Context

This guidance is tied to:
1) Our understanding of disease transmission
2) Case prioritization (ACS Tiers 1-2-3)
3) Patients’ symptoms and exposure histories
4) Our current testing strategies and capacity

Any organization’s policies will be influenced by local community epidemiology (disease prevalence). This guidance will be updated as scientific evidence evolves.

The CDC considers at least three aspects of performing procedures which influence risk of transmission. One is the anatomic region being operated on, for instance areas where viral load might be higher (e.g., nose and throat, oropharynx, respiratory tract). The second aspect is the likelihood that the procedure will generate aerosols. Per the CDC, procedures that are often considered aerosol generating procedures (AGP), or that create uncontrolled respiratory secretions, include: open suctioning of airways, sputum induction, cardiopulmonary resuscitation, endotracheal intubation and extubation, non-invasive ventilation (e.g., BiPAP, CPAP), bronchoscopy, and manual ventilation. A third aspect would be other issues related to source control, for instance the use of smoke evacuation devices. As stated by the CDC, “Development of a comprehensive list of AGPs for healthcare settings has not been possible”. https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-faq.html

Controversy remains within the healthcare and surgical communities as to whether other procedures should also be considered higher risk for aerosol generation or transmission, such as (but not limited to): any procedures on the aerodigestive tract(s), laparoscopy, thoracoscopy, other endoscopy or procedures involving insufflation / desufflation, procedures involving significant smoke generation, procedures involving powered drills/saws or other powered equipment on tissues likely to be infected with COVID-19. This guidance considers such procedures similar in concern to potential AGP’s.
Procedures to Consider for Pre-Procedure COVID-19 Testing – Detail

Pre-procedure COVID testing is recommended for many patients prior to their procedure. However, if testing capacity becomes constrained, there could be additional need to identify the highest risk cases to further prioritize for testing, and the lowest risk cases to forego testing. Even for an individual procedure where testing might be recommended, timing or capacity could preclude testing, the patient could refuse testing, or clinicians might, after careful assessment, use their best judgement to forego testing. For individual procedures proceeding without COVID-19 testing, whether due to timing, capacity, or clinician judgement, PPE and precautions should be selected based on standard and transmission-based precautions relevant to the procedure and patient.

Procedures that do not involve intubation or general anesthesia, or are not otherwise in one of the categories listed, can be candidates to forego pre-procedure COVID-19 testing.

Procedures where testing is recommended include:
- Procedures involving intubation, extubation, general anesthesia, prolonged manual ventilation
- Procedures on the naso-oro-pharynx, including dentistry, laryngoscopy, endoscopy
- Procedures on the respiratory tract (airways, lungs), including bronchoscopy
- Procedures and endoscopy of the upper GI tract (including EGD, TEE)
- Procedures necessitating use of smoke evacuation devices*

The decision to test is left to the discretion of the attending clinician for certain specialties, where there is potential for aerosol generation, or other circumstances of concern. These include:
- Gastroenterology- Colonoscopy
- Interventional Cardiology
- Interventional Radiology
- Obstetrics
- Ophthalmology

Note: For many specialties (e.g., Cardiac, Thoracic, Vascular, Neurosurgery, open abdominal or laparoscopic surgery, Orthopedics) a large proportion of procedures involve intubation or general anesthesia, and thus are candidates for pre-procedure testing as above.

Note pertaining to Illinois Cases Only
IDPH states as a condition to performing elective procedures effective 5/11/20; “facilities must test each patient within 72 hours of a scheduled procedure with a preoperative COVID-19 RT-PCR test and ensure COVID-19 negative status. Patients must self-quarantine until the day of surgery after being tested.”

