

CNI Service Center Standard Operating Procedures During the COVID-19 Pandemic October 7, 2020

Introduction

The Center for Cognitive and Neurobiological Imaging (CNI) at Stanford University is a shared facility, dedicated to research and teaching in cognitive neuroscience. The center is located on the lower level floor of Jordan Hall. The CNI provides neuroimaging facilities and related resources for researchers and students in the cognitive and neurobiological sciences. The core instrument provided by CNI is a research-dedicated 3T MRI scanner. The purpose of this document is to describe procedures for the safe operation of the CNI facility during the COVID-19 pandemic. The policies and procedures discussed in this document were developed to be consistent with the requirements of the Environmental Health and Safety policies and with the Human Subjects Research policies at Stanford University. Human Subject Research can be undertaken at CNI with minimal risk of COVID-19 transmission if the procedures outlined in this document are rigorously followed. Redundant mechanisms are in place to ensure adequate disinfection protocols are performed. These procedures rely on the support of facility users to share in the burden of these additional protocols. Due to the COVID-19 pandemic users will need to complete additional training prior to resumption of their scanning privileges at CNI.

Overview of CNI Workspace

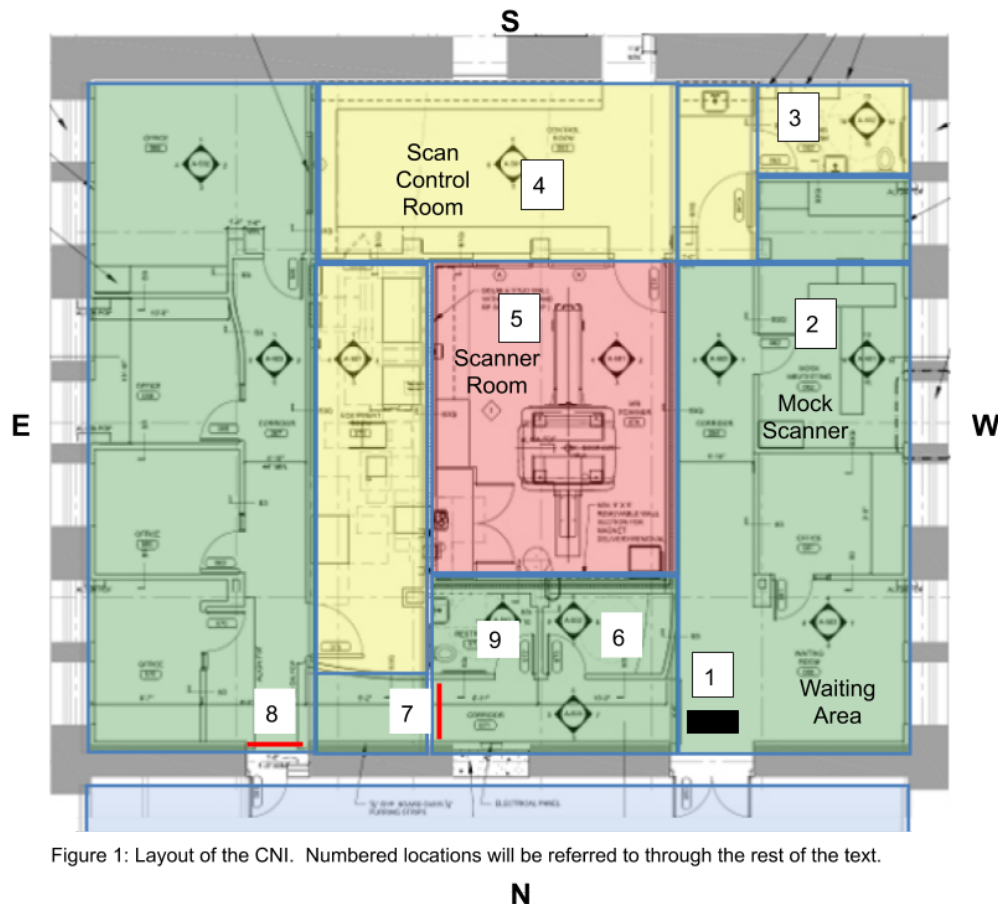


Figure 1: Layout of the CNI. Numbered locations will be referred to through the rest of the text.

