

OneTogether: tools for preventing Surgical Site Infections

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The 'OneTogether' Partnership

- Formed in 2013 by professional organisations concerned to improve patient safety by preventing SSI
- Quality improvement collaborative – promote and support adoption of best practice to prevent SSI
 - Provide resources that make evidence accessible to those involved in caring for surgical pts
- Material agreed by all partners, free from commercial influence. Commercial support for design/distribution of educational materials free without copyright



Why focus on SSIs?

- SSI accounts for 19% of all HCAI (EU PPS, 2011)
- Most common HCAI in surgical patients
- Knowledge of best practice and importance of compliance in preventing SSI is poor
- Current quality assurance systems do not accurately measure infection prevention practice in operating theatres or drive improvement



Patients' experiences of surgical site infection

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Key words: Surgical site infection, patient experience, narratives

'There is nothing you can do anyway, you are in agony.'

'It was really stinking and I couldn't look at it.'

'The amount of fluid coming out of it is extremely embarrassing.'

'This wound has taken over my life, and in fact both our lives [patient plus spouse].'

Infection prevention in theatre is complex



Skin prep
Timely antibiotic prophylaxis
Patient warming
Aseptic technique
Protection of instruments
Equipment – dust
Clutter – cleaning
Minimising No. of people
Controlling airflow (doors)

Several SSI prevention guidance



Choice Framework for local Policy and Procedures 01-01 – Management and decontamination of surgical instruments (medical devices) used in acute care. Part A: The formulation of local policy and choices

National Collaborating Centre for Women's and Children's Health

Surgical site infection prevention and treatment of surgical site infection

NICE

Clinical Guideline
October 2008
funded to produce guidelines for the NHS by NICE



WHO

Journal of Hospital Infection (2002) 52: 1–28
doi:10.1053/j.jhin.2002.1237, available online at <http://www.idealibrary.com on> **IBI**[®]

WORKING PARTY REPORT

Microbiological commissioning and monitoring of operating theatre suites

A report of a working party of the Hospital Infection Society

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1 Background
2 Introduction

Appendix 1. Centers for Disease Control and Prevention, Guidelines for the Prevention of Surgical Site Infection 2017: Background, Methods and Evidence Summaries

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CDC

Barriers to implementing best practice to prevent SSI: Key themes

- **Variability** in knowledge of, and availability of policy
- **Conflict** of ideas/opinion
- **Poor knowledge** of evidence
- Importance of practices to prevent SSI **not recognised**
- **Lack of standards** to support best practice
- **Ownership** and responsibilities not defined
- Lack of **leadership**

Original Article



The OneTogether collaborative approach to reduce the risk of surgical site infection: Identifying the challenges to assuring best practice

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1-8
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jip.sagepub.com
SAGE

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7 Infection Prevention Standards

1. Skin preparation
2. Antibiotic prophylaxis
3. Patient warming
4. Instrument management
5. Surgical environment
6. Wound management
7. Surveillance

Standards and Guidance:

Reducing the risk of infection on the patient's surgical pathway



1. Skin Preparation

1.1 Washing

Recommendation
NCS recommends that patients should shower or have a bath (or be assisted to shower, bath or bed bath) using soap, either the day before, or on the day of surgery.¹⁹



1.2 Hair Removal

Recommendation
NCS recommends that razors should not be used for hair removal because they increase the risk of SSI. If hair must be removed, then clippers with disposable heads are recommended.¹⁹



1.3 Skin Disinfection

Recommendation
NCS recommends that the skin should be disinfected immediately prior to the incision with chlorhexidine or povidone-iodine (alcoholic or aqueous solution).¹⁹



1.4 Reducing Skin Recolonisation

Recommendation
NCS recommends that if an incise drape is used, this should be impregnated unless the patient has an iodine allergy.¹⁹



4. Maintaining Asepsis

Recommendation
All pre-sterilised instruments must be checked for evidence that they have been sterilised and that the packs are intact. Instruments should be held up in a clean area, as close to the procedure time as possible, and protected from contamination prior to use. All prepared instruments must be closely observed at all times. Staff who undertake procedures which require skills such as aseptic technique, must be trained and demonstrate proficiency before being allowed to undertake these procedures independently.²⁴



3. Perioperative Warming

Recommendation
NCS recommend measuring the patient's core temperature using a site that produces a direct measure or direct estimate (a thermometer with no correction factors) of core. The use of indirect measurement (thermocouple, one with a correction factor [forehead, tympanic, temporal, forehead & forehead strip]) are not recommended. All patients having anaesthesia should be actively warmed (a process that involves heat to the patient) for at least 30 minutes prior to anaesthesia. The patient's core temperature should be 36°C or above before they are transferred to theatre, unless there is a need to expedite surgery.

