

Clipping not Shaving Intervention Guidelines

SSII Surgical Site Infection Improvement Programme

Author

Christine Sieczkowski

Version

0.3

Date Created

30 January 2014

Date Updated

04 March 2014



HEALTH QUALITY & SAFETY
COMMISSION NEW ZEALAND

Kupu Taurangi Hauora o Aotearoa

Document reviewed and approved by

Name	Position / Project Role	Signature and Date
Sally Roberts	Chair SSII Programme Steering Group	
Arthur Morris	SSII Programme Clinical Lead	

Distribution list

Name	Position / Project Role	Organisation
Sally Roberts, Andrew Keenan, Paula Halliday, Diane Callinicos, Trevor English, Allan Panting, Arthur Morris, Dave Mackay	Steering Group	N/A
Arthur Morris, Margaret Drury, Michelle Taylor, Christine Sieczkowski, Sud Rao, Kelly Vince, Sally Roberts, Lorraine Wilson, Anja Werno, Tim Blackmore	Clinical Leadership Group	

Change record

Date	Version	Modified By	Description
30/01/2014	0.1	Christine Sieczkowski	First draft for review
07/02/2014	0.2	Christine Sieczkowski	Second draft
04/03/2014	0.3	Hayley Callard	Minor change to referencing and update advice about disinfecting clippers.

CONTENTS

Preface.....	5
Executive Summary	6
Appropriate use of clipping.....	7
Inappropriate hair removal.....	7
Implementing clipping of hair.....	8
Summary recommendations.....	8
References.....	9
Evidence review for clipping versus shaving.....	10

PREFACE

The Surgical Site Infection Improvement (SSII) Programme is one component of the Health Quality & Safety Commission's (the Commission) Infection Prevention and Control Programme. The Commission's programmes aim to reduce healthcare associated infections, including surgical site infections (SSIs).

SSIs can cause emotional and financial stress, serious illness, longer hospital stays, long-term disability, and can result in loss of life. The consequences for patients, as well as health services, mean that the prevention of SSIs is extremely important.

To address this, in 2012 the Commission entered into a partnership with Auckland and Canterbury District Health Boards to deliver the SSII Programme nationally.

Drawing upon the 2010 report to the Ministry of Health *Recommendations for a National Surgical and Procedural Site Infection Surveillance Program*, the SSII Programme in collaboration with district health boards throughout the country, has refined these recommendations and has implemented a consistent, evidence-based approach for collecting and reporting high quality data about hip and knee arthroplasty procedures.

Through its consultative process the SSII Programme promotes culture change and practice improvements that focus on the prevention of SSIs. This encourages performance improvement by highlighting practice that may require attention. The SSII Programme also provides intervention guidance on how to drive improvements that result in safer patient care.

Over the next one to two years the SSII Programme will focus on SSIs following selected cardiac procedures and caesarean sections. The SSII Programme has been intentionally spread over three to five years to ensure that improvement can be achieved in a sustainable way.

Document	Clipping not Shaving Intervention Guidelines	Programme	SSI Improvement
Version	0.3	Author	Christine Sieczkowski
Created	04 March 2014	Updated	04 March 2014

DEFINITION OF TERMS

Clipping is the use of clippers with fine teeth to cut hair close to the patient's skin, leaving short stubble of usually around one millimetre in length.

Shaving is a method using a sharp blade which is drawn over the patient's skin to cut hair close to the skin surface.

EXECUTIVE SUMMARY

This document has been produced to encourage healthcare professionals to use clipping, rather than shaving, for preoperative hair removal. The Clipping not Shaving Intervention Guidelines are the third in a series of SSII Programme intervention guidelines.

Preparation for surgery has traditionally included the routine removal of body hair from the intended surgical wound site. Hair is removed because its presence can interfere with the exposure of the incision site, the subsequent wound, suturing of the incision and the application of adhesive drapes and wound dressings (Best Practice 2007).

Studies have shown that preoperative hair removal by any means is associated with increased SSI rates (CDC 1999). Hair should not be removed unless it interferes with the operation. If removal is necessary, remove by clipping and not by shaving (Nichols 2001).

Clipping rather than shaving will improve the safety and quality of care that patients receive. Hair removal using electric clippers should occur as close to the time of the procedure as possible and should be performed outside the operating room. Hair removal with a razor causes epidermal micro-trauma and bacterial colonisation, has been associated with a higher risk of SSI and, therefore, should not be used (Ng, Alexander & Kerr, et al 2013).

Document	Clipping not Shaving Intervention Guidelines	Programme	SSI Improvement
Version	0.3	Author	Christine Sieczkowski
Created	04 March 2014	Updated	04 March 2014

APPROPRIATE USE OF CLIPPING

According to international guidelines (WHO 2009, Canadian Patient Safety Institute 2011, NICE 2008) hair should not be removed from the operation site unless it interferes with the surgical procedure. If hair removal is required, the evidence supports the use of clippers for all sites. Clipping should occur as close to the time of surgery as possible.

