaedic, colorectal surgery or C. Section
- Funded by the Infection Prevention Society

Patients' awareness of SSIs

9/17 patients did not know they had an SSI

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“I didn't realise I had an infection. When I got your letter to take part [in the study], I thought where is the infection. There may have been one but [the hospital] didn't tell me about it.” Participant 10



Causes of SSIs

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- 1 participant – germs in the OR



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Patients' experience

“I can't cope, I can't cope. I just can't do this.” Participant 5

“There was a stage when I just wanted to die.” Participant 13

“I was in utter despair.” Participant 1

Lack of support post discharge

“It’s frightening when you come home and there is nobody.” Participant 13

“You don’t know who to ring. I didn’t know what to do.” Participant 5



Financial cost to the patient

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“My husband had to get a second job or we wouldn’t have been able to pay the mortgage”

Participant 5



Why don't patients know about surgical site infection ?

**Why don't patients know
about surgical site infection ?**

SSIs do not have a high profile

Why don't patients know about surgical site infection ?

SSIs do not have a high profile
'... a lack of decent data.'

Public Accounts Committee 2009

National SSI Surveillance Programme

SSI rates (%)

<u>Category</u>	<u>2008 – 2015 (%)</u>
Hysterectomy	1.5
Hip	0.7
CABG	4.4
Vascular	2.8
Small bowel	6.4
Large bowel	10.6



Karen, Lead Tissue
Viability (Wound Healing)
Nurse, Leicester

Leicester SSI surveillance

- 30 day active follow up – every patient
- Colorectal (large bowel) SSI – 27%

Colorectal SSI rates – published studies

- National SSI Surveillance England 2013 10.6%
- Tanner - JHI 2009 27%
- Petrosillo - BMC Infect Diseases 2008 19%
- Limon – JHI 2014 20%
- Dariouche - NEJM 2010 22%
- Smith - Ann Surg 2004 26%

Benchmarking

Comparing data against the national SSI
data

Study Aim

To audit SSI definitions and data collection methods used by hospital trusts in England

Method

- National survey 2012
- Postal plus online option
- Named contact at all 156 Trusts in England
- Reminder after 2 weeks
- Prize draw £25 Amazon vouchers x10

Responses

- 106/ 156 Trusts responded

Variations in length of follow up

<u>Follow up</u>	<u>No. of Trusts</u>
In-patient data only	10/106
In-patient and readmission only	23/106
In-patient, readmission and post discharge	67/106

In patient surveillance

Microbiology / case note review patient contact	32
Microbiology / case note review	21
Case note review	15
Case note review / patient contact	9
Patient contact	6
Microbiology	6
Microbiology / patient contact	5
Computer flag alone	2
Combination of above	7

Re-admission surveillance

Microbiology / case note review	20
Microbiology / case note review / patient contact	16
Patient contact	12
Microbiology	11
Liaising with ward staff	9
Microbiology / patient contact	8
Computer flag alone	7
Case note review	6
Combination of above	6

Post discharge surveillance

Patient questionnaire only	17
Phone call only	16
Questionnaire + call	15
Out patient clinic	10
Phone call + PCT info	8
Questionnaire + PCT info	7
Outpatient clinic only	6
Outpatient clinic + PCT info	4

Patient questionnaire response rates

10% - 5 hospitals

20% - 3 hospitals

30% - 1 hospital

40% - 3 hospitals

50% - 7 hospitals

60% - 6 hospitals

70% - 7 hospitals

80% - 5 hospitals

90% - 3 hospitals

100% - 1 hospital

Variations in definitions

10% - did not use the CDC SSI definition

10% - did not report superficial infection

Reporting SSI data

	Mandatory procedures (85 hospitals)	Non mandatory procedures (52 hospitals)
In patient only data	8.2%	1.9%
In patient and readmission data only	26%	15%
In patient, readmission and post discharge data	66%	83%

High quality post discharge surveillance SSI rates

National Knee SSI rate 2010/2011 - **0.6%**

High quality post discharge surveillance SSI rates

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	High quality post discharge surveillance
Knee 2010	3.4% (6 trusts)
Knee 2011	3.5% (13 trusts)