Patients having anaesthesia for longer than 30 minutes, or at a higher risk of perioperative hypothermia are warmed from induction using forced-air warming. The patient's core temperature should be monitored and documented every 15 minutes in recovery. The patient should not be transferred to the ward, until their core temperature is 36°C or above. Intravenous fluids (500 ml or more) and blood products should be warmed to 37°C using a fluid warming device. All irrigation fluids used intraoperatively should be warmed to a temperature of 36-40°C.



2. Prophylactic Antibiotics

Recommendation
NCS recommends that there must be a local guide to antibiotic prescribing including advice on appropriate surgical prophylaxis. Surgical prophylaxis should be given intravenously on induction of anaesthesia or within 60 mins before the incision is made.²¹ In most circumstances a single dose of antibiotic with a long enough half-life to achieve activity throughout the operation is sufficient.²¹



5. Surgical Environment

Recommendation
An effective air changing ventilation system should be in operation. The doors to the operating theatre should remain closed and traffic in and out of theatre restricted to a minimum to ensure efficiency of the ventilation. The number of personnel present in theatre should be kept to a minimum.²⁶



6. Wound Management

Recommendation
NCS recommends that surgical incisions should be covered with an appropriate interactive dressing at the end of the operation.²¹



7. Surveillance

Recommendation
The risk of SSI should be monitored using a standardised surveillance methodology to provide feedback to surgeons and the surgical team about the quality of infection prevention in the operating theatre. Monitoring of infection rates is essential to provide patients with accurate information about the risk of SSI associated with the operation.²¹



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OneTogether Assessment Toolkit

Infection prevention practice
across the surgical pathway
Updated 2017



3 Assessment tool: 1.2 Hair removal

1.2 HAIR REMOVAL				
NICE recommends that razors should not be used for hair removal because they increase the risk of SSI. If hair must be removed, then clippers with disposable heads are recommended.		Defined standard Present in local policy N = 0; Partial = 1; Yes = 2	Standard is applied Evidence that element is performed N = 0; Partial = 1; Yes = 2	Comments If 'partial' – specify where non-compliant
1	Prior to elective admission: patients are given verbal and written information not to shave or remove hair from operative site. This includes why this is important and how to ask for help.			
2	Hair removal is only undertaken where it is necessary to visualise the operative site.			
3	Hair is removed as near to time of incision as possible.			
4	Hair is removed using clippers with single-use disposable head.			
5	Staff who are responsible for hair removal have been trained and are competent in performing the procedure.			
		(Sum of scores ÷ 10) x 100 = %	(Sum of scores ÷ 10) x 100 = %	Overall % compliance (Sum of all scores ÷ 20) x 100 = %

GUIDANCE ON COMPLETING 1.2 HAIR REMOVAL

- 1 a) Visit pre-assessment clinic to review process and what written and verbal information is given to patients.
b) Ask 2 patients waiting for surgery if they were given advice about washing.
- 2 a) Check if theatre protocols include a standard for hair removal.
b) Check how hair removal for a few patients on a list is managed; if removal is routine rather than patient specific then this does not comply with the standard.
- 3 a) Check if theatre protocol include this in the standard. b) Check how hair removal for a few patients on a list is managed.
- 4 a) Check if theatre protocol include this in the standard. b) Check how hair removal for a few patients on a list is managed.
- 5 Ask member staff who removes hair if they have received training and have had competency assessment.

Does your theatre have a **defined** standard ?

A single dose of prophylactic antibiotics is administered unless surgery is prolonged or there is another specific indication for a repeat dose

Score

2 = if you have a written policy/process for the OR

1 = There is some consensus in the OR but no written policy

0 = There is no policy or clear standard

Is this standard **applied** in your theatre?

A single dose of prophylactic antibiotics is administered unless surgery is prolonged or there is another specific indication for a repeat dose.

