Pulmonary Function Testing Recommendations During COVID-19 Era
Updated: 11/17/20

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Pulmonary Function Testing Recommendations During COVID-19 Era
Updated: 11/17/20
This is a fluid document and subject to change based on updates to guidelines and recommendations.

**Goal of Action Plan:**
To provide comprehensive, compassionate care of patients who require pulmonary function testing at AMITA Health that minimizes the risk of transmission of COVID-19 to patients, associates, and providers.

**Standard Operating Procedure:**
This is the standard operating procedure of the AMITA Health Pulmonary Function Testing Labs that serve to prevent/address the potential spread of the COVID-19 virus and allows for the safe restart of pulmonary diagnostics dependent upon each facilities ability to maintain staffing, PPE, and screening requirements.

**Scope:**
This guidance document is intended to apply to all Pulmonary Function Testing service providers and associates practicing at AMITA Health in-hospital or ambulatory locations. This supplements all other COVID-19-related procedures of AMITA Health and provides further instruction related to Pulmonary Labs.

**Consideration for Re-Opening Pulmonary Labs:**
- Adequacy of PPE
- Adequacy of Equipment
- Cleaning - Disinfecting Guidelines and materials (Refer to MDS)
- Negative pressure in Lab is preferred if available
- Availability of Testing Personnel
- Facility and patient traffic planning to reduce exposure
- These resource requirements are subject to change, as deemed appropriate by the Director of the Illinois Department of Public Health based on evolving conditions in the COVID-19 pandemic. Pulmonary Function Testing may be suspended as determined by the Director of the Illinois Department of Public Health in the event of the following circumstances:
  - Rapid resurgence or a second wave of COVID-19

**Prioritization and Clinical Indication for Pulmonary Function Testing:**
- Initial indications for PFT testing in order of priority (in the event of a surge or limitations to PFT or COVID-19 testing capacity):
  1. Preoperative PFT for Thoracic or Abdominal Surgery.
  2. Treatment monitoring for Drug-induced toxicity with pulmonary side effects (e.g. Bleomycin, Amiodarone)
  3. Decision to treat ILD, PH
  4. Diagnostic if urgent – dyspnea, asthma, COPD
General Personnel Guidelines:

Clinical areas should be restricted to essential personnel only:

- Visitor restrictions based on ministry guidelines or policies.
- Guidance to be given to visitors to wait outside or in the car.
- Visitors to meet patients at the facility exit following pulmonary testing.
- Universal masking will remain in place for all associates, patients, and visitors in all testing areas until otherwise directed.
- Associates with any sort of illness, cold, upper respiratory infection, etc. should not be present under any circumstance, even if wearing a mask or protective gear.
- All associates will self-monitor twice daily their temperature, any new or changing cough, shortness of breath, fever, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste and smell.
- Department and team will support social distancing guidelines.
- EVS will clean and disinfect Pulmonary Function Testing area daily. RT testing staff will clean and disinfect testing area after each patient based on manufacturing guidelines.
- No scheduled meetings or visits with outside vendors/representatives should take place other than equipment maintenance or repair.
- Vendors will be limited and will undergo enhanced screening to include the following: Temperature upon arrival and assessment for symptoms of COVID. Do you have a new or changing cough, shortness of breath, fever > 99.5, chills, repeated shaking with chills, muscle pain, headache, sore throat, new loss of taste and smell, increase in shortness of breath, change in cough, known exposure to a COVID-positive patient? Vendors are expected to follow PPE protocols as outlined.