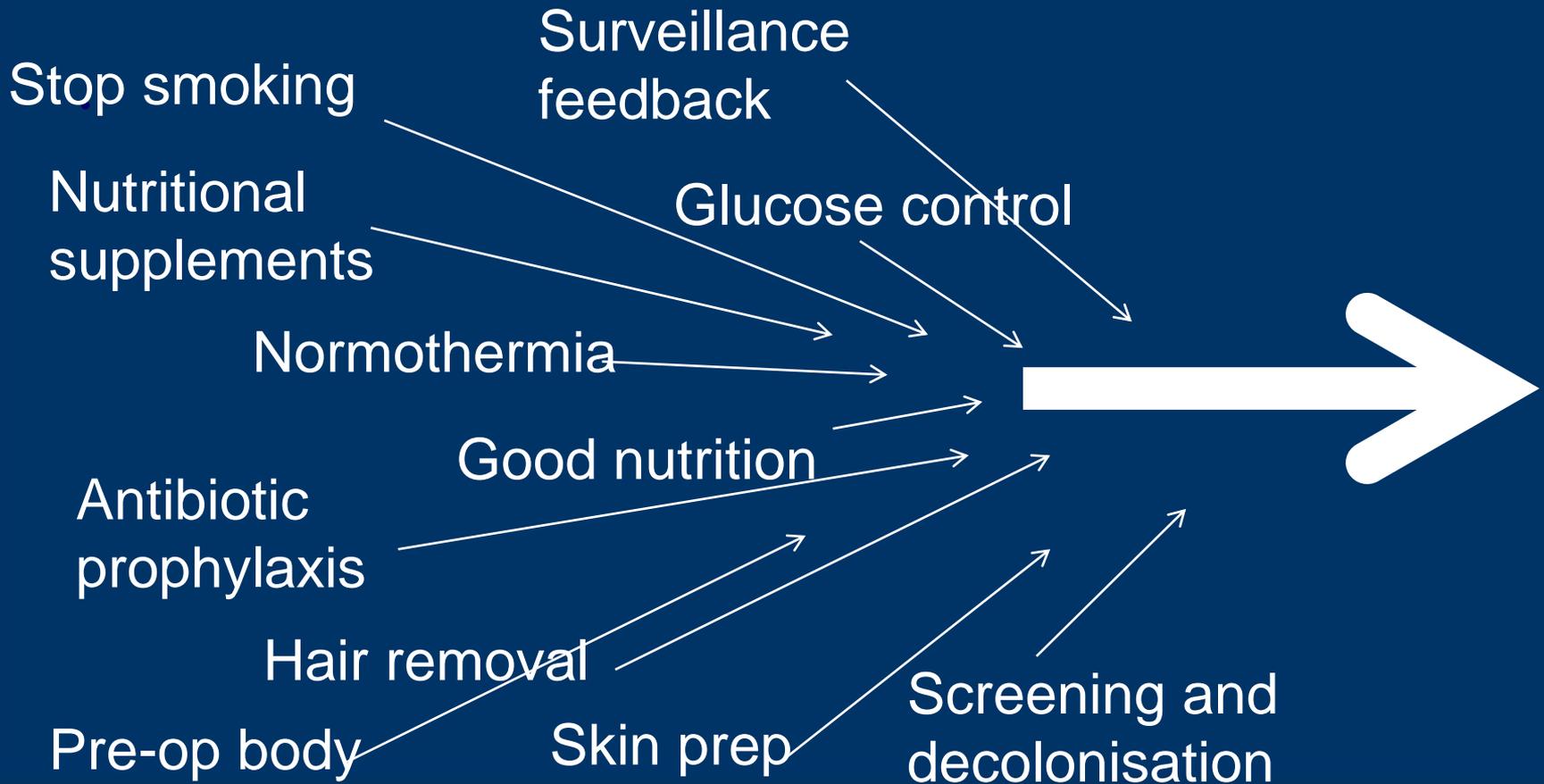
National SSI Surveillance Programme

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“So ... what are we going to
do about SSIs ?”

