

Perioperative Attire: The Importance of Following the Recommended Practices



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Thank You!

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Dr. Spruce was a Clinical Nurse Specialist in the Perioperative Departments for 5 hospitals in Las Vegas and a Nurse Practitioner in private practice in Florida. She was a circulating nurse in the OR for 6 years and worked in pre-op, PACU, and in the Endoscopy Suite. She is a board certified Acute Care Nurse Practitioner, Adult Clinical Nurse Specialist and as a CNOR. She has published several articles in the AORN Journal and the Journal for the American Academy of Nurse Practitioners.

Disclosure Information

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Objectives

1. Discuss how the wearing of surgical attire impacts patient safety
2. Explain the scientific evidence supporting the AORN Surgical Attire Recommendations
3. Explain ways the perioperative RN can address challenges implementing surgical attire recommendations

How did we get here?

Wearing surgical attire isn't a new concept.

- 1876 - Lister's aseptic principles were published in.
- 1894 - Dr. Hunter Robb pioneered surgical attire at Johns Hopkins in. Even back then Dr. Robb cautions:

Gowns “should be thoroughly sterilized before they are worn . . . by wrapping them in a towel or placing them in bags made of butcher’s linen and then exposing them to the streaming steam of the sterilizer for a half an hour.”¹

About the hair

- “The hair of the head should not be allowed to grow long, and should be kept as free as possible from dandruff.”¹ And of course as today there was resistance:



One supportive surgeon condemns the surgeon who “operates in his undershirt,” calling it a “surgical sin.” “At no time,” the surgeon admonishes, should the operator be more clean, more immaculate in his appearance than when he steps up to the operating table.”¹

Fast forward to 1975

AORN releases the first explicit
Standards for OR Attire

But it is only as good as its users!

Where we are today

AORN updates

Recommended Practices for Surgical Attire in 2011

- The Importance of following this RP?
 - The evidence
 - Patient Safety
 - Health Care Worker Safety
 - Regulatory Compliance

The Evidence

Let's discuss the recommendations
that have been
difficult to enforce in practice.

Evidence Supporting Recommendation IV

All personnel should cover head and facial hair, including sideburns and the nape of the neck, when in the semirestricted and restricted areas.²



Studies

- **2004 study by Owens:** 20 OR team members had their foreheads, eyebrows, and ears swabbed. There were significant numbers of organisms colonized including staph aureus, coagulase negative staph, diptheroid and others; the ear being the worst.³
- **2000 study by Mase:** isolated staph aureus from the nose, scalp hair, and facial hair. MRSA was also cultured from the hair. These bacteria adhered tightly to the hair and could not be removed by conventional shampoo.⁴

Studies

- **1990 study by Mastro** in the NEJM: Investigation of an outbreak of SSIs caused by Group A Strep. This was a prolonged outbreak lasting 3 years and was traced directly to a surgical technician who was a carrier of strep on the scalp.⁵
- **1973 study by Dineen and Drusin**: 2 outbreaks of post-op wound infections were attributed to staff carrying staph aureus in their hair. Recommended that to reduce the amount of shedding from the scalp and hair, completely cover the head with a hood.⁶

Classic Study (Summers, 1965)

- **Scalp hair** tested for staph aureus from 3 groups
 - out-patients
 - in-patients
 - staff
- Bacteria were grown from the hair of all subjects
- Study correlated post-op wound infections to the same phage type that were isolated from the hair.⁷

Summary

These studies clearly demonstrate

- Hair, scalp and ears are carriers of multiple organisms that have been directly connected to numerous surgical site infections.
- All of the hair should be covered, not just a portion of the hair, **all of the hair; including the ears!**
- There is **no point** in covering a portion of the hair, there is still a risk to the patient unless the entire exposed hair is covered.

Evidence Supporting Recommendation III.b.