*Note regarding smoke generation
A recent study did not find significant evidence of viable viral particles outside of the respiratory tract nor in serum samples (https://www.nature.com/articles/s41586-020-2196-x). In this case, using electrocautery on tissues not considered infected with virus, such as muscle tissue for example, would represent no known risk. Thus, while some professional organizations have made statements calling out smoke as a risk factor for transmission, this might not be the case. At the same time, even in the absence of concern surrounding COVID-19, smoke generation can represent an environmental hazard independently warranting the use of N95 respirators and eye protection.
Additional Screening and Testing Process Comments

For pre-procedure screening and testing:

- Phone-based or other virtual/remote screening of patients for COVID-19 symptoms or exposures should be performed consistently several days ahead of surgery.
- **For preop testing, patients should be tested within 4 days prior to their procedure, unless there are extenuating circumstances.**
- Patients should be handled through outpatient test centers and processes whenever possible.
- Patients should default to emergency, rapid testing only when absolutely necessary.
- **Patients should ideally mask and self-quarantine to the maximum possible extent between testing and their procedure.**
- **Patients must be rescreened for symptoms and exposure history on presentation for surgery.**

As noted, even for a procedure where testing might be recommended, timing or capacity could preclude testing, the patient could refuse testing, or clinicians might, after careful assessment, use their best judgement to forego testing.

- If the patient is **symptomatic, or their status is unknown**, they are likely best handled as a COVID-19 PUI. If they are not to be handled as a PUI, the medical record should reflect the reasoning for this.
- If the patient is **asymptomatic** with a negative screen, precautions should be determined by the attending clinician and multidisciplinary team, based on a thorough assessment of the patient, and in the context of prevailing local epidemiology.

In all instances, the attending clinician(s) and multidisciplinary team should work collaboratively on the care plan and follow standard and transmission-based precautions relevant to the patient and case.

For patients who have been previously identified as COVID-19 positive, the issue of discontinuation of precautions is addressed in additional sources:


For inpatients who during their admission have tested negative, and for whom new or worsening symptoms have not developed, repeat testing is not warranted. (See BJC ICC Guidance “Retesting Patients During an Inpatient Stay”, 5/14/20).
Procedural Use of PPE – Detail

This section references the American College of Surgeons Elective Surgery Acuity Scale (ESAS) [https://www.facs.org/covid-19/clinical-guidance/triage] describing levels of acuity, interpreted as follows:

- **Tier 3**: High acuity, “emergency”
- **Tier 2**: Intermediate acuity; with higher time-sensitivity (“urgent”), or lower time-sensitivity (“non-urgent,” “semi-elective”)
- **Tier 1**: Low acuity case, low time-sensitivity, “elective”

**Tier 3 “Emergency” cases:**

Tier 3 cases should not be delayed. This includes former Tier 2 (time-sensitive) cases which are now judged to qualify as Tier 3 or can otherwise no longer be delayed.

**Screening**: Screen all patients for symptomatology and exposure history (if possible).

**COVID-19 Testing**: Send COVID-19 PCR test for patients who will be managed with intubation or general anesthesia, where intraoperative aerosol generating procedure is anticipated, or in other categories described above, if there is time (i.e., not crashing into OR), and if there is testing capacity. If there is not time nor capacity, or if the attending clinician’s judgement is to forego testing, proceed with the case using infection prevention precautions and PPE based on standard and transmission-based precautions relevant to the procedure and the patient’s screening and clinical status.

- If patient (symptoms, exposures) **screens negative (low risk)**
  - **PCR COVID-19 Positive**: Assuming this category of case cannot be delayed: All OR personnel should wear N95 respirator and eye protection, and gown and gloves. Submit N95 respirators for decontamination in accordance with facility protocols.
  - **PCR COVID-19 Negative or No Test**: Usual care is recommended: surgical masks and eye protection for all staff.
    - If there is residual concern about the patient or case, only those personnel present during any AGP or higher-risk portion of the procedure would be considered at significant risk based on CDC guidance. Consider limiting PPE escalation to these personnel. Personnel present, and foot traffic, should also be minimized during these segments as per CDC guidance. If someone chooses to wear an N95 respirator, they should submit that for decontamination in accordance with facility protocols.