Score

2 = There is 100% compliance with the standard

1 = There is some compliance but it is not consistent

0 = Rarely compliant, no agreed standard

2 Instructions for conducting the assessment

SCORING EXAMPLE

STANDARD OF CARE	DEFINED STANDARD	STANDARD IS APPLIED
There is a defined skin disinfection process agreed by a multi-disciplinary team.	0 Rationale: There is a local policy for skin disinfection but it is very out of date and doesn't reflect NICE guidance. I am unsure how it was developed.	0 Rationale: This cannot be measured for each procedure, as there is no guide for different procedures.
All products for skin disinfection must have an associated management protocol. E.g. multi-dose bottles: date of opening and use by date.	0 Rationale: There is no protocol available.	1 Rationale: All multi-dose bottles viewed today are labelled with date of opening and use by date. But not all questioned could confirm this and thought they did not use multi-dose bottles.
	Sum of Scores = 0	Sum of scores = 1

CALCULATION

4 Interpreting the assessment results

The results from the assessment provide guidance into the level of compliance within each area. As a guide OneTogether recommends the following categorisation of compliance.

% range	Compliance
80-100	High
50-79	Medium
0-49	Low

Please note: Although a score of 80% compliance is categorised a high compliance score, further improvements can still be implemented to achieve 100% wherever possible.



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Action plan

ACTION PLAN LEAD		ACTION PLAN TEAM	
Speciality			
Date			

AREA OF ONETOGETHER SURGICAL PATHWAY:			
Initial compliance score:	%	Re-assessed compliance score:	%

IMPROVEMENT AREA	ACTIONS	LEADS	RAG	REVIEW DATE	COMMENTS/UPDATE

Prioritising Actions for Improvement

There are a number of ways in which a team may prioritise actions for improvement:

- Areas of practice with the lowest compliance scores
- Speed with which action can be taken to address compliance
- Risk associated with non-compliance

Recommends that the results from the assessment, action planning and prioritisation should be agreed by multi-disciplinary team

Electronic version of Assessment Tool



MENU

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[Instruction Summary](#)

Assessment Selection:

<p>1.1 Patient Washing</p>  <p>Incomplete</p>	<p>1.2 Hair removal</p>  <p>Incomplete</p>	<p>1.3 Skin disinfection</p>  <p>Incomplete</p>	<p>1.4 Preventing skin recolonisation</p>  <p>Incomplete</p>	<p>2 Prophylactic antibiotics</p>  <p>Incomplete</p>
<p>3.1 Warming intravenous and irrigation fluids</p>  <p>Incomplete</p>	<p>3.2 Perioperative warming, pre-operative</p>  <p>Incomplete</p>	<p>3.3 Perioperative warming, intra-operative</p>  <p>Incomplete</p>	<p>3.4 Perioperative warming, post-operative</p>  <p>Incomplete</p>	<p>4.1 Maintaining asepsis – surgical practice</p>  <p>Incomplete</p>
<p>4.2 Maintaining asepsis – instrument management</p>  <p>Incomplete</p>	<p>5 Surgical environment</p>  <p>Incomplete</p>	<p>6 Wound management</p>  <p>Incomplete</p>	<p>7 Surveillance of Surgical Site Infection (SSI)</p>  <p>Incomplete</p>	<p>Overall Compliance Score</p> <p>Incomplete</p>