Care bundle to prevent SSI



Risk factors for SSI – patient factors

Diabetes

Medication

Smoking

Obesity

Poor nutrition

Alcoholism

Chronic renal failure

Jaundice

Poor physical condition

Previous radiotherapy or chemotherapy

Risk factors for SSI – surgical

Surgical classification Haematoma
Skin preparation
Site, duration and complexity of surgery
Presence of suture or foreign body
Suturing quality
Pre-existing local or systemic infection
Prophylactic antibiotics
Mechanical stress on wound

Risk factors for SSI - anaesthesia

Tissue perfusion

Hypovolaemia

Hypothermia

Concentration of inspired oxygen

Pain

Blood transfusion

Gottrup et al. An overview of surgical site infections. World Wide Wounds 2005

SSI reduction – Care Bundle

Darouiche et al. **Chlorhexidine** alcohol versus povidone iodine for surgical site antisepsis. New England Journal of Medicine 2010 362 1 18-26 **SSI 16% reduced to 9%**

Melling et al. Effects of **pre-operative warming** on the incidence of wound infection after clean surgery. Lancet 2001 358 876-880
SSI 14% reduced to 5%

Geubels et al. Reduced risk of surgical site infection through **surveillance** in a network. International Journal for Quality in Health Care 2006 18 2 127-133 **SSI 4.3% reduced to 1.8%**

Care Bundle – Leicester Hospital

- Large bowel surgery
- Baseline - 6 months retrospective data
- Cohort - 6 months prospective data
- Department of Health High Care Bundle
- Commercial support
- Project nurse

Department of Health Care Bundle

- MRSA screening and decontamination
- Pre-operative washing
- Appropriate hair removal
- Surgical skin preparation
- Antimicrobial prophylaxis
- Normothermia
- Impregnated incise drapes
- Supplemental oxygen

