

Technical Considerations for the Operator in the Surgical Suite Mitigating COVID-19 Risk- SK

There are a great deal of recommendations regarding case selection and the medical management of COVID-19, but there is surprisingly little regarding specific technical considerations. Please find below a few suggestions, and please feel free to vet these and reach out to add or change them.

1. Consider the necessity of the operation, and if the indication is weak or not pressing consider delaying it. Guidelines for these considerations are available from many sources including the American College of Surgeons¹² and the Society of Gynecologic Oncology³.
2. When testing becomes more available consider preoperative testing to ascertain the COVID-19 status of the patient.
3. Aside from the obvious first principle of safe and appropriate patient care we also must consider our own health and that of our teammates (anesthesia personnel, nursing staff, OR techs, etc.). It is critical to understand the proper use of personal protective equipment (PPE). We think we intuitively understand PPE because of our daily use of gowns and gloves in the operating suite, but when tested on the donning and doffing sequence of full barrier precautions most of us will fail. Please consider not just glancing at but actually studying the CDC's donning and doffing cartoons attached to this document.⁴ Then - please do it again. The med staff also can sponsor donning and doffing classes if there is interest. The most common occurrence of serious cross infections to healthcare workers during outbreaks were in crisis situations when first responders were not wearing the recommended PPE.⁵ If we are going to get sick let it not be due to a sin of omission.
4. Double glove.
5. Consider reviewing the Department of Defense's Practice Management Guide Beginning on Page 27.⁶
 - i) Doff all PPE EXCEPT the N95 mask in the operating room.
 - ii) Leave any object unnecessary to the procedure outside of the room - cell phones, wedding bands and other jewelry, instrumentation, etc.
 - iii) If an aerosolizing procedure is being performed utilize full barrier precautions including an N95 mask or PAPR.
 - iv) A truly emergent procedure should be considered an aerosolizing procedure and treated as such.
 - v) "Overall members of the surgical community should recognize that such circumstances are both an extraordinary challenge and also a great opportunity. The challenge may be severe, but as a key component of the team, surgeons will rise to that challenge and deal with extraordinary events.
- 6) Insist that your staff is wearing their PPE.
- 7) Limit - or if possible eliminate - scheduled breaks.
- 8) Limit personnel in the operating suite. Consider if the case can be done without an assistant. For minor procedures consider if the case can be done without a tech. New orientees or students should not be present in a contaminated room.
- 9) While wearing an N95 mask in the operating room keep it covered with a typical surgical mask so as to limit soilage and extend its useful lifespan.
- 10) Reuse the N95 if not damaged or soiled.
- 11) In times of short supply, N95 mask can undergo extended use and reuse if cared for properly. Ultra Violet Germicidal Irradiation (UVGI) is being pursued at North Memorial Health (as studied by 3M) to sterilize masks between uses. Alternatively a N95 mask

can be placed in a paper bag and be decontaminated (not sterilized) by the passage of time.⁷ See NMH reuse and extended use guidelines of N95 masks.

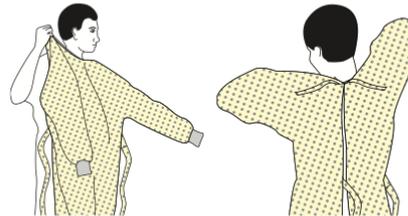
- 12) One of our colleagues wisely recommended that the nature of the procedure itself should not change as that change may have negative downstream effects such as unanticipated danger to the patient or staff, longer OR times, longer hospital stays, poorer outcomes, or legal repercussions. Even so it is wise to be aware of the fact that we do not typically take the aerosolizing nature of our procedures into account.
 - a. Consider limiting electrocautery use or at least be more mindful of the use of suction during electrocautery use.
 - b. Consider the use of a filtered suction device as opposed to wall suction which is not filtered and exhausts off of the roof of the hospital.
 - c. Consider methods of desufflation of cavities more carefully. For instance, do not simply remove laparoscopic ports and actively desufflate the abdomen. Instead allow the air to dissipate through the filtered smoke evacuator prior to removal of the ports.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