Rationale	This measure assesses whether DHBs are complying with evidence based practice.
Improvement	An increase in the rate of compliance, i.e. xx% of patients having hair removed received clipping of body hair preoperatively.
Numerator statement	Number of procedures where preoperative clipping of body hair was performed.
Denominator statement	Number of procedures where hair is removed.

INAPPROPRIATE HAIR REMOVAL

Much of the focus of SSI prevention research in relation to hair removal has been on removal practices in hospitals by surgical and nursing teams. Studies have shown that preoperative hair removal the night before an operation is associated with a significantly higher risk of SSI than hair removal immediately before the operation. This is due to skin micro-trauma and bacterial colonisation (Ng et al 2013).

Engaging patients in their care with education about appropriate hair removal is important and could be included as a quality initiative in preoperative patient literature (AORN 2013).

Document	Clipping not Shaving Intervention Guidelines	Programme	SSI Improvement
Version	0.3	Author	Christine Sieczkowski
Created	04 March 2014	Updated	04 March 2014

IMPLEMENTING CLIPPING OF HAIR PREOPERATIVELY

- Patients should be educated not to shave in the vicinity of the surgical site before their surgery. This message could be incorporated into the preoperative patient information (AORN 2013).
- Update policies and procedures. If hair removal is necessary, clippers should be used to prepare the surgical site preoperatively.
- Use either a single use electric or battery-powered clipper. Clippers should be disinfected as per manufacturer's instructions.
- To limit bacterial contamination of the surgical site, clipping should occur less than two hours before surgery.
- Hair removal should occur outside the operating theatre or procedure room, but inside the operating department. Clipping the hair outside of the operating room minimises the dispersal of loose hair and therefore the potential for contamination of the sterile field and/or the surgical wound.
- Remove razors from surgical wards and operating rooms to prevent their use in hair removal.

SUMMARY RECOMMENDATIONS

- If it is necessary to remove hair, clipping or depilatory cream cause fewer SSIs than shaving.
- Although the evidence is limited on the timing of hair removal, if clipping is to be used it should be carried out on the day of surgery.
- Depilatory creams have been known to cause skin sensitivity.
- DHBs should consider providing information for patients not to remove hair before their admission and certainly not before admission for an elective caesarean section.

Document	Clipping not Shaving Intervention Guidelines	Programme	SSI Improvement
Version	0.3	Author	Christine Sieczkowski
Created	04 March 2014	Updated	04 March 2014

REFERENCES

AORN. Perioperative Standards and Recommended Practices. Denver, CO: AORN, 2013; 1:75-90.

Joanna Briggs Institute. Pre-operative hair removal to reduce surgical site infection. Best Practice. 2007; 11:1-4.

Canadian Patient Safety Institute (CPSI). Safer healthcare now! Prevent Surgical Site Infections: Getting started kit. Edmonton, A.B. Canadian Patient Safety Institute 2011; p.17.

Graves N, Nicholls TM, Morris AJ. Modelling the costs of hospital-acquired infections in New Zealand. Infection Control Hospital Epidemiology. 2003; 24:214-23.

Graves N, Nicholls TM, Morris AJ, Wong CGS. The prevalence and estimates of the cumulative incidence of hospital-acquired infections among patients admitted to Auckland District Health Board hospitals in New Zealand. Infection Control Hospital Epidemiology. 2003; 24:56-61.

Magill S, Hellinger W, Cohen J, Kay R, Bailey C, Boland B, Fridkin S. Prevalence of healthcare –associated infections in acute care hospitals in Jacksonville, Florida. Infection Control and Hospital Epidemiology. 2012; 33:283-90.

Ng W, Alexander D, Kerr B, Ho MF, Amato M, Latz K. A hairy tale: successful patient education strategies to reduce pre-hospital hair removal by patients undergoing elective caesarean section. Journal of Hospital Infection. 2013; 83: 64-7.

NICE: National Institute for Clinical Excellence. Clinical Guideline: October 2008. Surgical Site Infection- Prevention & treatment of surgical site infection.

Nicholls TM, Morris, A.J. Nosocomial infections in Auckland Healthcare Hospitals. NZ Medical Journal. 1997; 110:314-6.

WHO: Patient Safety. WHO Guidelines for Safe Surgery; 2009.

