

TABLE MANNERS

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How do you get ready for a surgery? What do you do to clean your hands for surgery? Do you use soap first and then scrub? Do you use a brush and soap? Do you use an alcohol base rub? So you do what you have always done because you have had a low infection rate and you figure, if it's not broken don't fix it, right? And another question, do you put a large percentage of your patients on antibiotic therapy after surgery? Is there any reasonable basis for us to be doing this in veterinary medicine?

What do you wear in to surgery? A fresh pair of scrubs laundered in the hospital, by an outside service, or at home? Do you wear the same scrubs all day long or for multiple surgeries or on multiple days? Do you even wear scrubs or do you maybe just take off your outer "dress" shirt and wear a tank top or undershirt into the operating room?

FOOD FOR THOUGHT

Here is a brief review of some of the more recent literature, which I hope will help shed some light on more recent developments.

In 2011 Verwilghen et al. did a study involving American and European veterinary surgeons to see what they did to scrub for surgery. The results showed 80% of the veterinarians that responded to the survey (over 450 individuals) use a disinfecting soap as the main method for cleaning their hands. Most used a chlorhexidine-based product. At the time of the study, the World Health Organization recommended hydro-alcoholic rubs for hand preparation. With a glove perforation rate of 67% in any given surgery, the higher risk a veterinarian has of carrying a more pathogenic bacterial load, and a higher risk of having skin excoriations due to frequent scrubbing again increasing the virulent bacterial population on our hands as surgeons, are we doing the best we can? What if we wash our hands with a chlorhexidine soap and then use an alcoholic rub like Avagard after? In one study, this technique revealed that it made the alcoholic rub less effective.

In 2013 Singh et al. showed that resistant infectious organisms were identified from 17.5% of the hospital clothing tested and that technicians were 9.5 times more likely than veterinary students to have contaminated clothing. It did not matter if the clothing was a long sleeved white coat, short-sleeved white coat, scrub suit, and whether clothing was laundered at the hospital or at home, or worn from home or changed at the work place. Even the duration of time for which someone had



been wearing the item of clothing, even greater than 2 weeks, did not seem to have a positive correlation with contamination. The only factor that made a difference in the p value was being a technician. More frequent patient contact was suspected to be a factor in this outcome but not proven.

In 2016 Andrade et al. showed that over 80% of the clean orthopedic procedures tested yielded bacterial isolates from one or more source. Hand cultures yielded the highest percentage of positive cultures followed closely by glove cultures. Positive cultures of the patient's own skin were just half of both the positive hand or glove cultures. Another interesting factor was that a positive intraoperative culture did not positively correlate to positive surgical site infections. In this study there was only an 18% glove perforation rate. The location of perforation was in agreement with other studies, the index finger of the primary surgeon's non-dominant hand.

Also in 2016 Chou published that utilizing rubs or scrubs with chlorhexidine gluconate rather than the other tested propanol solutions yielded a lower positive culture rate. Interestingly the exposure/ contact time did not improve the result. It was determined in this study, like many in the past, the longer the surgery, the more likely it was to grow a positive culture.

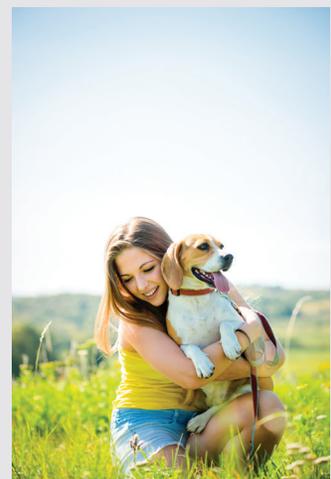
Very interestingly last year, in 2017 Hardy et al. found no correlation with having painted nails, even chipped painted nails, with a positive culture but rather, the length of the nails had a more positive impact on culture results. Longer nails (longer than 2 mm) had a positive correlation with positive culture. This was a small population sample, however, with only 21 participants and just over half of them were students. Glove perforation/tear was reported in 23% of individuals in the study.

However, it's important to remember that with all the nail treatment options out there, this study was performed with nail polish, not artificial nails. Artificial nails (brushed on liquid acrylic and powder) do have a positive association with bacterial contamination. This study, due to its own findings, speculated that the positive correlation may still have to do with the length of the nail and not the acrylic. However, this has not been proven.

So, what do I do, you might ask? Here at VCA Hollywood Animal Hospital I predominantly utilize Avagard and if I use a scrub brush, it's a chlorhexidine-based product. One of the important things to remember when using an alcohol based rub is that it will not help with gross debris and washing your hands and drying them prior to applying the rub is an important step. Make sure you allow the rub to dry all the way before attempting to put on your gloves, otherwise you are in for a challenge, especially with non-powdered gloves these days. I wear a clean pair of scrubs daily and I launder my scrubs at home. I don't wear nail polish and I keep my nails very short, 1 mm or less. I was very tempted by the 2017 Hardy article to paint my nails. However, the skeptical side of me prevents me from doing this and I do not allow visitors or interns to wear nail polish when scrubbed in on a surgery with me. There are too many variations of "nail polish" these days: simple traditional nail polish, gel nail polish, ceramic polish, etc. to know what type a person is wearing just by looking at the nails. Ultimately we all will have a personal variation on what we do but, I believe there is enough evidence to get away from the scrubs and start using the alcohol rubs as a staple.

References:

- Andrade et al. Survey of intraoperative bacterial contamination in dogs undergoing elective orthopedic surgery. Vet Surg. 2016 Feb;45(2):214-22.





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 - Hardy et al. The effect of nail characteristics on surface bacterial counts of surgical personnel before and after scrubbing. *Veterinary Surgery*. 2017;46:952–961.
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- Verwilghen et al. Presurgical hand antisepsis: concepts and current habits of veterinary surgeons. *Veterinary Surgery* 40 (2011) 515–521

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