Findings

Baseline - 127 colorectal patients

Findings

Baseline - 127 colorectal patients

Cohort - 166 colorectal patients

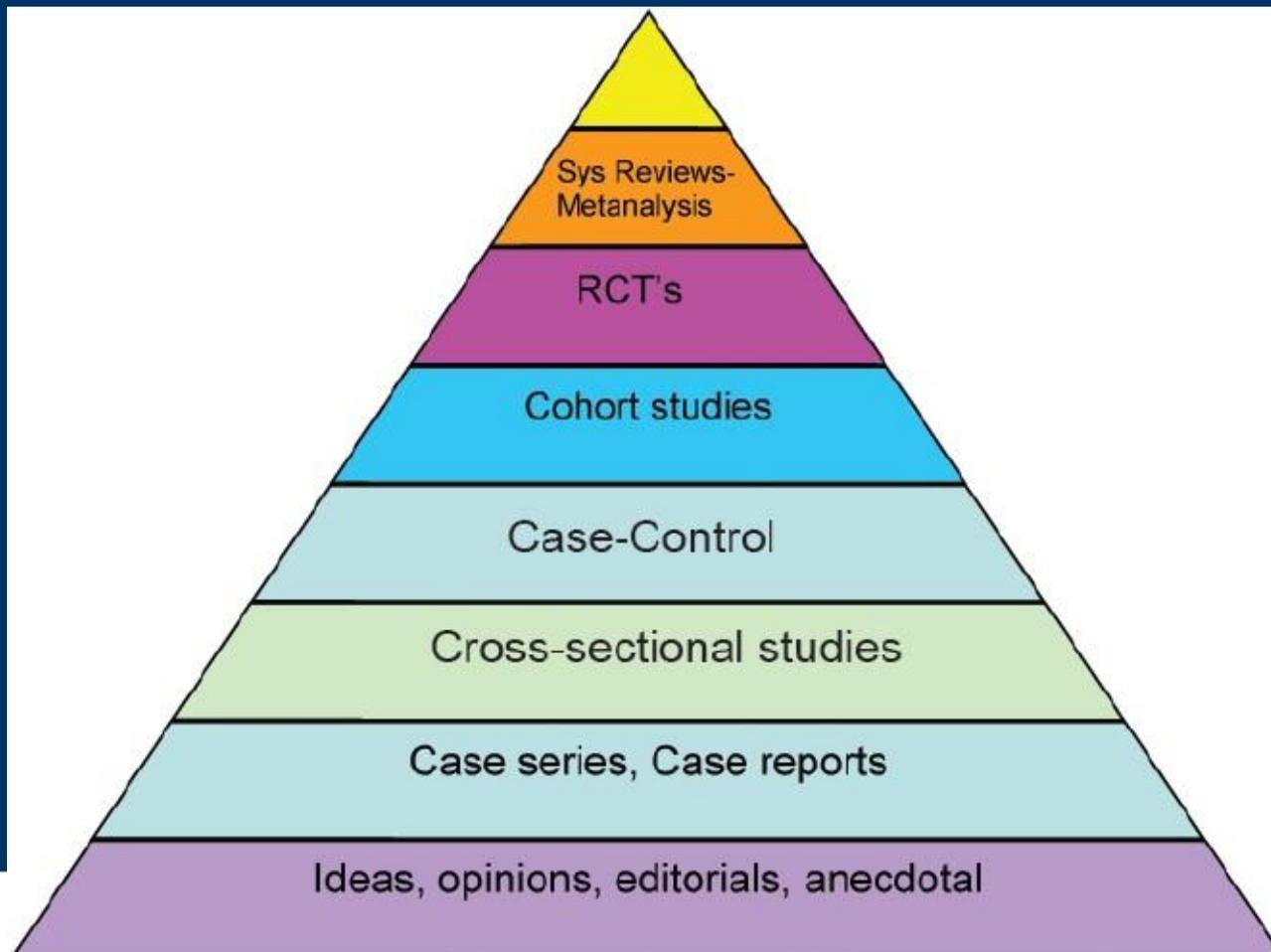
SSIs pre and post bundle

	Baseline (127)	Cohort (166)
No SSIs	76%	
SSIs	24%	

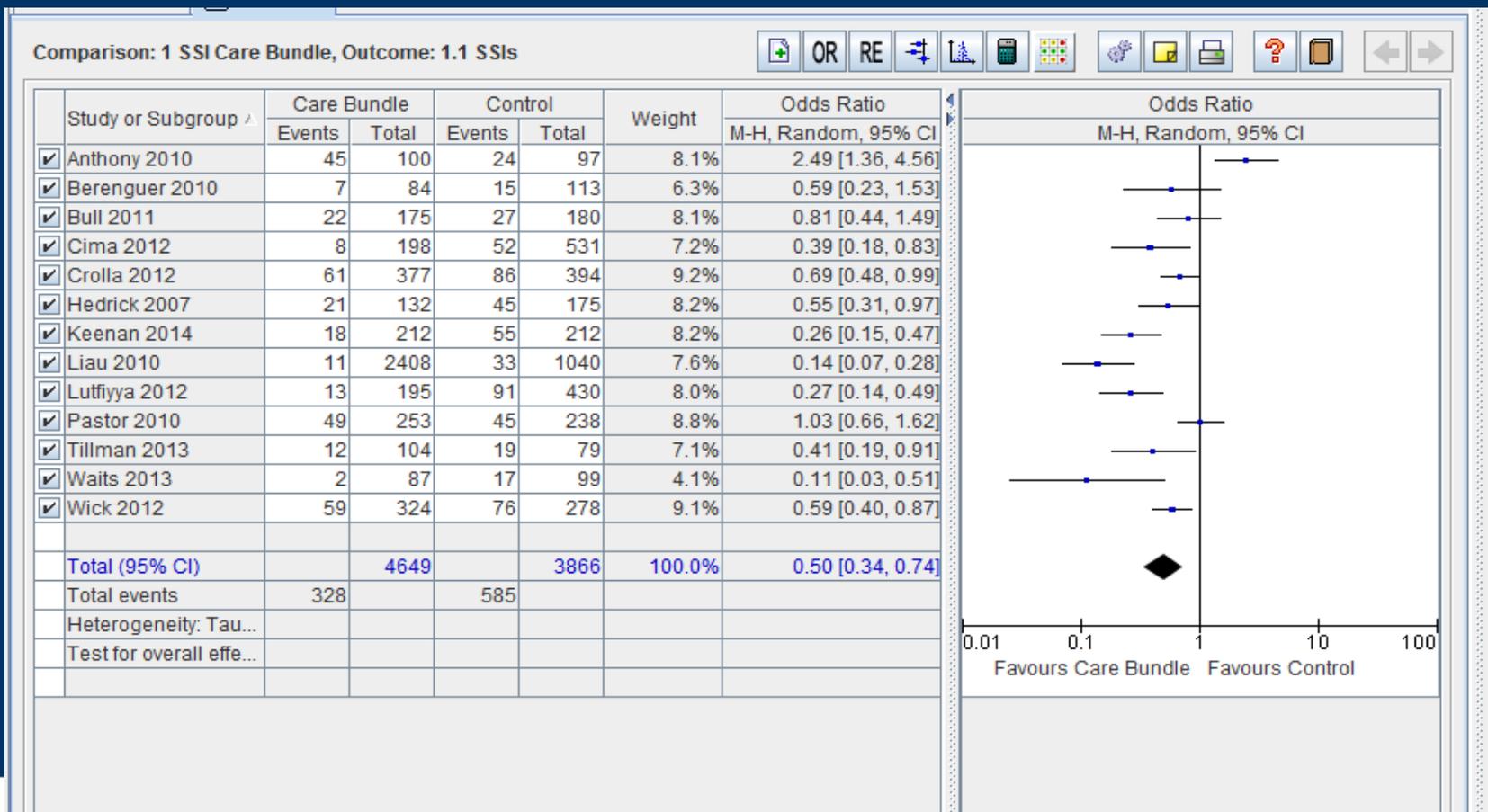
SSIs pre and post bundle

	Baseline (127)	Cohort (166)
No SSIs	76%	72%
SSIs	24%	28%

Hierarchy of Evidence