- If patient (symptoms, exposures) **screens positive or unknown (high risk)**
  - **PCR COVID-19 Positive**: Assuming this category of case cannot be delayed: All OR personnel should wear N95 respirator and eye protection, and gown and gloves. Submit N95 respirators for decontamination in accordance with facility protocols.
  - **PCR COVID-19 Negative or No Test**: Assuming this category of case cannot be delayed: consider treating this patient as a PUI (preferred option). In this case, all OR personnel should wear N95 respirator and eye protection, and gown and gloves. Submit N95 respirators for decontamination in accordance with facility protocols.
BJC GUIDANCE: COVID TESTING PRE-PROCEDURE & PROCEDURAL PPE

- If the clinical team does not consider this patient a PUI, this should be clearly reflected in the medical record. Usual care is then recommended: i.e., surgical masks and eye protection for all staff. If there is residual concern about the patient or case, only those personnel present during any AGP or higher-risk portion of the procedure would be considered at significant risk based on standard CDC guidance. Consideration can be given to limiting PPE escalation to these personnel and segments. Personnel present, and foot traffic, should also be minimized during these segments as per CDC guidance. If someone chooses to wear an N95 respirator, they should submit that for decontamination in accordance with facility protocols.

**Tier 2 “Urgent” or “Semi-elective” and Tier 1 “Elective” cases:**

Tier 2 cases are often seen as time-sensitive, but Tier 2 cases which cannot be delayed are handled with Tier 3 cases above. This section applies to Tier 2 cases for which some discretionary delay remains feasible, as well as Tier 1 truly elective cases.

**Screening:** Screen all patients for symptomatology and exposure history (if possible).

**COVID-19 Testing:** Send Covid-19 PCR test for patients who will be managed with intubation or general anesthesia, where intraoperative aerosol generating procedure is anticipated, or in other categories of concern described above, if there is testing capacity. If the case is deemed to be low risk, and the patient screens negative (symptoms, exposures), the attending clinician may choose to forego testing. If testing is not performed, proceed with the case following standard and transmission-based precautions relevant to the patient and case.

- **Patient (symptoms, exposures) screens negative (low risk)**
  - **PCR COVID-19 Positive:** Assuming this case can be delayed: delay case until such time as patient has remained asymptomatic for at least an additional 14 days. If the patient is then re-confirmed as asymptomatic and re-screens negative for exposures, proceed with surgery/procedure, usual surgical attire. Additional testing is not required nor recommended. If someone chooses to wear an N95 respirator, they should submit that for decontamination in accordance with facility protocols.
    - If the patient must have surgery before that time, treat as a COVID-19 positive case as for Tier 3 emergencies above.
  - **PCR COVID-19 Negative or No Test:** Proceed with case. Providers can wear usual surgical attire: surgical masks and eye protection. If someone chooses to wear an N95 respirator, they should submit that for decontamination in accordance with facility protocols.

- **Patient (symptoms, exposures) screens positive or unknown (high risk)**
  - Delay the case. Wait until the patient has been asymptomatic for at least 14 days and has re-screened negative. A case that cannot be delayed or becomes mandatory is handled as a Tier 3 case.

**Additional Note on Tier 2 and Tier 1 Cases:**

Some Tier 2 and many Tier 1 cases might be of low procedural risk – not falling in the categories of procedures where testing is recommended, as described above. After careful assessment, if the patient is asymptomatic and screens negative, testing could be foregone. Follow standard and transmission-based precautions relevant to the patient and case. This could include many cases under local anesthesia or not involving intubation or general anesthesia. Institutions and providers can work locally to determine qualifying cases.
Notes from the CDC


Care of COVID-19 infected patients:
“If shortages exist, N95 or higher-level respirators should be prioritized for procedures involving higher risk techniques (e.g., that generate potentially infectious aerosols) or that involve anatomic regions where viral loads might be higher (e.g., nose and throat, oropharynx, respiratory tract). As part of routine practice, healthcare providers should also be using appropriate engineering controls for source control (e.g., smoke evacuation devices).”
“In regions with high community COVID-19 incidence, N95 respirators could be prioritized for the care of all patients who are undergoing procedures that might pose higher risk (e.g., those generating infectious aerosols or involving anatomic regions where viral load might be higher), regardless of COVID-19 testing results.”

“Which procedures are considered AGP in the healthcare setting?”
“Some procedures performed on patients are more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking, or breathing. These aerosol generating procedures (AGPs) potentially put healthcare personnel and others at an increased risk for pathogen exposure and infection.”
“Development of a comprehensive list of AGPs for healthcare settings has not been possible, due to limitations in available data on which procedures may generate potentially infectious aerosols and the challenges in determining if reported transmissions during AGPs are due to aerosols or other exposures. There is neither expert consensus, nor sufficient supporting data, to create a definitive and comprehensive list of AGPs for healthcare settings.”