When in the semirestricted or restricted areas, all nonscrubbed personnel should wear a freshly laundered or single-use long sleeved warm up jacket snapped closed with the cuffs down to the wrists.²

Studies

- **1975 study by Noble** studied dispersal of skin bacteria into the air. Men dispersed more viable bacteria carrying particles than women. Various areas of the body shed more than others but airborne flakes known as squames are dispersed into the air from all skin sites.⁸
- **2000 study by Tammelin** tested nares and various skin sites for MRSE and dispersal into the air. 43% of men and 23% of women dispersed MRSE. Study also proved that tightly woven scrubs (cotton & poly) decreased shedding when compared to conventional scrubs (cotton).⁹

Summary

Long-sleeved scrub jackets protect the patient from potential infection by preventing skin squames from dispersing into the air and settling into the surgical wound.



Evidence Supporting Recommendation II.d

**Shoes worn within the
perioperative environment
should be clean.²**

Study by the Royal College of Surgeons of England (2007)

Study to assess the **level of bacterial contamination of OR shoes** at the beginning of the work day compared to outdoor shoes.

- Outdoor shoes were contaminated with staph, coliforms, bacillus, diptheroid, nisseria, and micrococcus.
- The dedicated OR shoes had much less of these microorganisms than the outside shoes.¹⁰

Shoes that are worn only in the perioperative area may help to reduce contamination of the perioperative environment.



Evidence Supporting Recommendation II.h.

**Fanny packs, backpacks, and briefcases
should not be taken into the
semirestricted or restricted areas of the
perioperative suite.²**

Study

Study by Neely in 2000 to determine the survival of

22 gram+ bacteria (VRE & MRSA) on

- Clothing (100% cotton)
- 100% cotton terry (towels)
- Poly/cotton (scrubs and lab coats)
- 100% poly, and 100% plastic.¹¹

- All staph survived for at least 1 day on all fabrics and plastics.
- The shortest survival time for any enterococcus was 11 days.
- Possible for these fabrics to become vectors for the spread of these microorganisms.

Study

Study by Neely in 2001 to determine the survival of fungi on

- 100% cotton (clothes)
 - 100% cotton terry (towels)
 - 60/40 (scrubs and lab coats)
 - 100% poly,
 - 25% spandex, 75% nylon,
 - 100% polyethylene plastic,
 - 100% polyurethane.¹²
- Tested candida, aspergillus, fusarium, mucor, and a paecolomyces species.
 - Most survived at least one day but many survived for weeks.

Case Western

News Release

June 25, 2012

- A **healthy young boy** was infected with MRSA that was traced to his mother's nurses bag that had been left in the family car.¹³
- The mother was a home health care nurse who had visited a patient with the same infection.

Summary

- In order to give the patient the safest environment possible; briefcases and other personal items should not be brought into the semirestricted or restricted area.
- The evidence indicates that many organisms can survive on porous materials and cannot be cleaned or disinfected adequately to ensure that the patient has an optimal safe environment for surgery.

Evidence to Support Recommendation V

**Surgical attire should be laundered in
a health care-accredited laundry
facility.²**

Study Twomey (2009)

- Aim to determine the safety and efficacy of re-usable vs single use scrubs and laundering mechanism. Tested viable organisms on scrubs after home and facility laundering as well as single use scrubs.¹⁴
- Conclusion: **Single use scrubs are cleaner** than home laundered scrubs and home laundering is not as effective as facility or 3rd party laundering in decontaminating scrubs.

Study

Report at the International Conference on Healthcare Associated Infections (2010)

Zygomycosis is an invasive fungal infection caused by mucomycetes, rare but can affect various body sites and has a 50% mortality.