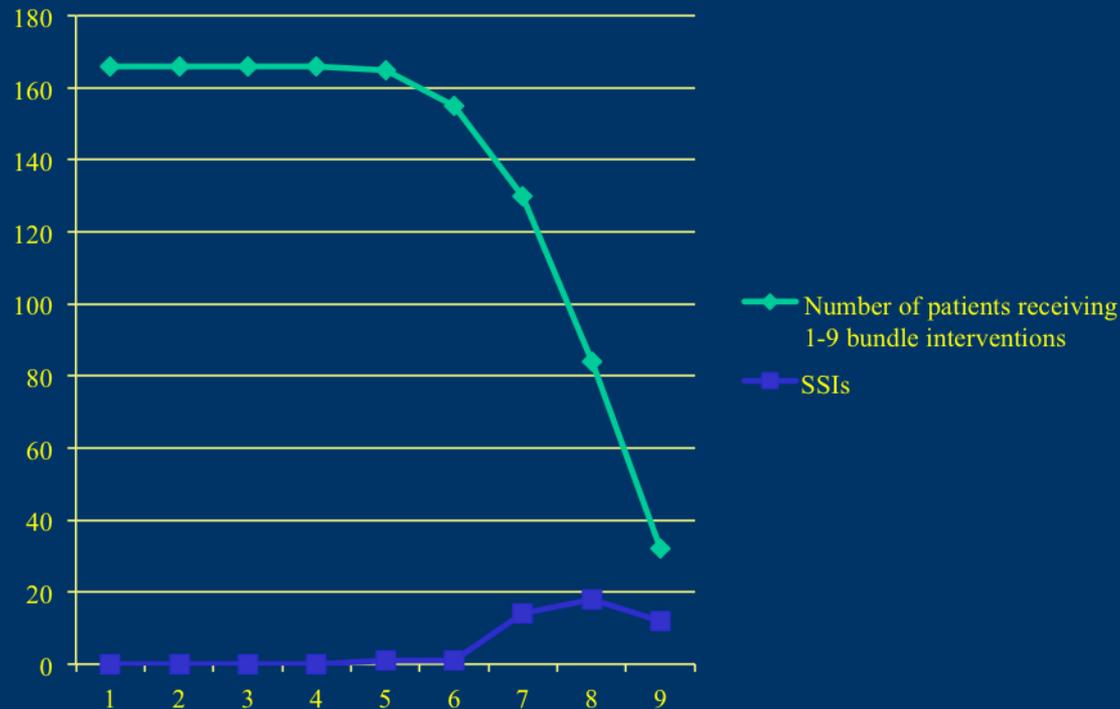
Care bundles to reduce SSIs



Compliance with interventions

	Baseline	Cohort
MRSA screening and decontamination	88%	89%
Pre-op wash	63%	63%
Approp. hair removal	Not recorded	100%
Approp. antibiotic prophylaxis	75%	73%
Skin prep 2% CHG	Not used	63%
Normothermia	23%	35%
Iodine incise drapes	Not recorded	100%
Supplemental oxygen	Not recorded	100%
Glucose for diabetics	98%	95%

