



## **When Preparing Veterinary Patients for Surgery Is the Friction (Back and Forth) Method of Scrubbing the Skin More Effective Than Concentric Circles at Reducing Bacterial Levels on the Skin?**

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Hello, my name is Alison Mann and I am the author of the Knowledge Summary 'when preparing patients for surgery, is the friction or back and forth method of scrubbing the skin is more effective than concentric circles at reducing the bacteria levels on the skin.' The reason I chose to do this Knowledge Summary is because as a vet nurse, it's something that's often asked by students either during lectures or asked by qualified nurses at CPD events. It's also something that's asked quite a lot on online forums and social media as well. So, for my search, I used CAB abstracts and Pubmed. I also did my own search because there was some literature which I knew about which wasn't showing up in either of the searches despite trying different words within the search. I found that there was one veterinary study and one human study because of the lack of veterinary papers in this area, I did allow for human studies into this as well.

So, we're going to discuss the human study that I found first. This is by McDonald et al. in 2001. This study looks at the preparation of donor arms for blood donation. It's a bit of a complicated study in that it has three parts to it. It's really the third part that we're concerned with, and that gives us any of the evidence that is relevant to what we need. So, I'm only going to discuss this part in this Audio Summary. So, the third part of this study, which we're concerned with, they used three different methods to prepare the donor arm. The first method was iodine tincture, which was applied using a no-touch commercial kit. This was applied using the back-and-forth method. The second method that was used was two applications of alcohol using the back-and-forth method, followed by iodine again but using a circular technique and the third, which they called the control method was a chlorhexidine and isopropyl alcohol wipe, which was applied using a circular motion and then left to dry.

So, the back and forth, no-touch, iodine technique was found to be superior. And this was significant. However, there were, some limitations to this study and they are, that's obviously it's carried out on humans and not animals. So, there's the differences in the skin, the bacterial load that might be on the skin and the fact that there won't be as much hair there, there

wouldn't have been any clipping beforehand on that skin. There was no indication as to who was actually collecting the swabs for the bacterial counts, whether they were blinded to these methods. It's also only carried out on one small area of skin. And also, if you think about the location of this area where blood is taken from, it's not normally an area that you would think is exposed to quite high bacterial counts in the first place.

It wasn't the same person carrying out the arm disinfection. So, everyone's technique could have been a little bit different. And in this study, a no-touch kit was used. So, although these are available to veterinary practices, lots of places don't use these, maybe for financial reasons, quite often patients are prepped just with swabs either by a gloved hand or sometimes not gloved hand, rather than using the no-touch method. Also, these no-touch commercial kits, which were used in this study included the use of iodine rather than chlorhexidine. So, it was a bit difficult to transfer it to veterinary practice because we normally tend to use chlorhexidine for most of our surgeries unless it's contraindicated for any reason.

The second paper, which I found was a veterinary paper, which was published in the Veterinary Nursing Journal. It was actually a undergraduate degree dissertation. And it was looking at preparation of dogs in a teaching hospital prior to abdominal surgery. So, the sample size here was quite small, it was 25 dogs, and they were all having abdominal surgery. So, it was all the same area, which was being prepped. The patients were prepared, all of them were prepared using chlorhexidine. Half of them were prepared using the back-and-forth method. And half of them were prepared using concentric circles, but they were all prepped with chlorhexidine solution. There were 13 dogs in all, which were prepped using the back-and-forth method and 12 of which had concentric circles, they were all prepped for around five minutes or until the plain swab was wiped over the surgical incision site and came away clean.

After this swab was taken, which was cultured and incubated for 24 hours. So, the outcome of this was that there was a reduction in bacterial counts for both methods. But there wasn't any significant difference between the two methods. Limitations of this study are that the sample size was quite small. This is probably due to the limited data collection window, which they would have had in this study. There's a bit of subjectivity around when the patient was deemed to be finished with their prep. So, it was either five minutes or until the clean swab was taken from the skin. However, it was the same person doing this, so hopefully they would have had the same technique and the same opinion on this each time. The patients were all dogs; however, they would have all been different sizes, had different lifestyles, the coat may have differed greatly. So, some of them may have been exposed to higher bacterial burdens on the skin already.

So, the conclusion really was that there's not an awful lot of evidence around to really give a firm conclusion on which is better to use, whether it's concentric circles or the back and forth. But just to reiterate that we can't always make clinical decisions based on evidence and in this

instance is a great example. So what I would say to people doing this in practice, mainly nurses, is that sometimes you have to base it on experience. So for instance, you may argue that the circular method doesn't disinfect the proposed incision site properly, and it also risks bringing bacteria from the periphery back over to the incision sites. The back-and-forth method does produce more friction. So, it could be this mechanical action, which actually helps to reduce the bacterial levels on the skin. But in this instance, the absence of evidence you should make your practice protocols based on what works best for you, what is proven to be the most efficient for your practice. Thank you for listening.

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