Figure 1 illustrates the CNI layout that will be used while operating in COVID-suppression mode. The numbered Stations refer to the following locations:

- Station 1: Main entry. A table will be present with hand sanitizer, procedural masks and Nitrile gloves available.
- Station 2: Mock scanner room.
- Station 3: Changing area, bathroom.
- Station 4: Scanner control room. Hand sanitizer, procedural masks, and Nitrile gloves available at the sink area.
- Station 5: Scan room.
- Station 6: Testing room.
- Station 7 & 8: Temporary barriers or signs restricting access to the East side of CNI.
- Station 9: Bathroom

The following table describes the maximum occupancy for each area given the density limitations set by the University as of October 5, 2020. Given the flexible movement of people within these spaces it is not generally possible for CNI to provide fixed markings that limit personnel locations so as to maintain 6' of social distancing – this will be the responsibility of CNI users to ensure they maintain social distancing while moving through the CNI.

Station #	Description	Area (Sq. Ft.)	Max Occupancy
1	Waiting Area + Hallways	550	4
2	Mock Scanner	258	2
3	Changing area / bathroom	75	1
4	Scanner control Room	426	3
5	Scan room	416	3
6	Testing room	54	1
9	Bathroom	54	1

Table 1: Room specifications. University rules are no more than 1 person per 125 sq ft.

Overview of Daily Workflow

1. The CNI facility will operate in a restricted access fashion in order to limit the amount of space that will need frequent cleaning, as well as to reduce the number of participants using the facility at any one time. Researcher and subject access will be restricted to the main entrance (Station 1) and temporary barriers or signs will limit access to the East side of CNI at Stations 7 and 8.
2. Each morning the Stanford University Janitorial service will clean CNI, paying special attention to disinfecting commonly touched surfaces.
3. On the day of their scan, researchers must have confirmed they meet Stanford's requirements for employees coming into work prior to arriving at CNI. This will be facilitated by the use of the Stanford HealthCheck Form <https://healthcheck.stanford.edu/>.
4. For each scan, researchers will arrive 30 minutes in advance of their subject.
5. **Social Distancing:** As much as possible researchers will practice social distancing, maintaining 6 feet of separation between each other and research subjects. This is especially important when interacting with individuals that are not yet masked.