Pilot testing of self-assessment tool

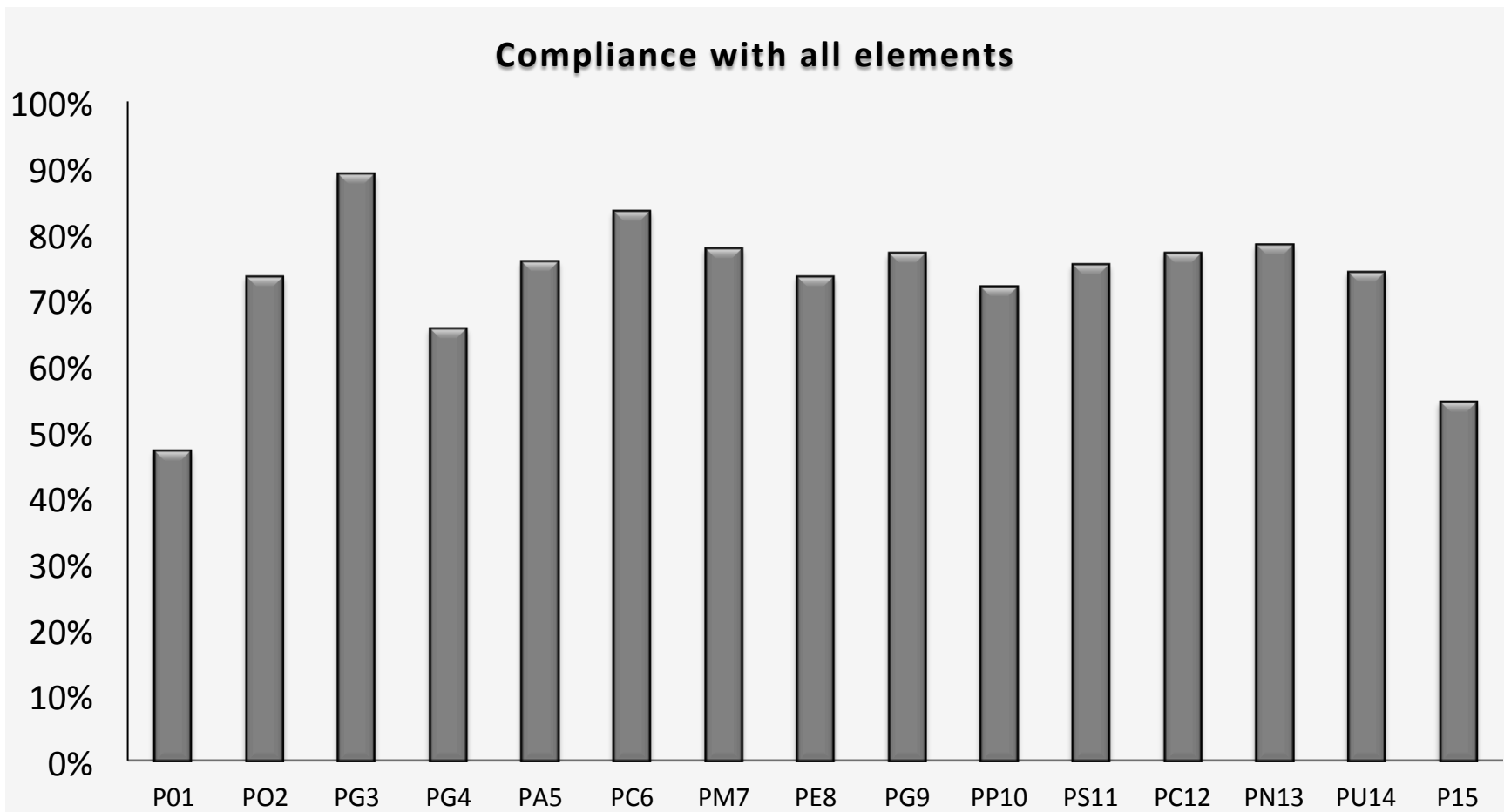
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INFECTION PREVENTION & CONTROL SOCIETY

Infection Prevention & Control Self-Assessment Tool
For Patients Undergoing surgery