9 cases since 1993

6 between 2008-2009

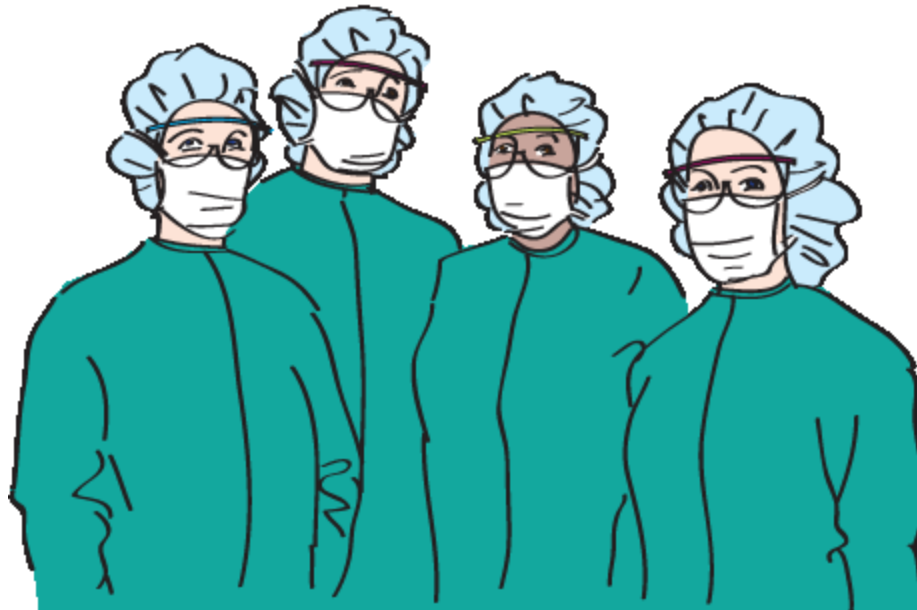
- 40% of swabs of the hospital linens contained the organism.
- The linens acted as a vector bringing it into contact with patients.
- Likely contaminated during transport and delivery to the hospital.¹⁵

Summary

- **Health care accredited facilities** should be used for laundering of scrubs.
- Scrubs should be protected during transport and storage to prevent possible contamination.

Healthcare Worker Safety

Protect Yourself!



Think about exposures!

The National Institute of Occupational Safety and Health Report (2002)

recommend measures to protect healthcare worker exposure to hazards and address take-home exposures.

Journal of Hazardous Materials (2010) :

- Surgical procedures performed with high speed rotating instruments and electric coagulating devices produce aerosolized blood which can float in the OR and affect HCWs.
- Most HCWs with an occupational infection could not remember any causative injury.¹⁶

Summary

- There is clear evidence that HCWs in the OR face their own occupational hazards and exposures.
- **Bacteria can live on materials for weeks or even months** and can be transported home or from facility to facility.
- Protect yourself and your home by following the Surgical Attire Recommendations and think about what is in your work environment and what you are bringing into your personal spaces.

Patient Safety

Institute of Medicine 1999 Report “To Err is Human.”

- More than 100,000 people die every year due to healthcare harm.
- That is the equivalent of more than 10 jumbo jet airliners crashing every single week.
- If we add to that the infections patients get from hospitals- that number doubles.¹⁷

Patient Safety (Cont.)

Surgical Site Infections (SSIs) are the second most frequent Healthcare Associated Infection (HAI) in the hospital setting.

- Account for 20% of all HAIs
- An estimated 2-5% of 30 million patients undergoing a surgical procedure per year experience an SSI (500,000 per year).¹⁸

Impact on Patients



Alicia Cole

Aspiring Actress



My Survivor Story

- Home.....
- Biography.....
- Resume.....
- Video Clips.....
- Print Work.....
- Voice Over.....
- My Bookshelf.....
- Links.....
- Contact Info.....
- My Survivor Story.....
- Advocacy.....
- My NonProfit.....

Thank you checking my website, unfortunately I have no new and exciting acting gigs to report. I am still healing from my horrific battle with **NECROTIZING FASCITIS**. I am working with a great wound specialist and we are hopeful that the area which was the deepest and most catastrophic of my wound will be healed soon. So please keep me in your continuous prayers.