Compliance with interventions



Pre-operative warming

Pre-operative warming

NO PRE OP WARMING

SSIs 34% (41/121)

PRE OP WARMING

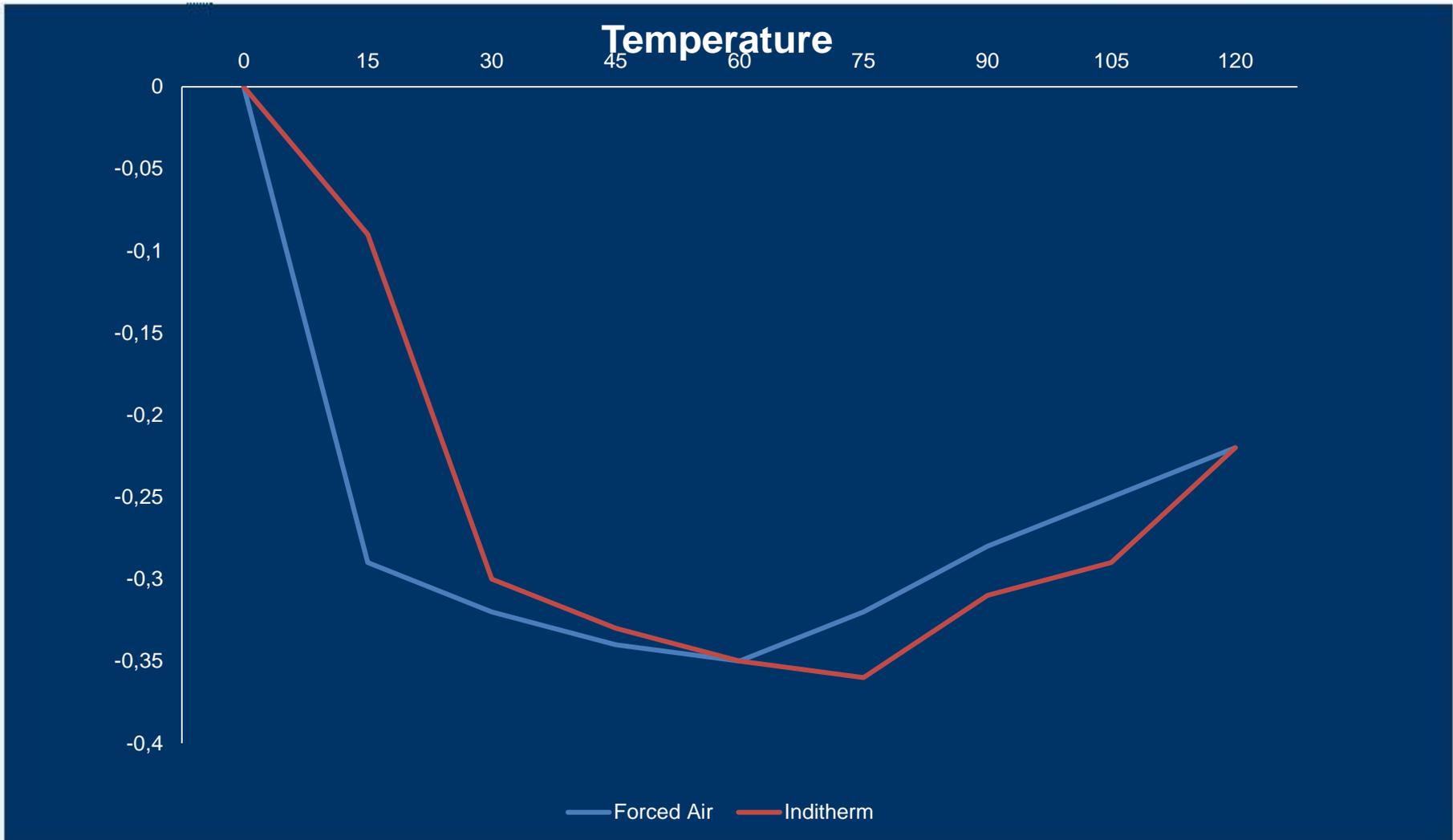
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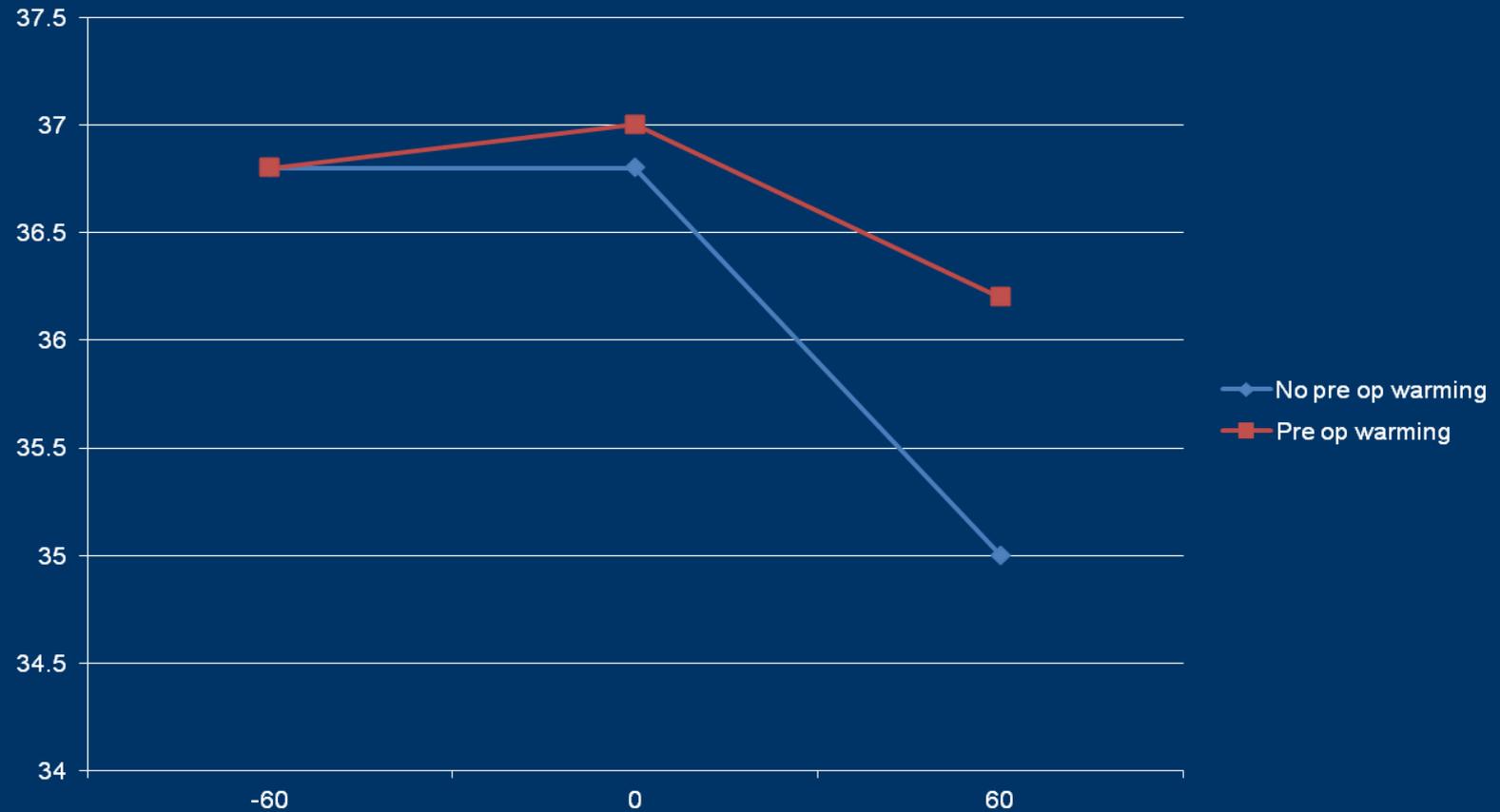
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PRE OP WARMING

SSIs 10% (3/30)



Effect of pre-op warming





Rapid surveillance feedback

Conclusion

- SSIs – devastating effect on patients and their families
- Awareness of SSI is low
- SSIs are under-estimated
- Compliance with interventions to reduce SSI is mixed