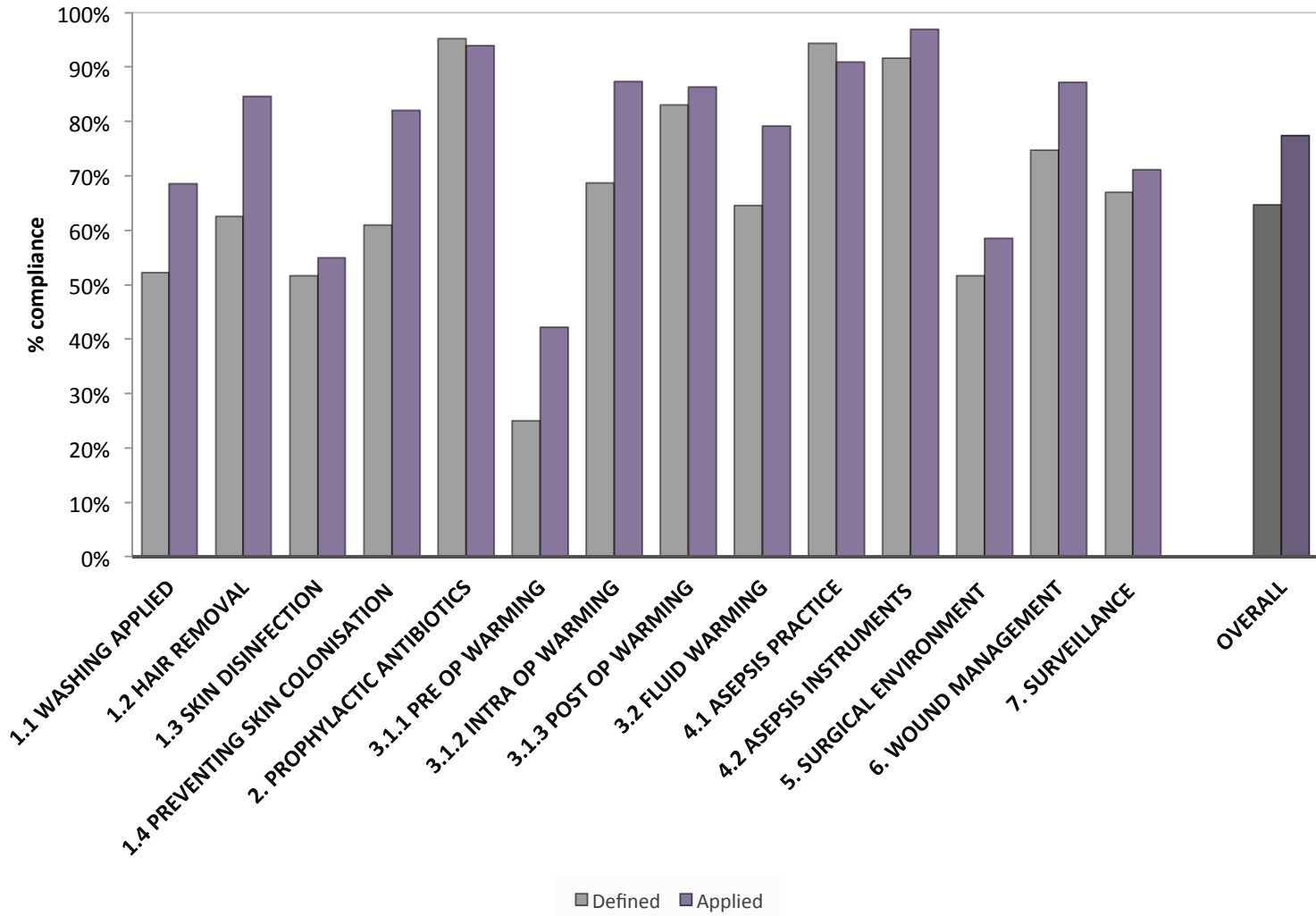
Hospital / Trust	
Theatre Specialty	
Personnel conducting assessment	
Name & service	
Name & service	
Name & service	
Name & service	
Date of assessment	

- Piloted in 15 theatres in 10 UK hospitals & Malta
 - Separate assessment in each specialist theatre as practice varies
 - IPCN & theatre staff complete together – shared learning
 - Emphasis on information for improvement
- Evaluated as invaluable tool for identifying gaps in best practice and driving improvements