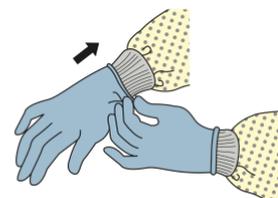
3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



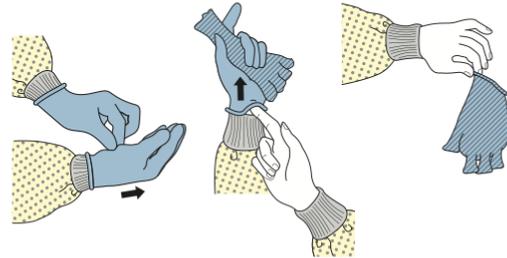
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HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



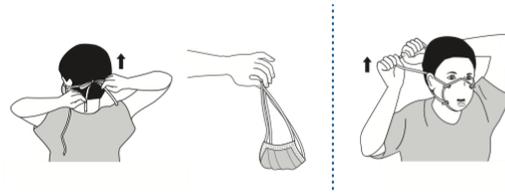
3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

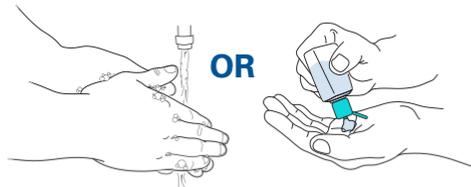


4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE



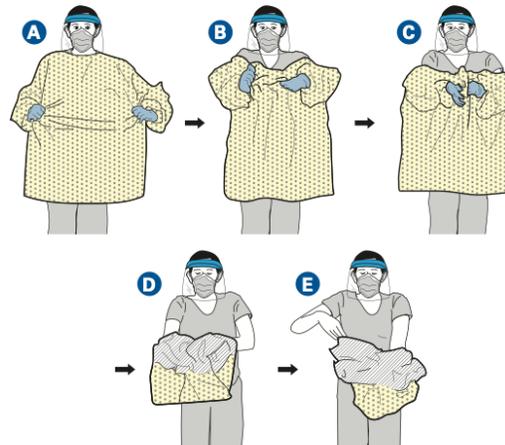
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HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



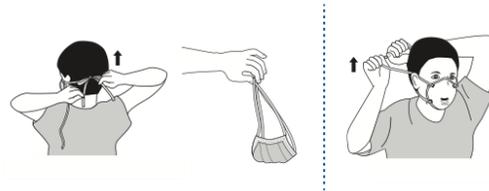
2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

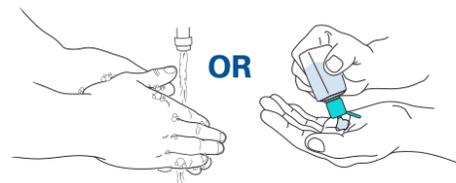


3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



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¹<https://www.facs.org/covid-19/clinical-guidance/elective-case>

² [https://www.journalacs.org/article/S1072-7515\(20\)30303-3/pdf](https://www.journalacs.org/article/S1072-7515(20)30303-3/pdf)

³ https://www.sgo.org/wp-content/uploads/2020/03/Surgical_Considerations_Communique.v14.pdf

⁴<https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf>

⁵Schwartz DA, Graham AL. Potential maternal and infant outcomes from (Wuhan) coronavirus 2019-ncov infecting pregnant women: Lessons from SARS, MERS, and other human coronavirus infections. *Viruses* 2020;12(2):194.

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<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwiZo5Ge5tzoAhWZKs0KHe5rBgUQFjAAegQIAhAB&url=https%3A%2F%2Fhealth.mil%2FReference-Center%2FTechnical-Documents%2F2020%2F03%2F24%2FDoD-COVID-19-Practice-Management-Guide&usq=AOvVaw0Y1laAlvOg9oKEf2H7D97a>

⁷ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>