

**Guidance for Diagnostic Imaging During the COVID-19 Pandemic**

**Approved:** 4/23/20

**Last Revision:** 4/27/20 – updated tables 1-3 to include non-COVID-19 isolation status in guidance, revised ED PPE Guidance (page 5, #2), added Appendix with isolation status links

**Background:** This document represents an update to prior [guidance](https://radiology.ucsf.edu/sites/radiology.ucsf.edu/files/wysiwyg/patientcare/patient-safety/covid-19/KPK_Tests_Pending_4-14-20_Final.pdf) published 4/14/20. Key changes include:

* Incorporation of changes in UCSF Health’s testing algorithm for COVID-19: Within the last week, UCSF Health has significantly expanded COVID-19 RT-PCR testing of asymptomatic patients, including ambulatory pre-operative/pre-procedural patients and all new inpatient admission.
* Incorporation of changes in how patients’ charts will indicate patient’s testing status: The charts of **asymptomatic** patients for whom a COVID-19 RT-PCR test is ordered **will no longer be flagged with a “COVID-19 (Pending)” marker.** This flag will continue to be placed on the charts of symptomatic patients with pending RT-PCR tests (patients under investigation). The “COVID-19 (Confirmed)” flag will continue to be placed on the charts of patients with positive RT-PCR tests and will only be removed manually if a patient has two negative tests at least 24 hours apart or automatically when 30 days have elapsed since the flag was placed.
* Incorporation of changes in isolation precautions for asymptomatic inpatients undergoing testing: Asymptomatic **inpatients** with COVID-19 RT-PCR tests pending will now be placed under droplet precautions.
* Guidance is now divided by patient location

**Guidance:** Radiology worklists include columns indicating the presence or absence of COVID-19 flags on patients’ charts and patients’ isolation status. Radiology personnel should use this information and the patient location to determine appropriate actions and personal protective equipment use, summarized in Tables 1-3.

*STOP for safety.* The expansion of COVID-19 RT-PCR testing in asymptomatic patients is an extension of numerous steps that have been taken to **minimize** occupational interactions with patients with COVID-19. Given the community prevalence of this disease and UCSF Health’s role in caring for these patients, interactions with patients with COVID-19 will not be **eliminated** completely. The guidance provided in this document is intended to maximize the safety of these interactions. All faculty, staff, and trainees are encouraged and even expected to **STOP for safety**. If a healthcare worker is concerned that a situation is potentially unsafe, in most cases it is appropriate to refrain from entering this situation immediately. The healthcare worker should immediately escalate the situation to ensure the safest possible environment for healthcare workers and patients alike. Escalation should begin with the healthcare worker’s supervisor.

**Table 1: Diagnostic Imaging in ED Patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| COVID-19 Flag | Isolation Status | Interpretation | Action | PPE |
| COVID-19 (Confirmed) | *Respiratory Illness Evaluation without Negative Pressure*  OR  *Novel Respiratory Isolation* | COVID-19 Infected Patient | Consult radiologist for appropriateness of examination;\*  Proceed if approved | **In ED:**  *airborne + contact*  **In Department**:  *follow isolation status* |
| COVID-19 (Pending) | *Respiratory Illness Evaluation without Negative Pressure*  OR  *Novel Respiratory Isolation* | Patient Under Investigation (PUI) | Consult radiologist for appropriateness of examination;\*  Proceed if approved | **In ED:**  *airborne + contact*  **In Department:**  *follow isolation status* |
| None | None +/- non COVID-19 related isolation | NA | Confirm with bedside RN that patient should not be under isolation; Proceed with imaging study | **In ED:**  *airborne + contact*  **In Department:** *droplet + contact + any other non COVID-19 related isolation status* |
| \*Chest x-ray and CT imaging do not require radiologist approval in ED patients | | | | |

**Table 2: Diagnostic Imaging in Inpatients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| COVID-19 Flag | Isolation Status | Interpretation | Action | PPE |
| COVID-19 (Confirmed) | *Respiratory Illness Evaluation without Negative Pressure*  OR  *Novel Respiratory Isolation* | COVID-19 Infected Patient | Consult radiologist for appropriateness of examination;\*  Proceed if approved | EITHER  *airborne + contact*  OR  *droplet + contact* depending on isolation status |
| COVID-19 (Pending) | *Respiratory Illness Evaluation without Negative Pressure*  OR  *Novel Respiratory Isolation* | Patient Under Investigation (PUI) | Consult radiologist for appropriateness of examination;\*  Proceed if approved | EITHER  *airborne + contact*  OR  *droplet + contact* depending on isolation status |
| None | **Droplet Precautions**  +/- non COVID-19 related isolation status | Asymptomatic Patient with COVID-19 test pending | Proceed with imaging study | **Droplet**  +/- non COVID-19 related isolation status |
| None | **None**  +/- non COVID-19 related isolation status | COVID-19 test negative\*\* | Proceed with imaging study | **Standard precautions + surgical mask**  +/- non COVID-19 related isolation status |
| \*Chest x-ray does not require approval in inpatients | | | | |
| \*\*Some inpatients whose admission predates 4/23/20 will have been asymptomatic and never tested | | | | |