6. On arrival researchers will use hand sanitizer, put on gloves in preparation of cleaning, and a mask (or leave on an existing one at their discretion). Researchers will also confirm with the contactless thermometer that their temperatures are not above 100°.
7. Researchers will then proceed to each of the areas they will use for their subject and follow the cleaning procedures outlined in the sections below for each station. Note only a single occupant is allowed at a time in rooms 3 & 6.
8. After cleaning, one researcher will stay in the scan or scan control room. The other researcher will greet their subject at Station 1, or exterior to Jordan Hall.
 - a. The researcher will offer hand sanitizer to their subject and give them a procedural mask.
 - b. Researchers will confirm the answers for the subject that will have been collected during pre-screening on the [CNI screening form](#). A single additional visitor, such as a parent or guardian, will be allowed only if necessary to accompany a participant. Visitors must have also been screened and be provided with an **MRI-safe** mask. This is a regular mask from which the CNI staff has stripped the metal ribbon. The metal ribbon is mildly ferromagnetic--not enough to cause a projectile hazard, but it will create substantial image artifacts!
 - c. A contactless temperature measurement of the subject and any visitor will be taken.
 - d. If the subject (or visitor) presents with a temperature over 100° or has any COVID19 symptoms, researchers will not scan the subject and escort them from CNI premises while maintaining social distance. Researchers should then cancel their scan booking in the CNI scan scheduler and are then free to leave.
 - e. Assuming no contraindications, signatures will be collected on the screening forms and they will be deposited into the collecting box.
 - f. The participant will then be instructed to change into disposable scrubs in the changing area/bathroom at Station 3. A disposable bag will be provided for their clothes and belongings.
 - g. Any accompanying guardian may accompany the subject to the changing room but must otherwise remain in the waiting area.
9. The researchers will then fill out the MRI screening and consent forms, perform any necessary tests or acclimatization at Stations 2 and 6, and then scan the subject. Hand sanitizer will be available at each station and researchers will instruct the subject to frequently clean their hands when moving from one station to another. The sink area in Station 4 will always be available for additional hand washing and glove changing. Maintain social distancing as much as possible.
10. During the scan, there will be one primary “scan room” researcher. This researcher will be provided with a personal face shield by CNI that they will keep and use for all studies. They will be the sole researcher to be present in the scan room with the research subject assisting with preparation of the subject for scanning, scanner entry and egress.
11. **Glove use:** Gloves are to be worn whenever interacting with the subject in the scan room, and we recommend they also be used during cleaning. Gloves should not be worn when exiting the CNI. Gloves may be worn in the control room and waiting area, but frequent hand washing or sanitizing is an acceptable alternative and will help preserve our supply of gloves.
12. After completion of the scan, the researchers will instruct the subject to return to the changing room to change back into their clothes. Used gloves, masks and other trash can be disposed of in the normal trash container. ONLY in the event of items being visibly contaminated with bodily fluid do they need to need to be disposed of in the biohazard container in Station 4.
13. Researchers will escort the participant out of the facility.
14. Researchers will then perform the cleaning procedures at each of the stations they or their subject have utilized.

Additional Stage-Dependent Requirements

Stanford University has adopted a plan of phased resumption of research activities. These stages provide guidelines for general research as well as many specific guidelines for clinical and non-clinical human subject research. The definitions of these stages and guidelines are in a state of continual evolution so we will not describe them here but refer all PIs and users to the [Research Recovery Plan](#). It is the responsibility for all PIs to be sure they know what the current stage of research recovery is, and how that impacts human subject research. The CNI will also do it's best to make sure that notable changes in the research stages are communicated to all users.

Cleaning Procedures for Each Station

Super Sani-Cloths are intended to be the primary instrument used to disinfect all stations. Please note the EPA recommends a 2-minute contact time for the active ingredient to kill SARS-Cov2 -- this means you need to make sure the surfaces are moist enough not to dry out within that period. Please use your best judgment of making sure you refresh your Sani-Cloth as needed, but please also try to use them as efficiently as possible -- they are a **precious** resource! As Sani-Cloths are currently in short supply, we also will be using Sani-Prime Germicidal spray (3-minute contact) and paper towels as well as Clorox Disinfecting wipes (0.5-minute contact). Please note that you should spray your towel first and then wipe, rather than spray the surface as this can cause some aerosolization of any surface virions.

Please also note that **ALL** supplies are **ONLY** for the internal use at CNI. Under no circumstances should researchers remove supplies from CNI for their lab or personal use outside CNI.

Station 2: Mock Scanner Room

1. Use Sani-Cloth wipes to clean hard surface areas around the table cushion, all over the head coil.
2. Use the Swiffer mop with Swiffer Dry Sweeper Pads soaked with Sani-Prime spray to wipe down the bore area.
3. Place clean linens on the table cushion and the base of the head coil. Remove and place used linens in the hamper located in the mock scanner room.

Station 3: Changing area and bathroom

1. Use Sani-Cloth wipes to clean door handles, faucets.
2. Use Sani-Cloth wipes to clean the bench.
3. Dispose of any used temporary clothing bag.

Station 4: Scanner control room

1. Use Sani-Cloth wipes to clean the console keyboard and mouse, surrounding desk surfaces, microphone buttons and control surfaces of the video switch, serial trigger box, FORP and stereo. Also wipe down chair arms.
2. If after the scan, wipe down any other areas you have touched including MRI safe glass frames, lens storage door, etc.