Document	Clipping not Shaving Intervention Guidelines	Programme	SSI Improvement
Version	0.3	Author	Christine Sieczkowski
Created	04 March 2014	Updated	04 March 2014

EVIDENCE REVIEW FOR CLIPPING VERSUS SHAVING

Original articles and systematic reviews

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Seropian R, Reynolds BM. American Journal of Surgery 1971; 121:251-54.	Wound infections after preoperative depilatory versus razor preparation.	1971	Study period June 1968- Feb 1969. Odd number cases received a standard razor preparation, even numbered cases received the depilatory preparation.	406 cases. The infection rate after razor preparation was 5.6% and after the depilatory 0.6%. The results of this study by sex, age, race, wound class and urgency of surgery, show no significant difference. The incidence of wound infection did vary with the interval between razor preparation and surgery. The infection rate being 3.1% after razor preparation just before surgery and 7.1 % after preparation during the 24 hrs before surgery and 20% more than 24 hrs before surgery.	Depilatory preparation does not contribute to the risk of wound infection, but razor preparation has a definite adverse effect. The microscopic injury that regularly accompanies razor use is a sufficient explanation without the need to implicate visible injury.	Limitation: no mention of the duration of patient follow up.
Cruse PJE, Foord R. Arch. Surgery 1973; 107: 206-10.	A five year prospective study of 23,649 surgical wounds.	1973	A prospective study of 23,649 surgical wounds. All wounds were examined by one person for 28 days after the operation. Initiated for 4 reasons 1. To obtain accurate monthly infection figures 2. To determine factors that influence infection rate 3. To obtain statistical background and 4. To improve infection rate and bed utilisation.	Patients who were shaved-infection rate of 2.3%. Patients who had no shave but pubic hair clipping the infection rate was 1.7%. In patients who had no shave or clipping the infection rate was 0.9%.	Authors felt that a reduction in shaving contributed to a steady decline in clean-wound infection rate.	This study looked at multiple factors for reducing wound infection of which shaving was one. Others included shorter pre-op stay, skin prep, contamination prevented during op, careful surgical technique.

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Kjonniksen I, Anderson BM, Sondenaa VG, Segadal L. AORN Journal 2002 ; 75 :928-40.	Preoperative hair removal- a systematic literature review.	2002	This article describes a systematic literature review on whether, how and when to perform preoperative hair removal. Studies were divided into groups: <ul style="list-style-type: none"> - shaving compared to no hair removal - shaving compared to clipping - shaving compared to depilation - timing of preoperative hair removal with razor, clippers and wet and dry shaving 	<p>There was no strong evidence that hair removal results in a higher frequency of SSIs than no hair removal.</p> <p>Several of the randomized and observational studies showed that either wet or dry shaving the evening before the procedure resulted in a significantly higher infection rate than depilation or electric clipping.</p> <p>No convincing differences in the incidence of postoperative SSIs between electric clipping, depilation or no hair removal.</p> <p>Hair removal with clippers should be performed as close as possible to the time of the procedure.</p>	The authors' recommended future research be directed towards randomized trials of clipping or depilation versus no hair removal.	

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Tanner J, Woodings D, Moncaster K. The Cochrane Collaboration Cochrane Reviews 2006 Issue 3 http://www.cochrane.org/reviews/en/ab004122.html	Preoperative hair removal to reduce surgical site infection	2006	The preparation of people for surgery has traditionally included the routine removal of body hair from the intended surgical wound site. However, there are studies which claim that pre-operative hair removal is deleterious to patients by causing surgical site infections and therefore should not be carried out. The primary objective to this review was to determine if routine pre-operative hair removal results in fewer SSIs than not removing hair. Randomised controlled trials comparing hair removal with no hair removal, different methods of hair removal, hair removal conducted at different times before surgery and hair removal carried out in different settings.	Eleven RCTs were included in this review. Three trials involving 625 people compared hair removal using either cream or razors with no hair removal- no statistically significant difference in SSI rate. Three trials involving 3193 people compared shaving with clipping and found that there were statistically significantly more SSIs when people were shaved rather than clipped (RR 2.02, 95% CI 1.21 to 3.36). One trial compared shaving on the day of surgery with shaving the day before and one trial compared clipping on the day of surgery with clipping the day before. Neither trial found to be of statistical significance. No trials were identified which compared clipping with no hair removal. No trials were found comparing clipping to a depilatory cream.	There was no difference in SSIs among patients who have had their hair removed and those who had not. If it is necessary to remove hair, then clipping and depilatory creams result in fewer SSIs than shaving using a razor. No difference observed in SSIs when patients are shaved or clipped one day before surgery or on the day of surgery.	Other studies show higher rates of infection when hair removal is undertaken the day before surgery.