For those who may not know, last August 15, 2006, I was scheduled to enter Providence St. Joseph's Hospital in Burbank, California for a routine myomectomy to remove two uterine fibroids. This is a fairly common procedure among women and I was scheduled to be home in two days. Those of you who know me know that I have been an athlete all my life and was considered the picture of health. Even so, I prepared and trained for my surgery in the same way I prepared for the LA Marathon. When I asked Dr. Pearson what I could do to ensure a smooth and swift recovery and he said, "Be in the best shape possible." That was all I needed to hear.

Sometimes even the best plans do not work out. I spent the next month in the ICU and it would be two months total before I was able to leave St. Joseph's. During the days prior to my original release date my fever hovered around 103°, I was in the immense pain, and throwing up so often I was weak.

Thankfully my parents had come to town to be with me, because it was my mother who ended up saving my life. During one of the evening dressing checks my mother noticed a black dot near my incision. She asks the nurse about it and was assured that it was "nothing". However we had not seen that dot in the morning when Dr. Pearson came to check my incision. My mother asked the nurse to please call the doctor and ask him to come back to the hospital to take a look at it.



Alicia is sadly unavailable for work at this time. She has been fighting a courageous battle against the deadly disease, Necrotizing Fasciitis or as it is commonly known, **MAN-EATING FLESH DISEASE**.

Cards and well-wishes may be sent to:

P.O. Box 57022
Sherman Oaks, CA 91413

“Once the surgery was finished, the doctor told us everything was fine, but I had trouble from the start. I had a fever when I left the operating room. The doctor told me that was normal, but later others told me I must have gotten the infection before I ever left the OR”

The Facts about the RP

- The Surgical Attire RP was co-authored by an anesthesiologist from American Society of Anesthesiologists and approved by a surgeon from American College of Surgeons as part of the Recommended Practices Advisory Board.
- We have the studies to back up the recommendations.

An Obstacle for Implementation

- Most of the studies used to support the RP are observational.
- Randomized Controlled Trials (RCT's) are the gold standard of evidence based practice.
- Let's put that into context...

The Parachute Study

- By Gordon Smith and Jill Pell published in the BMJ in 2003.²⁰
- Objective: To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.
- Systematic review of all studies showing the effects of using a parachute in free fall.
- **Results-No RCTs**