Station 5: Scan room

1. All following steps to be complete **before and after each subject**.
2. Clean the MRI table with Sani-Cloth wipes.
3. Use Swiffer pole and Swiffer Dry Sweeper Pads soaked with Sani-Prime spray to clean the MR bore from entry up to the interior air vent. Please leave the scanner fan **OFF** while disinfecting, and then turn **ON** after 3 minutes in order to air out the scanner bore. You can subsequently adjust the fan for subject comfort as needed during the scan session.

4. Clean all used pads and positioners with Sani-Cloth wipes. Notify Laima if any are torn or fraying.
5. Clean any coil used inside and out with Sani-Cloth wipes.
6. Clean all ancillary equipment that was used such as bellows, plethysmograph, earmuffs with Sani-Cloth wipes.
7. Clean all common surfaces such as door handles and scanner buttons,

Station 6: Testing room

1. Use Sani-Cloth wipes to wipe down the table surface and chair arms.
2. If using any supplies from the filing cabinet, be sure to wipe down both the supply container and any handles that were touched.

Station 9: Bathroom

1. Use Sani-Cloth wipes to clean door handles, faucets.
2. Dispose of any used temporary clothing bag.

Requirements for Researcher and Subject Participation

Researchers must be diligent in screening subjects prior to enrolling them in a study, and they must screen again 24-48 hours in advance of the planned scan time. Screening requirements include:

1. Researchers must be familiar with signs of COVID19 as described on [Stanford Health Alerts](#). When pre-screening subjects, they will use the [CNI screening form](#) for the subject and any other planned visitor.
2. Researchers will be in control of choosing their participants based on their IRB approval documents and subject to the particular stage dependent requirements under which CNI is operating. The consent process must explicitly explain that a decision to participate - or not - will not affect employment, and PIs cannot consent their reports.

Requirements for Reinstatement of Scanning Privileges at CNI

1. Prior to resuming scanning privileges at CNI, researchers need to complete the following:
 - a. Review the online training material and complete the quiz posted on the CNI Wiki website "Getting Started" page. This material covers the information outlined in this document as well as Stanford's recommendations for employee screening as to whether they can come in to work.
 - b. Complete the [EHS training](#) on COVID19 hygiene best practices.
<https://ehs.stanford.edu/training/ehs-2470-covid-19-hygiene-best-practices>

New Scanner Scheduling Policies & Procedures

1. Users should reserve additional ½ hour blocks before and after each of their scan sessions for cleaning purposes using the COVID19 grant that will be available to every user.
2. Users will not be charged for this additional cleaning time.
3. Users will be liable for normal cancellation fees (10% of equivalent scan fee) under normal cancellation policies.
4. In order to maximize scanning time, but still have a redundancy in cleaning please note the following protocol for booking slots for cleaning activities:
 - a. Users should always plan to have a ½ hour slot for cleaning before and after their scan. If the calendar is empty, users should book a ½ hour before their scan and ½ hour after their scan.
 - b. If there are bookings already on the calendar, there is no need to have two ½ slots between scans. One ½ hour will be sufficient between scans. The researchers of the scan ending and

the researchers of scan beginning should plan to divide that ½ hour cleaning slot equally for their portions of the required cleaning.

SOP Modifications when Scanning Phantoms Alone

1. All of the procedures required for the researchers will stay the same for initial entry (e.g. self masking and temperature assessment) except that face shields will not be required.
2. Researchers will need to clean frequently touched surfaces around the scanner (including coils and phantoms under test) and console prior to scanning. Researchers do not need to wipe down the bore of the scanner.
3. Researchers need to clean all surfaces they have touched after scanning.

