Science, snark, and sartorial folly in the debate over operative attire

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A few years ago, hospitals around the country began to receive citations for improper operative attire. Ears exposed, arms exposed, nape of neck exposed, where did these regulations come from? The answer was AORN (Association of periOperative Registered Nurses). In 2015, AORN issued new guidelines for surgical garb and covering. The requirements stated that headwear should cover the head, all hair, the ears, and the nape of the neck. Skullcaps were essentially banned overnight.

The new AORN guidelines were quickly adopted by the Centers for Medicare & Medicaid Services and the Joint Commission. Assumptions became recommendations. Recommendations became guidelines. Guidelines became law. Reprimands were issued, and with a remarkable efficiency rarely seen in hospitals, the skullcaps disappeared.

Several months later, the ACS (American College of Surgeons) responded, “the skullcap is symbolic of the surgical profession.” They issued their own guidelines stating that a skullcap could be worn when only a limited amount of hair on the nape of the neck or a modest sideburn remains uncovered. And now the war was on.

AORN responded, “head coverings based on symbolism and personal attachment to historical norms have no place in the patient benefits analysis expected of guideline developers … until an evidence-based definition of “limited” or “modest” can be determined, there is no way for facilities to enforce such a recommendation.” AORN’s position seemed to be that the laws must be draconian so they are easier to implement.

Unfortunately, there was very little evidence for AORN’s recommendations. In their supporting literature, AORN listed quasi-experimental studies, nonexperimental papers, and two case reports. None of the evidence offered a direct link between head coverings and surgical infections. In fact, there was far more evidence for banning cell phones, jewelry, white coats, ID badges, and perhaps the most significant threat, stethoscopes.

Despite the lack of substantiating data, AORN proceeded with authoritarian aplomb. They even argued that it would be unethical to conduct a randomized clinical trial studying the headwear issue because “that would potentially expose patients to the risk of infections from health care workers whose skin and hair were uncovered.”

AORN is particularly defensive about claims they banned the skullcap. They point out that the terms “skullcap” and
“bouffant” are not mentioned in the 2015 guidelines. Lisa Spruce RN, Director for Evidence-based Perioperative Practice at AORN, wrote: “People who say we banned the skullcaps clearly did not read the 2015 guideline.” Maybe not, but I did read Implementing AORN Recommended Practices for Surgical Attire, co-authored by Ms. Spruce.

This document includes the statements “Skull caps are not recommended” and “Providing bouffant caps in a variety of sizes will allow perioperative team members choices when converting to bouffant caps over skullcaps.” Sounds like a ban to me.

While AORN’s science and implementation were spotty at best, it is prudent to look at our own history regarding the acceptance of antiseptic principles.

In March 1867, a Scottish surgeon named Joseph Lister published the results of a series of compound fractures in Lancet. In those days, sterility was so poor that most of these fractures were treated with primary amputations to avoid sepsis and death. Dr. Lister successfully managed all eleven of his patients without limb loss. In the paper, he attributed his success to the use of carbolic acid to wash the surgical instruments, the wounds, and his own hands.

While his results were initially derided, within 10 years the practice became standard of care.

At Johns Hopkins Hospital, Dr. Lister’s techniques were quickly adopted by Dr. William Halsted. The carbolic acid, however, caused his scrub nurse, Caroline Hampton, to develop severe dermatitis. Dr. Halsted asked the Goodyear Rubber Company to design a pair of gloves for Ms. Hampton that could be worn in the operating room. The gloves were a success and quickly became popular with other OR personnel. Dr. Joseph Bloodgood, a resident of Dr. Halsted, started wearing the gloves himself.

In 1899, Dr. Bloodgood published a report showing a near 100% drop in surgical infection rates with the gloves. Other surgeons, however, were resistant to this change; complaints included comfort, feel, and functionality. Widespread adoption of surgical gloves took nearly 30 years. Caroline Hampton, the first known person to wear gloves during surgery, would later become Caroline Hampton Halsted.

So while surgeons have not always been quick to adopt new methods to improve sterile technique, the current situation seems different. Evidence is lacking and the recommendations border on the ridiculous. Instead of #ilooklikeasurgeon it’s #ilooklikea70ssitcomcharactertakingashower.

When I describe to a medical student how to survive their first foray into the OR, I can see the anxiety rise in their face. Take off your home scrubs and undershirt. Place on new scrubs and shoe covers. Take the bouffant, and pull it down over your ears. That’s right, if you don’t look like an idiot you’re doing it wrong.