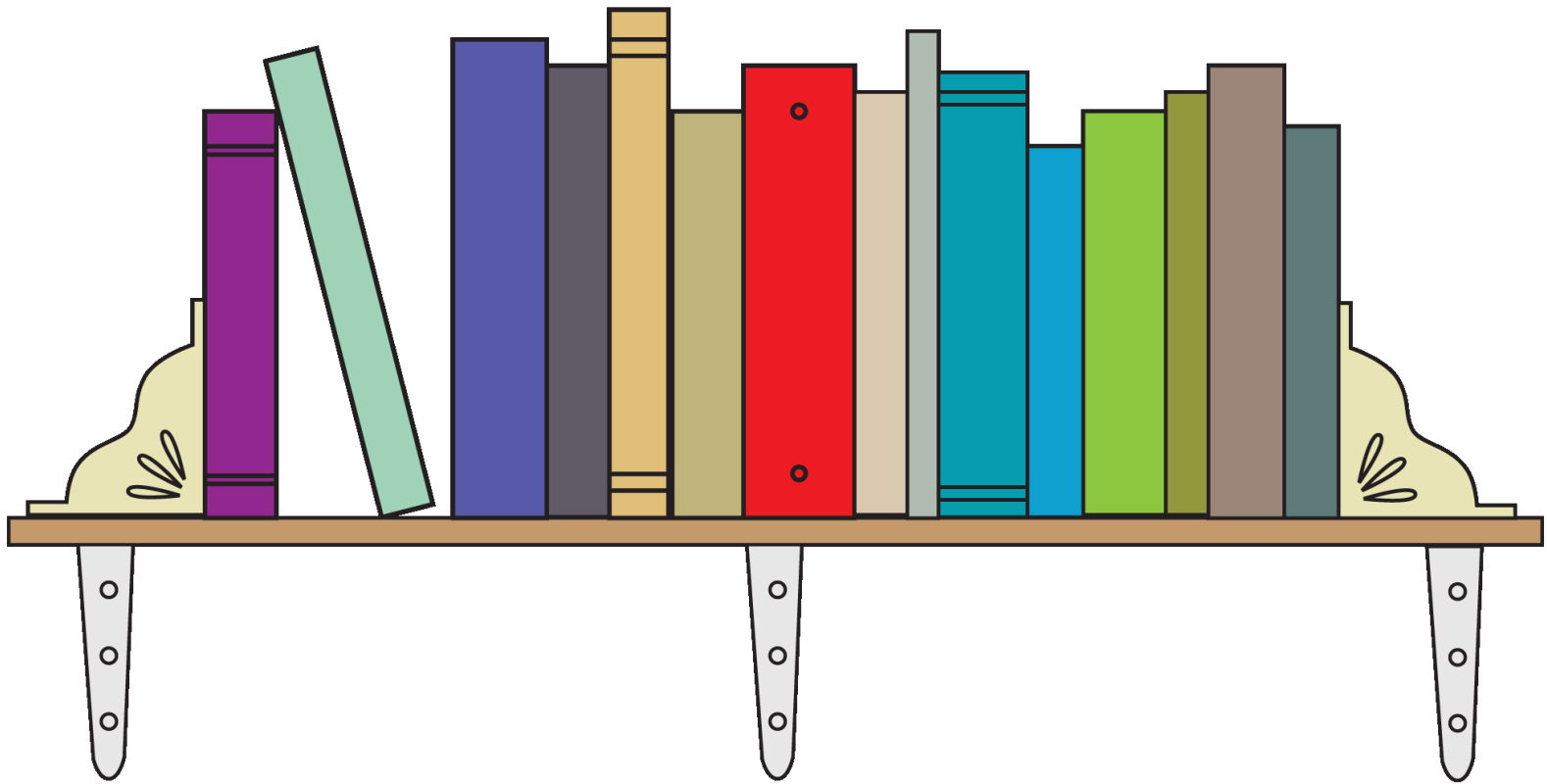
Conclusion

- The effectiveness of parachutes has not been subjected to rigorous evaluation by using RCTs.
- We know by observational studies that a parachute may protect us from harm.
- Common sense might be applied when considering potential risks and benefits of interventions.
- Just because an intervention has not been proven by an RCT does not mean it shouldn't be implemented.

Or as the authors say:

We feel assured that those who advocate evidence based medicine and criticize use of interventions that lack an evidence base will not hesitate to demonstrate their commitment by volunteering for a double blind, randomized, placebo controlled, crossover trial for the effectiveness of the parachute.”

Regulatory



DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop C2-21-16
Baltimore, Maryland 21244-1850



Office of Clinical Standards & Quality/Survey & Certification Group

REF: S&C: 12-32-Hospital

DATE: May 18, 2012

TO: State Survey Agency Directors

FROM: Director
Survey & Certification Group

SUBJECT: Patient Safety Initiative Pilot Phase – Revised Draft Surveyor Worksheets

<p>4. I.3 Surgical attire (e.g., scrubs) and surgical caps/hoods covering all head and facial hair are worn by all personnel in semi restricted and restricted areas.</p> <p>Note: Restricted area includes ORs, procedure rooms, and the clean core area. The semi restricted area includes the peripheral support areas of the surgical suite.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
<p>4. I.4 Surgical masks are worn (and properly tied, fully covering mouth and nose) by all personnel in restricted areas where open sterile supplies or scrubbed persons are located.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
<p>4. I.5 Sterile drapes are used to establish sterile field.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
<p>4. I.6 Sterile field is maintained and monitored constantly. Ensure that:</p> <ul style="list-style-type: none"> • Items used within sterile field are sterile. • Items introduced into sterile field are opened, dispensed, and transferred in a manner to maintain sterility. • Sterile field is prepared in the location where it will be used and as close as possible to time of use. • Movement in or around sterile field is done in a manner to maintain sterility. 	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
<p>4. I.7 Traffic in and out of OR is kept to minimum and limited to essential staff.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	

Hospitals

handling, surgical areas, supply storage, equipment cleaning, etc.