Overall compliance with all elements

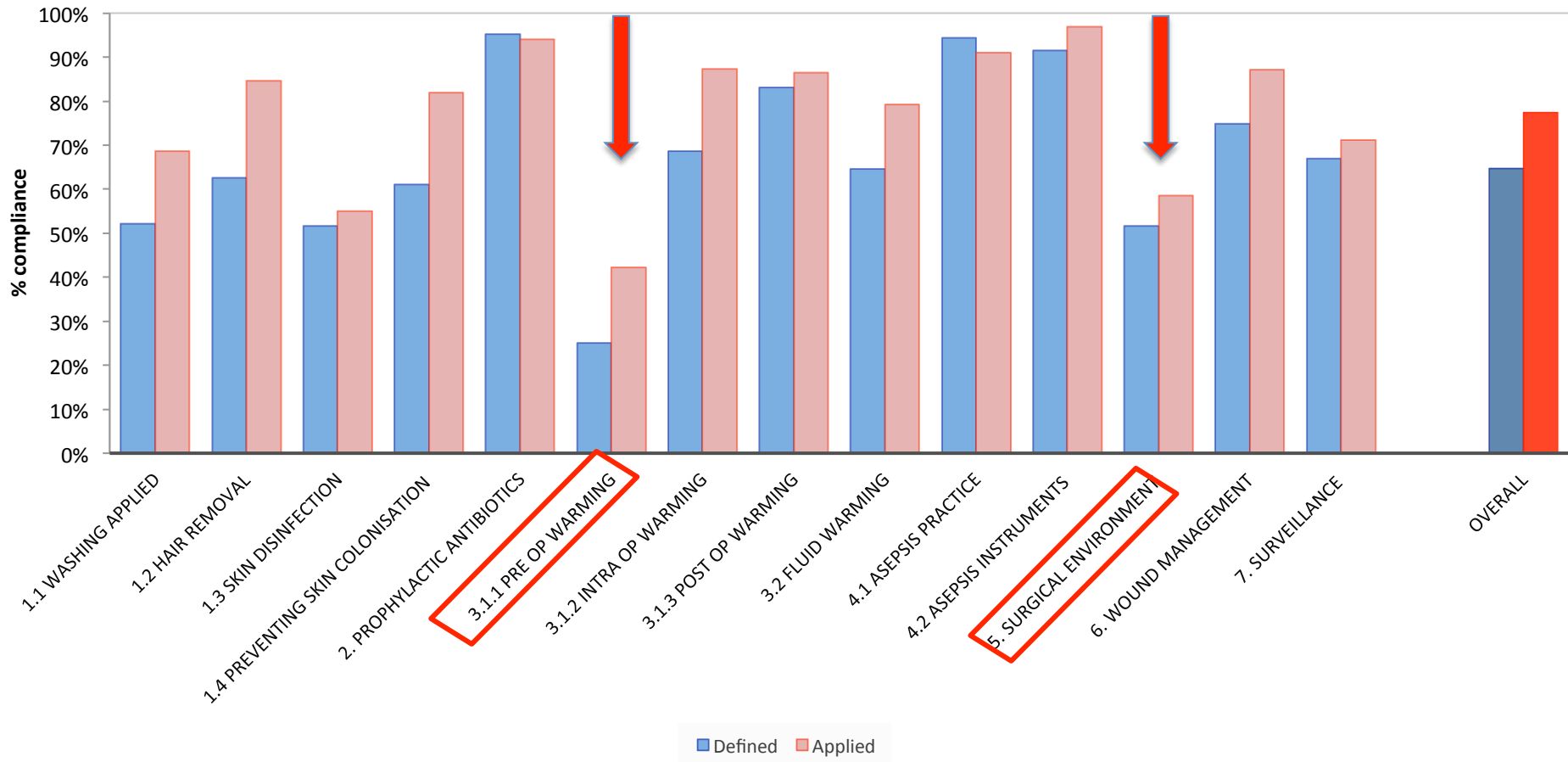


Compliance with the Defined and Applied standards



Pilot study - 2015

Comparison between Defined and Applied Standard



Using the OneTogether tool

- Focus on one department
- Start by going through the tool with key members
- Ask same questions to different members of staff
- Observe practices and speak to patients

- An 'excuse' for infection prevention to visit theatres
 - Big eye opener for infection prevention team and also for clinicians involved

After assessment?

Agree on where to focus energy to improve/change

What could we change easily?

What needs more energy? More complex to deal with

Meetings and discussions with key stakeholders – feedback results

Focus on the process, look closer
– Ask what, why, when, how, who



Focus on why we are doing this ...



What's next from OneTogether?

Development of **Quality Improvement Guides**

- Practical resources to facilitate implementation of best practice
- Summary of evidence
- Competency assessment checklist
- FAQ
- Powerpoint slides

- Evidence based/expert recommendations

Skin prep QI guide

Why is skin prep important?

- Pre-operative washing
- Hair removal
- Skin Disinfection
- Incise Drapes



Skin Disinfection: the use of antiseptic products for skin preparation

Why use antiseptics to disinfect the skin prior to surgery?

Cleaning the skin with soap and water removes dirt, skin secretions such as sweat and sebum, together with superficial microorganisms. However, microorganisms that live in the folds, sebaceous glands and hair follicles are not removed by washing. The aim of skin disinfection is to apply antiseptic solutions to rapidly kill or remove skin microorganisms at the site of the incision and reduce the risk of contamination of the surgical site.

When should skin antiseptics be applied?

Preparation of the surgical site should occur as close to the point of surgery as possible and immediately prior to draping. There is no evidence to suggest that multiple applications of different skin antiseptics increases efficacy.