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Best Practice 2007; 11: 1-4.	Pre-operative hair removal to reduce surgical site infection	2007	Reviewed the Cochrane systematic review from 2006	No statistically significant difference between shaving and no hair removal. Clippers vs. no hair removal- no studies were found. Three percent (46/1627) of people who were shaved prior to surgery developed SSI compared to two percent (21/1566) of people who were clipped prior to surgery.	This is a statistically significant finding. Trials involved similar types of surgery and showed more people are more likely to develop SSI when they are shaved rather than clipped prior to surgery.	There is insufficient evidence to say whether hair removal increases or reduces SSI. However, if it is necessary to remove hair, clipping or using depilatory cream causes fewer SSI than shaving.
Ng W, Alexander D, Kerr B, Ho MF, Amato M, Latz K. Journal of Hospital Infection 2013 ;83 :64-7.	A hairy tale: successful patient education strategies to reduce pre-hospital hair removal by patients undergoing elective caesarean section.	2013	This study was conducted in a 430 bed community teaching hospital in Toronto. They undertake approx 6000 births per annum of which 1700 are caesarean section. Expectant mothers were given the message not to remove the hair from their lower abdomen /pubic area during the last month of pregnancy. The message was reinforced by healthcare providers and posters etc.	SSIs following caesarean section were studied prospectively. The rate of self-hair removal decreased significantly from 41% (2008) to 27% (2011). Concurrently, a 51% reduction in the SSI rate was observed.	The multifaceted strategy proved successful in reducing pre-hospital hair removal overall and in particular, shaving. The study suggested that a trend over time to lower-risk methods of hair removal, e.g. clipping, depilatory creams.	Limitation: Other simultaneous SSI prevention interventions, which are alluded to but not described, are also likely to have contributed to the reduction in SSI rate.

Guidelines

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Infection Control and Hospital Epidemiology 1999; 20: 247-78.	Guideline for Prevention of Surgical Site Infection	1999	Specifically recommends SSI prevention methods unique in open operations.	<p>SSI rates were 5.6% in patients who had hair removed by razor shave compared to 0.6% among those who had hair removed by depilatory cream or no hair removal.</p> <p>SSI rates were 3.1% vs. 7.1% if shaving performed >24 hrs before surgery.</p> <p>Clipping immediately before surgery compared to the night before showed SSI at 1.8% vs. 4.0% respectively.</p>	<p>One study showed that preoperative shaving the surgical site the night before is associated with a significantly higher SSI risk than either the use of depilatory cream or no hair removal.</p> <p>Shaving immediately before an operation compared to shaving within 24 hrs was associated with decreased SSI rates.</p> <p>Clipping hair immediately before surgery has been associated with a lower risk of SSI than shaving or clipping the night before surgery.</p>	Although the use of depilatories has been associated with a lower SSI risk than clipping and shaving, depilatories sometimes produce hypersensitivity reactions.

Authors and journal	Title of publication	Date	Description	Findings	Conclusions	Comment
Nichols R L. Emerging Infectious Diseases 2001; 7:220-24	Preventing surgical site infections: A surgeon's perspective.	2001	This paper examined the 1999 CDC guidelines for reduction of infection in surgical patients, mainly by the use of prophylactic antibiotics in regard to the timing of the initial dose, choice of antibiotic and duration of administration.	This paper also makes mention of other CDC surgical site infections prevention guidelines such as preoperative hair removal. 'Do not remove hair unless it will interfere with the operation' Category 1A- strongly recommended for implementation and supported by well designed experimental clinical or epidemiologic studies. If hair is removed, remove immediately before the operation with electric clippers (Category 1A).	See findings	
NICE Clinical Guideline October 2008 www.guideline.gov/content.aspx?id=13416	Surgical site infection – Prevention & treatment of surgical site infection.	Oct 2008	Systematically developed statements which assist clinicians in making decisions about specific treatment. Has been developed with the aim of providing guidance on the patient's journey throughout the pre, intra and the post- op phases of surgery.	Three RCT's (n=3193 participants) compared effects of shaving with those of clipping, incidence if SSI: 2.8 % (46/1627) after shaving developed SSI compared with 1.3% (21/1566) after clipping. (RR 2.02, 95%CI 1.21 -3.36). Seven trials (n=1213 participants) effects of shaving with those of depilatory creams. Incidence of SSI: statistically significantly more SSI's in patients who were	There is evidence that shaving using a razor is associated with more SSIs than any other method of hair removal. If hair has to be removed, use electric clippers with a single use	Despite shaving using razors being one of the less costly options for hair removal, once the costs of treating SSI were included in the analysis, this option became the most expensive. The use of clippers for preoperative hair removal was found to be

				shaved (9.7%) compared to those who had hair removed by depilatory cream (7.0%).	head on the day of surgery. No statistically significant difference between either shaving or clipping on the day before or the day of surgery.	the cheapest option and was also found to generate the highest number of Quality Adjusted Life Years (QALY's).
--	--	--	--	--	--	--