Patient Screening, Testing and Associate Screening:

Patient Screening:

All patients coming in for PFT testing should be screened for COVID symptoms at the time of scheduling and the day of the pulmonary testing. This screening should include the following questions:

- Do you have a new or changing cough, worsening shortness of breath, fever, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste and smell, or known exposure to a COVID + patient, or temperature > 99.5 F?
- On arrival to the facility, all patients should also have their temperature directly assessed (preferably using non-invasive means). If the temperature is greater than 99.5 F further investigation is warranted to determine whether to proceed.
- At the time of scheduling, instruct patient to take temperatures twice daily and report any temp greater than 99.5 F to ordering physician. Any new COVID related symptoms should be reported to physician immediately prior to arrival at facility.
Patient Testing:

- Resume COVID-19 PCR testing if the asymptomatic pre-procedural testing positive rate exceeds 1%. Please contact your site or region testing location to stay up to date on the current data.
- For methacholine challenge testing, it is recommended that COVID-19 PCR testing be performed 72 hours prior to the test.
- For patients with continued symptoms after COVID-19 infection, recommend PFT at 3 months. If a PFT is needed more urgently, it can be performed after 1 month.
- Operational details will follow ministry-specific guidelines for COVID-19 testing. Contact your local CMO or Pulmonary Lab Medical Director for additional questions regarding this process.
- Oxygen titration, 6-minute walk test, and simple stress test will not require COVID-19 PCR testing. Symptom screening and temperature check required day before and day of testing.
- CPET testing will follow recommendations for pulmonary function testing.

Please see below for COVID-19 testing recommendations in surge conditions:

<table>
<thead>
<tr>
<th>Test</th>
<th>Perform pulmonary testing during surge*</th>
<th>Obtain COVID-19 Testing during surge*</th>
<th>Obtain COVID-19 Testing when not in a surge*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Spirometry</td>
<td>Yes</td>
<td>Recommended</td>
<td>No</td>
</tr>
<tr>
<td>Complete PFT**</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>PFT w/ bronchodilator**</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>O2 titration</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6MWT</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Simple Stress Test</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Complete CPET</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Methacholine Challenge Test</td>
<td>No</td>
<td>N/A</td>
<td>Required</td>
</tr>
<tr>
<td>Nasopharyngoscopy</td>
<td>No</td>
<td>N/A</td>
<td>Required</td>
</tr>
</tbody>
</table>

*Surge defined as pre-procedure positive rate > 1%. Tier 3 PPE required for all procedures.
** PFT testing as clinically necessary.

Associate Screening:

All associates will be screened daily for the following:

- Do you have a new increase in shortness of breath, change in cough, known exposure to a COVID + patient, or temperature > 99.5 F.
- All associates should also have their temperature directly assessed (preferably using non-invasive means). If the temperature is greater than 99.5 F, further investigation is warranted to determine whether to proceed.
- AMITA associates are required to report daily through the COVID Screening App.
Day of Procedure:

- Ensure appropriate Tier 3 PPE available and in use. If Tier 3 PPE is unavailable, test should be rescheduled when Tier 3 PPE is available.
- N95 mask per AMITA policy will be issued to all pulmonary testing staff per the Tier 3 PPE guidelines. The surgical mask over the N95 mask is disposed of at the end of testing shift or if soiled or wet. The N95 may be reused for the next test or shift. If the seal check on the mask isn’t working or the mask becomes soiled, a new mask will be required. Please refer to PPE and seal check guidelines in Appendix 1 and 2.
- Registration and symptom assessment will be completed in advance of testing day to further limit face-to-face exposure.
- Orders and documentation to be done in EMR prior to test.
- Patient must be masked and brought to a testing room using an approach that avoids queuing or grouping individuals in a waiting area. Enhanced cleaning of the testing area should be performed between patients.