The hospital's program for prevention, control and investigation of infections and communicable diseases should be conducted in accordance with nationally recognized infection control practices or guidelines, as well as applicable regulations of other federal or state agencies. Examples of organizations that promulgate nationally recognized infection and communicable disease control guidelines, and/or recommendations include: the Centers for Disease Control

and Prevention (CDC), the Association for Professionals in Infection Control and Epidemiology (APIC), the Society for Healthcare Epidemiology of America (SHEA), and the Association of periOperative Registered Nurses (AORN). The U.S. Occupational Health and Safety Administration (OSHA) also issues federal regulations applicable to infection control practices.

Ambulatory Surgery Centers

16. Does the ASC's infection control program follow nationally recognized infection control guidelines? YES NO

NOTE! If the ASC does not follow nationally recognized infection control guidelines, a deficiency related to 42 CFR 416.51(b) **must** be cited. Depending on the scope of the lack of compliance with national guidelines, a condition-level citation may also be appropriate.

- 16a. Is there documentation that the ASC considered and selected nationally-recognized infection control guidelines for its program? YES NO

- 16b. Which nationally-recognized infection control guidelines has the ASC selected for its program? *(Fill in all that apply)*
- CDC/HICPAC Guidelines:
 - Guideline for Isolation Precautions (CDC/HICPAC)
 - Hand hygiene (CDC/HICPAC)
 - Disinfection and Sterilization in Healthcare Facilities (CDC/HICPAC)
 - Environmental Infection Control in Healthcare Facilities (CDC/HICPAC)
 - Perioperative Standards and Recommended Practices (AORN)
 - Guidelines issued by a specialty surgical *society / organization (List)*

Sound Familiar?

“AORN is a nursing organization, what about physicians?”

- “I want to see the evidence.”
- “What about RCTs?”
- “You are trying to tell me how to practice medicine.”
- “I am not wearing a bouffant, it looks like a shower cap!”
- “I have never had an infection in 30 years of practice!”
- “Hospital X isn’t doing this so why are you?”

First and Foremost

- C-suite (CEOs, COOs, CNOs, CFOs) support and involvement
- C-suite who will back you up
- Present the evidence
- Financial data
- Importance of patient safety
- Regulatory Issues

Barriers to Practice Change

- Awareness and knowledge
- Motivation
- Acceptance and beliefs
- Practicalities

Identify Problems

- Observe your staff-where are the problems?
- Involve key staff members.
- Question what their beliefs are and why they cannot follow the recommendations.
- Brainstorm with your staff regarding solutions.

Overcoming Barriers

- Education
- Interactive meetings
- Written materials
- Electronic newsletters
- Present the evidence
- Physician champions-examples of best practice
- Reminders

Some Practical Advice

- Cloth caps may be covered by a bouffant.
- Have enough jackets in a variety of sizes.
- Reimburse for shoe purchases.
- Long sleeve shirts may be worn under scrubs as long as scrub jackets cover them.
- Facility provided caps and long sleeved shirts.
- Explore new products.
- Eliminate skull caps from your facility!
- Recognize staff who follow best practices!

One last thing

- Dr. Amy Halverson (ACS) says:
 - Sometimes it is the way you approach a surgeon...instead of saying “you must do” ...say “I know you have great patient outcomes and no infections but we really want to try....and would like for you to help us.”
 - Or:
 - “Dr. please explain to me why you won’t wear a bouffant, (or change your clothes or stop bringing your briefcase in the OR), help me to understand.”
 - **It can make all the difference!**

In Conclusion

“The available evidence suggests that as many as half of the complications and deaths arising from surgery could be avoided if certain **basic standards of care** were followed.” ~WHO

We are all accountable!