Evidence for the efficacy of different skin antiseptics

- Agents containing alcohol have the highest probability of being the best in terms of preventing SSI, but there are few studies that have directly compared different alcohol based formulations (Dumville et al 2013, WHO 2016).
- Other deficiencies in available studies are that many are too small to detect differences in rates of SSI, measure only the change in skin colonisation, or have focused on single types of operative procedure.
- There is one randomised controlled trial that found 2% CHG in 70% IPA to be significantly more effective at preventing SSI than 8.3% PI in 72.5% IPA; but was conducted only on patients undergoing caesarean section (Tuilly et al 2016).
- A similar comparison in a study by Berry et al (1982) included a broader range of surgery but the methods were poorly described, did not use a clear, objective definition for SSI and did not account for variation in the period of follow-up.
- One small study has compared 0.5% CHG/70% IPA with 2% CHG/70% IPA and although identified a reduction in the number of microorganisms on the skin there was not a significant difference in the rate of SSI (Casey et al 2015).



Properties of active agents in pre-operative skin preparations

	Active antiseptic agent		
	Chlorhexidine Gluconate (CHG)	Iodophors (PI)	Alcohol
Mechanism of action	Disrupts cell membrane	Releases iodine which oxidises and substitutes cell material	Denatures cell wall protein
Preparation strength	0.5%; 2%	7 – 10%	70% Isopropyl or ethyl alcohol preferred but can be 30-85%
Quick kill	Moderate	Moderate	Rapid
Persistent activity	High (up to 48hrs)	Moderate	None
Use on eyes	No (damage to cornea)	Dilute 1:1 10% solution with balanced salts to make 5	No
Use on ears	No (damages middle ear)	Yes	Yes
Use on mouth	Use 0.12% oral rinse	Yes	No
Use on genital area	No	Yes	No
Use on tissues	No	No	No
Contraindications	<ul style="list-style-type: none"> • Sensitivity or allergy • Neonates 	<ul style="list-style-type: none"> • Sensitivity or allergy • Neonates • Inactivated in presence of blood <p>Note: risk of iodine toxicity in repeat use in patients with thyroid disorders, pregnant/breastfeeding women but unlikely to be a problem for single pre-operative skin preparation</p>	<ul style="list-style-type: none"> • Sensitivity or allergy • Neonates • Inactivated in presence of blood



Competency assessment checklist

Prepare patients skin for surgical procedures	Demonstrated to learner	Assessment of competence by Assessor		
		6 weeks	3 months	6 months
Skill Criteria	Signature/date	Signature/date	Signature/date	Signature/date
Demonstrate the correct identification of the patient's operative site and clarify any uncertainties prior to preparation				
Ensure that patient allergies are checked prior to procedure				
Ensure patient dignity and safety are maintained throughout				
Demonstrate the correct method of hair removal				
Demonstrate the correct method of skin preparation				
Demonstrate the correct application of incise drapes				
Underpinning Knowledge		Discussed Signature/date	Knowledge achieved Signature/date	Assessment method e.g questioning, written work, reflection
Discuss the importance of verbal and non verbal communication to the patient				
Identify factors which may compromise patient dignity during procedures and how these may be minimised				
Discuss the rationale for skin washing prior to surgery e.g. preoperative showering/bathing				
Discuss the types of antiseptic preparations used to disinfect the skin and the indications for their use				
Identify the dangers of pooling of preparation fluids and preventative measures				
Discuss sources of contamination when preparing the surgical field and appropriate measures to deal with them				
Discuss the relationship between hair removal at the operative site and infection prevention				
Describe the potential consequences of wound contamination				

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New Slide Section

Layout Section

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Slides Outline

▼ Default Section (3)

1 How to use this tool kit
Skin preparation for patients undergoing surgery

2 Introduction

3 For each section there is

▼ Untitled Section (1)

