

Preprocedural Hair Removal FactFinder

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Committed to providing helpful information to International Spine Intervention Society members about key patient safety issues, the Society's Patient Safety Committee has developed a FactFinder series. FactFinders will explore and debunk myths surrounding patient safety issues. The intent of this FactFinder is to address infection risks when injections are performed at upper cervical levels and other hair-bearing sites.

Myth: Removal of the hair reduces the risk of infection with upper cervical injections and other procedures done at sites with hair growth.

Fact: Hair removal confers no benefit in reducing the risk of infection and, if done by razor shaving, may actually create a greater risk of postprocedural infection than swabbing the hair liberally with an appropriate antiseptic.

Preprocedural shaving to remove hair has been done by tradition to prepare the skin at procedure sites. The practice is based on the notion that shaved skin looks “cleaner” and when antiseptic is applied to it the procedure site will be more effectively sterilized if the hair has been removed. This thinking has guided preprocedural preparation for a long time, without reference to scientific evidence as to whether or not it achieves a useful purpose in preventing infection.

In recent years the practice of hair removal has been questioned, studies have been undertaken and evidence has emerged. There have not been any studies explicitly related to needle interventions for pain management but a considerable volume of evidence relevant to percutaneous spinal interventions has emerged from studies of other procedures.

A literature review published in 2011 included 21 neurosurgical studies of relationships between preoperative hair removal practices and occurrences of postoperative infection¹. A total of 11,071 patients were involved in these 21 studies, of which 13 related to craniotomy, 14 to implantation surgery, 5 to burr hole procedures and 3 to spine surgery. None of the 21 studies provided evidence that preoperative hair removal decreases the occurrence of postoperative infection after such procedures. The authors concluded that the practice of routine preoperative hair removal was unsupported by evidence.

The studies in that review included 2 randomized controlled trials (RCTs) and 19 observational studies, which all reached similar conclusions, so the body of evidence produced is of moderate quality in accordance with the GRADE system of evaluating evidence. That means clinicians can be moderately confident in the estimate of effect and

the true effect is likely to be close to that estimate, but there is a possibility that further research might show the effect is substantially different.

The neurosurgical procedures included in the 2011 review involved sites comparable to those at which pain management interventions like lateral atlantoaxial (C1-2) joint blocks are done (in that case, above the hairline at the back of the neck). The neurosurgical procedures are all much more invasive than needle interventions and most involve wide skin incision, so they are likely to carry higher risks of postoperative infection. It seems reasonable to extrapolate from that body of evidence that if preoperative hair removal does not reduce the risk of postprocedural infection after such neurosurgical interventions, hair removal is not necessary before needle procedures either.

Other studies provide further information about preprocedural hair removal and the occurrence of postprocedural infection. While these studies are less relevant to needle interventions for spinal pain than those included in the neurosurgical review, they add to what is known of preprocedural hair removal in general.

A Cochrane review also published in 2011 included 14 RCTs, or quasi randomized controlled trials, of the effects of hair removal on postprocedural infection rates after various types of surgery, including spinal surgery². Included in this review were studies comparing hair removal with no hair removal, hair removal by different methods, hair removal at different times before surgery and hair removal in different settings (such as hospital wards and anesthetic rooms). The data of the 6 controlled trials that compared hair removal with no hair removal showed no significant differences in rates of postprocedural infection, so reinforcing the findings of the neurosurgical review; the Cochrane authors did comment that the comparison was underpowered. Other findings of this review were that preoperative shaving of hair resulted in more postoperative infections than preoperative hair clipping. No significant differences in postoperative infection rates were found related to times or settings of preprocedural hair removal

In 2013 another literature review was published to investigate relationships between preoperative hair removal and postoperative surgical site infections³. It included 5 studies that were appraised separately. The first was an RCT involving 789 patients who had lumbar spinal surgery done by the same surgeon⁴; they were randomized to two groups to allow comparison of preoperative razor shaving with no hair removal; the finding was that razor shaving increased the risk of postoperative infection. The second study in this review was also an RCT, comparing preoperative shaving with hair removal by depilatory cream for abdominal surgery⁵; the shaved patients were found to have a much higher rate of postoperative infection. The third of these five studies was an RCT comparing preoperative shaving and hair removal by electric clippers for cardiac surgery⁶; the data showed shaving was associated with more than twice the number of postoperative infections than hair clipping. The fourth study in this series was a controlled study comparing preoperative head shaving with no hair removal for cerebrospinal fluid shunt operations⁷; again, shaving was found to increase the risk of postoperative infection. The fifth of these 5 studies was a survey to assess the effects of hair removal on the self-esteem of 50 adult

craniotomy patients⁸; it found that hair removal had an adverse effect on patients' postoperative psychological state and retarded their sense of recovery.

The summary of the literature to date is that the resultant data show clearly and consistently that hair removal confers no benefit in reducing the risk of infection and (if done by razor shaving) may actually create a greater risk of infection after procedures done through hair-bearing skin. The preprocedural site preparation recommended for upper cervical injections and other needle interventions done through hair-bearing skin is swabbing the hair liberally with an appropriate antiseptic and then allowing time for the antiseptic to dry and become effective.

References:

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