Let's work towards a zero tolerance culture for the safety of all of our patients...
and possibly ourselves some day.

Questions and Answers



References

1. Schrader, E. S. (1976). From apron to gown: A history of surgical attire. *AORN Journal* 24(1), 53-67.
2. *Surgical Attire* (2011). Perioperative Standards and Recommended Practices for Inpatient and Ambulatory Settings. Denver, CO. 57-71.
3. Owens, K. L., James, E. & Bannister, G. C. (2004). Source of bacterial shedding in laminar flow theatres. *Journal of Hospital Infection Control*; 58(230-232).
4. Mase, K. Hasegawa, T., Horii, T., et al. (2000). Firm adherence of *Staphylococcus epidermidis* to human hair and effect of detergent treatment. *Microbiology Immunology*; 44(8), 653-656.
5. Mastro, T. D., Farley, T. A., Elliott, J. A., et al. (1990). An outbreak of surgical-wound infections due to group A streptococcus carried on the scalp. *New England Journal of Medicine*; 323(14), 968-972.
6. Dineen, P. & Drusin, L. (1973). Epidemics of postoperative wound infections associated with hair carriers. *The Lancet*; 1157-1159.
7. Summers, M. M., Lynch, P. F. & Black, T. (1965). Hair as a reservoir of staphylococci. *Journal of Clinical Pathology*; 18(13), 13-15.
8. Noble, W. C. (1975). Dispersal of skin microorganisms. *British Journal of Dermatology*; 93(4), 477-485.
9. Tammelin, A., Domicel, P., Hambraeus, A. & Stahle, E. (2000). Dispersal of methicillin-resistant staphylococcus epidermidis by staff in an operating suite for thoracic and cardiovascular surgery: Relation to skin carriage and clothing. *Journal of Hospital Infection*; 44(2), 119-126.

References (Cont.)

10. Amirfeyz, R., Tasker, A., Ali, S., Bowker, K. & Blom, A. (2007). Theater shoes- a link in the common pathway of postoperative wound infection. *Annals of the Royal College of Surgeons of England*; 2007; 89, 605-608.
11. Neely, A. N. & Maley, M. P. (2000). Survival of enterococci and staphylococci on hospital fabrics and plastics. *Journal of Clinical Microbiology*; 38(2), 724-726.
12. Neely, A. N. & Orloff, M. M. (2001). Survival of some medically important fungi on hospital fabrics and plastics. *Journal of Clinical Microbiology*; 39(9), 3360-3361.
13. CWRU nurse researcher surveys infection control practices for home patients. Think News Release, June 25, 2012.
http://blog.case.edu/think/2012/06/25/cwru_nurse_researcher_surveys_infection_control_practices_for_home_patients
14. Twomey, C. L., Beitz, H. & Johnson, B. J. (2009). Bacterial contamination of surgical scrubs and laundering mechanism: Infection control implications. *Infection Control Today*. www.infectioncontrolday.com/articles/bacterial-contamination-of-surgical-scrubs.html#
15. Duffy, J., Harris, J., Newhouse, E.N., et al. (2010). Zygomycosis outbreak associated with hospital linens. Paper presented at the International Conference on Healthcare Associated Infections, March 19, 2010, Atlanta, GA.
16. Ishihama, K., Sumioka, S., Sakurada, K., & Kogo, M. (2010). Floating aerial blood mists in the operating room. *Journal of Hazardous Materials*; 181, 1179-1181.
17. Chasing Zero: Winning the war on healthcare harm (2010). TMIT, Safety Leaders Website.
<http://www.safetyleaders.org/pages/chasingZeroDocumentary.jsp>
18. National Quality Forum (2010). Safe practices for better health care student projects: Surgical site infection prevention.

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