“Commonly performed medical procedures that are often considered AGPs, or that create uncontrolled respiratory secretions, include:
• open suctioning of airways
• sputum induction
• cardiopulmonary resuscitation
• endotracheal intubation and extubation
• non-invasive ventilation (e.g., BiPAP, CPAP)
• bronchoscopy
• manual ventilation

Based on limited available data, it is uncertain whether aerosols generated from some procedures may be infectious, such as: high flow O2 delivery, or nebulizer administration (aerosols generated by nebulizers are derived from medication in the nebulizer. It is uncertain whether potential associations between performing this common procedure and increased risk of infection might be due to aerosols generated by the procedure or due to increased contact between those administering the nebulized medication and infected patients).”
Procedures to Consider for Pre-Procedure COVID-19 Testing

- Procedures involving intubation, extubation, general anesthesia, prolonged manual ventilation
- Procedures on the naso-oro-pharynx, including dentistry, laryngoscopy, endoscopy
- Procedures on the respiratory tract (airways, lungs), including bronchoscopy
- Procedures and endoscopy of the upper GI tract (including EGD, TEE)
- Procedures necessitating use of smoke evacuation devices

Decision to Test at Discretion of the Attending Clinician

The decision to test is left to the discretion of the attending clinician for certain specialties, where there is potential for aerosol generation, or other circumstances of concern. These include:

- Gastroenterology- Colonoscopy
- Interventional Cardiology
- Interventional Radiology
- Obstetrics
- Ophthalmology

Note: For many specialties (e.g., Cardiac, Thoracic, Vascular, Neurosurgery, open abdominal or laparoscopic surgery, Orthopedics) a large proportion of procedures involve intubation or general anesthesia and thus are candidates for pre-procedure testing as above.

Procedures that do not involve intubation or general anesthesia and are not otherwise in one of the categories listed can be candidates to forego pre-procedure COVID-19 testing.

For details, see full document "Procedures for COVID-19 Testing & Procedural PPE"
# BJC GUIDANCE: COVID TESTING PRE-PROCEDURE & PROCEDURAL PPE

## Procedural Use of PPE: Abbreviated Table

### PPE Recommendations for surgical / procedural cases during COVID-19

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Patient Status</th>
<th>Test Result</th>
<th>PPE Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency cases and time-sensitive cases that cannot be delayed</td>
<td>Patient is asymptomatic &amp; screens negative</td>
<td>COVID-19 Test Positive</td>
<td>Wear N95’s (&amp; recycle), eye protection, gown &amp; gloves.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COVID-19 Test Negative / No Test</td>
<td>Usual surgical attire. Recycle any N95’s used.</td>
</tr>
<tr>
<td>Time sensitive cases that can still be delayed and elective cases</td>
<td>Patient is asymptomatic &amp; screens negative</td>
<td>COVID-19 Test Positive</td>
<td>Delay case. (Emergencies addressed above).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COVID-19 Test Negative / No Test</td>
<td>Usual surgical attire. Recycle any N95’s used.</td>
</tr>
<tr>
<td></td>
<td>Patient is symptomatic, screens positive, or unknown status</td>
<td>COVID-19 Test Positive</td>
<td>Wear N95’s (&amp; recycle), eye protection, gown &amp; gloves.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COVID-19 Test Negative / No Test</td>
<td>Default is PUI: N95’s (&amp; recycle), eye protection, gown &amp; gloves. IF NOT PUI: Usual surgical attire. Recycle any N95’s used.</td>
</tr>
<tr>
<td></td>
<td>Patient is symptomatic, screens positive, or unknown status</td>
<td>COVID-19 Test Not Indicated</td>
<td>Delay case. (Emergencies addressed above).</td>
</tr>
</tbody>
</table>

The shorthand "Recycle N95’s" refers to submitting respirators for decontamination in accordance with facility protocols, which is encouraged. For details, see full document "Procedures for COVID-19 Testing & Procedural PPE*

*Revised: May 22, 2020*