**Table 3: Diagnostic Imaging in Outpatients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| COVID-19 Flag | Isolation Status\* | Interpretation | Action | PPE |
| COVID-19 (Confirmed) | N/A | COVID-19 Infected Patient | Consult radiologist for appropriateness of examination; Escalate to supervisors to plan safest site and process to image patient\*\* | droplet + contact |
| COVID-19 (Pending) | N/A | Patient Under Investigation | Consult radiologist for appropriateness of examination; Escalate to supervisors to plan safest site and process to image patient\*\* | droplet + contact |
| None | N/A | Asymptomatic patient with or without test pending | Proceed with imaging study | **Ensure patient wears mask**  standard precautions + surgical mask |
| \*Isolation status is not functional for outpatient encounters | | | | |
| \*\*Standard operating procedure to manage this scenario will be developed | | | | |

*Additional Notes:*

1. Eye Protection in mixed inpatient/outpatient settings:

Radiology personnel in locations where both inpatients and outpatients receive care should consider routine extended use or re-use of eye protection and follow UCSF [guidelines](https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Reuse_Guidelines_PPE.pdf) on this topic.

1. Imaging of Emergency Department patients:
   1. Based on prior potential exposure events and at the direction of the Patient Safety Committee, we have instituted minimum droplet + contact PPE for radiology personnel when imaging ANY ED patient.
   2. Because aerosol-generating procedures (e.g. nebulizer treatments) are not always well-delineated in the ED, we recommend all radiology personnel don N95 masks and eye protection (or PAPR when appropriate) when present in the ED, following UCSF [guidelines](https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Reuse_Guidelines_PPE.pdf) for extended use and re-use.
   3. For post-intubation x-rays, N95 masks (+ eye protection and gown and gloves) are considered safe and sufficient protection per UCSF Health policy. However in situations where all ED providers involved in a patient’s care are have donned PAPRs, x-ray technologists may choose to don a PAPR. One PAPR is continuously available to x-ray technologists in the ED. The first technologist to use the PAPR per shift should take the remainder of post-intubation x-rays during that shift and should follow UCSF [guidelines](https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Reuse_Guidelines_PPE.pdf) on safe re-use of PAPR face shields.
2. Asymptomatic Patients with tests pending: outpatients versus inpatients

Note that asymptomatic **inpatients** with tests pending will be under droplet precautions (radiology personnel use eye protection + surgical mask), whereas asymptomatic **outpatients** with tests pending will be under standard precautions + surgical mask. **In the outpatient setting it is critical to ensure that the patient wears a mask.** If these conditions are met, then the outpatient risk = inpatient risk level by CDC standards despite different PPE standards. Routine use of surgical masks by inpatients may not be as consistent, necessitating the addition of eye protection in the inpatient setting.

1. Imaging patients with confirmed or suspected COVID-19 at UCSF Health sites

To minimize exposure risk for our patient-facing staff, imaging studies should only be performed on COVID-19 patients and patients under investigation (PUIs) when the results of the study are reasonably expected to alter a patient’s management during the acute phase of illness. Exceptions to this guidance include chest x-rays on inpatients and chest x-rays or CT scans in ED patients. The expected workflow is as follows:

* Clinical team places order for radiology diagnostic imaging study in APEX on COVID-19 confirmed or suspected patient
* Radiology technologist receives order and brings it to the appropriate radiology service attending or trainee MD for review
* Radiologists should take one of three actions:
  + Approve the study as the indication meets the criteria set forth above, OR
  + Initiate discussion with the referring team to discuss the clinical scenario and jointly determine if the imaging study and indication meet the criteria set forth above, OR
  + Escalate the decision-making to an appropriate radiology attending MD

**APPENDIX A: Isolation Status Links**

**CONTACT ISOLATION:** <https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Contact_Isolation.pdf>

**DROPLET ISOLATION:** <https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Droplet_Isolation.pdf>

**AIRBORNE ISOLATION:** <https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Airborne_Isolation.pdf>

**ENTERIC CONTACT ISOLATION:** <https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Enteric_Contact_Isolation.pdf>