4 Standards and guidance: reducing the risk of infection on the patient's surgical pathway



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How to use this tool kit

Skin preparation for patients undergoing surgery

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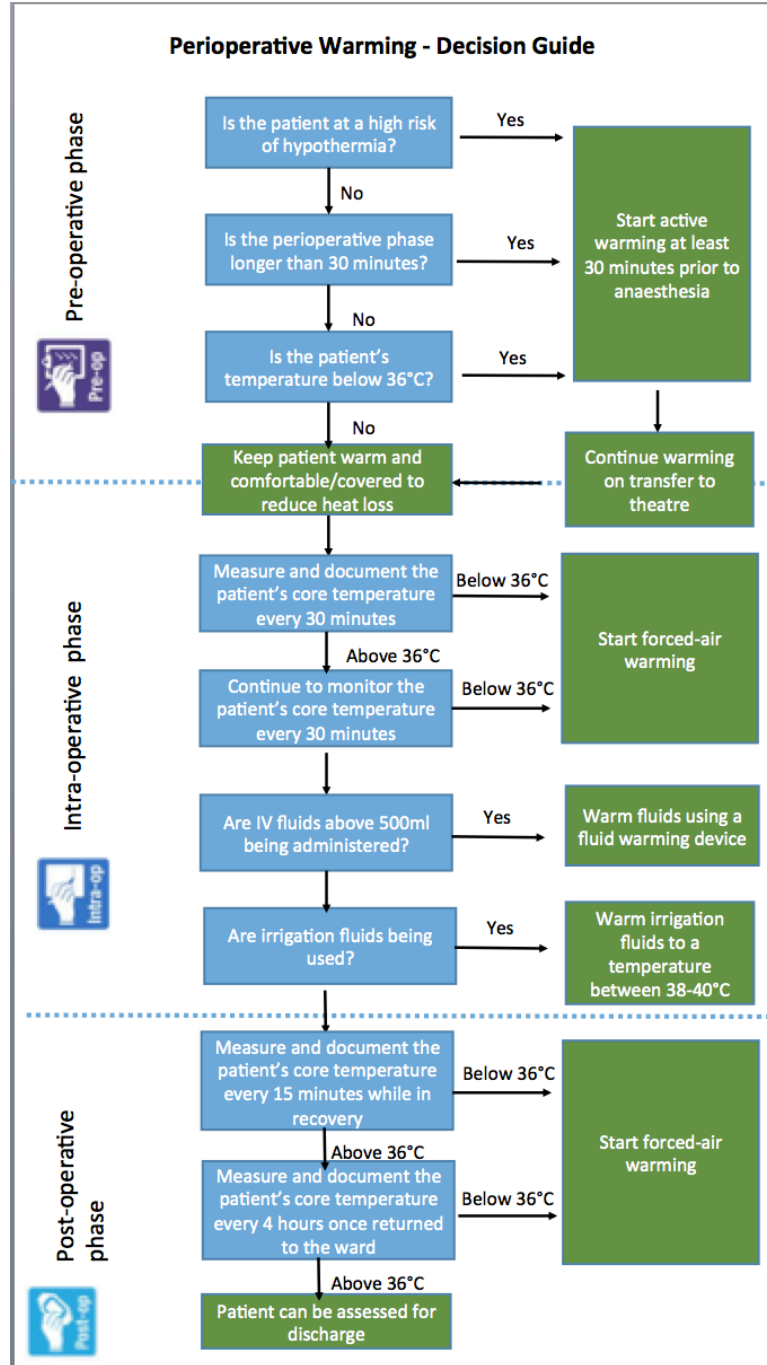
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Perioperative Warming - Decision Guide

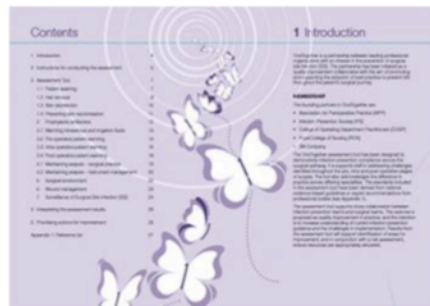


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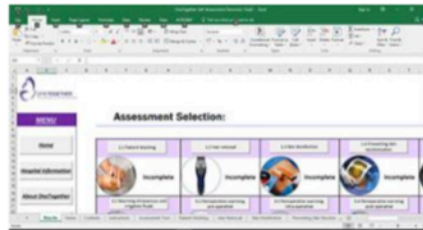
Resources



OneTogether Assessment Toolkit

This is the paper version of our Assessment Toolkit for you to print out and use as needed.

Download: [OneTogether Assessment Toolkit](#)



OneTogether Electronic Assessment Toolkit

The electronic version of our Assessment toolkit enables automatic calculation of infection prevention compliance scores.

Download: [OneTogether Electronic Assessment Toolkit](#)



Assessment Toolkit Training Video

To support the use of OneTogether's Assessment Toolkit, the OneTogether partners have created a training video which provides an overview of the tool's benefits, guidance on how to complete an assessment and practical hints and tips.

Download: [Assessment Toolkit Training Video](#)

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improvement are
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