Now take this jacket, cover your arms, and put on a mask and eyewear. Walk to the OR and when it is within 15 seconds of your time to scrub, remove the jacket and put it in the correct bin. The circulating nurse will be ready to kill you for any misstep.

Then proceed to scrub, FOR THE LOVE OF GOD REMEMBER TO PULL ON YOUR GOWN AND GLOVES.

Now, imagine this hypothetical student has facial hair. I almost want to give him the option of wandering onto the highway to seek a more honorable death.

Organizations other than AORN publish OR attire standards. The problem, again, is that there is so little evidence on which to base these regulations. Even masks have never been shown to reduce surgical infections. Therefore most guidelines are very limited.

The World Health Organization recommends a sterile gown. The Centers for Disease Control and Prevention admit that beyond the use of gloves, there is little evidence. “Maybe double glove?” suggests the British National Guidelines. With paltry policies like these, it is no wonder hospital administrators are drawn to the robust guidelines of AORN. Evidence be damned, AORN has an opinion on everything. Forty-seven recommendations in fact. AORN themselves wrote that the goal of publishing these extensive regulations was to demonstrate that “AORN was at the forefront of
evidence-based approaches to perioperative nursing care …” A goal that apparently could not have been met with a more modest set of rules.

Jumping through these attire hoops to fulfill unproven regulations is an unnecessary burden on physicians and OR personnel. Even following the evidence can lead to some weird places. Most of the AORN recommendations are based on the facts that hair contains bacteria, and humans shed bacteria. These truths alone, however, have not always led to effective infection control measures. Many of us remember the mandate to shave all hair in the surgical field. Of course, this practice led to an increase in infections. The science of bacterial shedding is not always obvious. Men shed more bacteria than women. Individuals wearing street clothes shed fewer bacteria than those wearing scrubs. Naked men shed fewer bacteria than clothed. The abundance of evidence shows that the more we cover our skin, the more bacteria we shed. Mandates to cover our ears and wear coverup jackets are counter-intuitive.

Commendably, many physicians have responded to the attire restrictions with science. Troy Markel and colleagues found that bouffant hats had greater permeability, microbial penetration, and bacterial shed than skullcaps. Shellwani and associates from the University of Buffalo reported that the use of bouffant hats did not influence surgical site infections.

Adham Elmously and his co-authors found that implementing AORN guidelines did not affect surgical infections and increased costs tremendously. They reported that the expense of using operating room long-sleeved jackets alone was over one million dollars annually for their institution.

Based on this new evidence, a joint task force was assembled by the ACS which included AORN, the American Society of Anesthesiologists, the Joint Commission, and others. The group convened in February 2018 and issued a statement in May 2018.

Among their conclusions “in practice covering the ears is not practical for surgeons and anesthesiologists and in many cases counterproductive to their ability to perform optimally in the OR.” Also, “the summit participants found that the scientific evidence fails to demonstrate any association between the type of surgical hat or extent of ear and hair coverage and SSI rates.”

AORN updated their guidelines and published a draft this past January. A final version is due this month (for $285). The posted draft version contains no recommendations regarding the type of head cover and no recommendation to cover ears. Long sleeves are now only required when performing preoperative patient skin antisepsis.

For now, we appear to have won the bouffant war. Perhaps then, we should examine how we ended up in this fight to begin with. According to AORN, the recommendations in the Guideline for Surgical Attire include a benefits-balanced-with-harms assessment to determine the risk/benefit of recommendations to patients.

While we agree that patients are paramount, what about physicians? The effect on physicians was never considered. If you are genuinely concerned with someone’s comfort, confidence, and performance, you don’t replace a part of their everyday equipment without their input. What if the Lakers approached LeBron James and said, “Hey Bron, nice headband. Hand it over. From now on we’re wearing Mickey Mouse ears.”

As the ACS noted, “guidelines were developed with little physician input, leading to the perception of external overregulation, a factor that has been found to be a major contributor to burnout.” Is this an overreaction? I don’t think so.

There are many recent examples of widespread changes made to the health care system without concern for physician wellness. The government mandate for electronic health records. The Joint Commission’s creation of opioid-friendly regulations.

Any time sweeping changes are made there are checklists. How will this affect the patients? How will it affect hospital workflow? How will it affect finances? Until physician wellness appears on these checklists, burnout will never be solved.
If an element of surgical attire that had been in place for over 100 years could suddenly be banned without any evidence or input from surgeons, what other sweeping changes could be made?

Sources

3. www.infectioncontroltoday.com/operating-room/aornresponds-acs-statement-attire