Procedural Guidance:

- Diagnostic testing will be performed with appropriate clinical limitations and appropriate Tier 3 PPE to minimize exposure. Testing staff to don Tier 3 PPE immediately prior to and during testing.
- As of June 1, 2020, limited testing has resumed as part of re-emergence. Most of this testing is in patients who are pre-op for thoracic and abdominal surgery. Those with chronic illness for which PFTs are needed to evaluate for treatment changes (interstitial lung disease, pulmonary hypertension), drug-induced toxicity (e.g. Bleomycin, Amiodarone), and diagnostic (if urgent, asthma, dyspnea, COPD). CPET testing will follow PFT recommendations.
- If bronchodilator administration is required, recommend that the patient uses their own SABA if possible. To conserve scarce medications, only 2 puffs of albuterol via spacer will be administered (if necessary). When using nebulized medications, use a breath actuated nebulizer (BAN) with filter, 0.5 ml albuterol sulfate with 0.5cc ml saline, run 8-12 breaths or until sputter using breath actuated mode at 7-8 L/min. Preferred environment for testing is negative pressure and expiratory filter on the nebulizer.
- Bronchial challenge testing and nasopharyngoscopy will resume when it is deemed safe to reintroduce these high exposure diagnostics test.
- Outpatient oxygen titration testing, simple stress test, and 6-minute walks resumed beginning the week of June 8 and do not require COVID-19 PCR testing. Symptom screening and temperature check required day before and day of testing. Current CMS guidelines offer oxygen approval and initiation without qualifying testing with prescription containing liter flow. Based on individual DME vendor guidelines, portable oxygen concentrators are currently being delivered with updated testing and orders. Testing staff to be in Tier 3 PPE (gown, gloves, N95, surgical mask, and face shield) during testing.
• Outpatient home-based testing (outpatient overnight oximetry and home sleep tests) limited in volume due to increased requirements to disinfect equipment between patient use. Equipment is to be sent out in disposable, sealable plastic bags for both HST and outpatient overnight oximetry.
• Rooms and all equipment to be cleaned and disinfected between patients with EPA approved disinfectant for all surfaces. Testing times will be adjusted based on room turnover times which allow for cleaning and disinfecting. Manufacturer safety data sheets will be used to determine the time for disinfection based on product availability.
  o Cleaning / disinfecting of equipment as dictated by manufacturer guidelines.
# COVID-19 Guidelines for PPE

Adjustments in these guidelines are subject to changes in standards of care and/or supply chain availability.

<table>
<thead>
<tr>
<th>Tier</th>
<th>Situation</th>
<th>PPE for Patient Care Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>Greeter/Screener. Non PUI/COVID-19 patient (Follow standard precautions for all patients and isolation precautions if patients are on isolation for something other than COVID)</td>
<td><img src="image1" alt="PPE items" /></td>
</tr>
<tr>
<td>Tier 2</td>
<td>PUI/COVID-19 patient not receiving aerosol generating procedures (AGP) OR when collecting NP swab</td>
<td><img src="image2" alt="PPE items" /></td>
</tr>
<tr>
<td>Tier 3</td>
<td>ALL PATIENTS regardless of COVID status receiving aerosol generating procedures (AGP)</td>
<td><img src="image3" alt="PPE items" /></td>
</tr>
</tbody>
</table>

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Appendix 2: Seal Check Guidelines

How To Perform a Particulate Respirator Seal Check
Adapted from Epidemic and Pandemic Alert and Response | World Health Organization 2008

Step 1
- Perform appropriate hand hygiene and don gloves.
- Cup the respirator in your hand with the nosepiece at your fingertips allowing the headbands to hang freely below your hand.

Step 2
- Position the respirator under your chin with the nosepiece up.

Step 3
- Pull the top strap over your head resting it high at the back of your head. Pull the bottom strap over your head and position it around the neck below the ears.

Step 4
- Place fingertips of both hands at the top of the metal nosepiece. Mold the nosepiece (USING TWO FINGERS OF EACH HAND) to the shape of your nose. Pinching the nosepiece using one hand may result in less effective respirator performance.

Step 5
- Cover the front of the respirator with both hands, being careful not to disturb the position of the respirator.

Step 5a: Positive seal check
- Exhale sharply. A positive pressure inside the respirator = no leakage. If leakage, adjust the position and/or tension straps. Retest the seal. Repeat the steps until the respirator is secured properly.

Step 5b: Negative seal check
- Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.
- Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal.
- Doff gloves and perform appropriate hand hygiene.