SOP Modifications for EEG Experiments

1. EEG experiments may be run separately in the mock scanner room, or integrated with the MRI exam.
2. All of the procedures required for the researchers will stay the same for initial entry (e.g. self masking and temperature assessment).
3. Face shields will also be required for researchers working in close proximity to the subject.
4. EEG electrode placement
 - a. *Head circumference measurements:* The head-size of the participant will be measured using a measuring tape that is cleaned with an alcohol swab right before being used.
 - b. The EEG Net appropriate for the patient's head size will be selected and soaked in a solution of baby shampoo and sodium chloride salt in water for 10 minutes. If needed, the participant will be asked to clean their scalp using disposable pads and either ethyl alcohol or witch hazel to reduce sebum on the scalp and face.
 - c. The electrodes will be placed by the researcher wearing full PPE including gloves, cloth mask, face shield and disposable smock as the testing involves brief, but close contact with the participant while placing the electrodes (5-10 min) and removing them (1 min).
5. *EEG data collection in mock scanner room*
 - a. During the recording session, the researcher and the participant will both be masked. In addition, a safe social distance of greater than 6 feet can be maintained during the experimental recording at all times. The testing typically takes no more than 30-45 minutes.
 - b. To begin data collection, participants will be seated in front of the experimental computer monitor.
6. *EEG data collection in conjunction with an MRI scan*
 - a. To retrieve any needed supplies any EEG supplies stored in the mock scanner room, users should check the CNI calendar to book time for this retrieval activity in the mock scanner room to prevent any unintended simultaneous use of the mock scanner by independent groups.
 - b. For the EEG/MRI exam - After the application of EEG net to the research participant, the participant and the researcher will follow the procedures for MRI scanning as described earlier in this document.
7. After the EEG or EEG/MRI exam is completed, the EEG net will be removed by a researcher wearing full PPE (duration ~1 minute).
8. Post-session close-out. The EEG Net will be disinfected after every session via a 10-minute soak in Control Type-III cleaning solution which is EPA approved for COVID-19 disinfection. The solution's strength is checked frequently using manufacturer-provided color strips. The EEG net will be rinsed with warm water 5 times, followed by soaking in a Type-III disinfectant solution for 10 minutes. It is then rinsed again with warm water 5 times and left to air dry in a clean dedicated place accessed only by essential researchers performing the experiments.

Slideshow of the SOP

A [slideshow](#) demonstrating the main steps to scan an external subject with 2 researchers is also available on the CNI Getting Started page.

Protocols for when two research groups are working at CNI

It will be possible for two research groups to be working at CNI, where one group is working in the mock scanner and another group is working at the MRI scanner following the guidelines below.

1. Upon arrival to CNI researchers will proceed to each of the areas they will use for their subject and follow the cleaning procedures outlined in the sections below for each station minimizing time spent in the CNI waiting area and hallways.
2. **Social Distancing:** As much as possible researchers will practice social distancing, maintaining 6 feet of separation between each other and research subjects and also when passing each other in the CNI hallways and waiting area.
3. If there are more than 3 people in the CNI waiting area and hallway, the later arriving group should proceed to leave and wait outside CNI until the earlier arriving has moved to their planned experimental area.

Requesting assistance for MRI scanner issues

If there are MRI scanner issues or equipment issues during a scan session, researchers should first call CNI staff by using the phone next to the GE scanner console. CNI staff can remotely view and control the MRI scanner so it will be possible to solve many problems without users being exposed to CNI staff and vice versa.

Estimated PPE Requirements

Monthly PPE Estimate		
Estimated Scans / Day		
Number of Scans / Weekday	8	
Number of Scans / Weekend	5	
Total Number of Scans/Week	50	
Supplies Needed Per Scan		
Item	Description	Amount
Masks	1 per person (2 RAs, 1 Subject)	3
Gloves	4 pair/RA, 1 pair/subject	9
Hand Sanitizer	5ml/pump - 10 pumps / scan visit	50
Super Sani-Cloths	2/console area, 2/bore, 1/squeeze ball,etc, 1/head coil, 1/cushions, 1/hard surfaces, 1/chairs, 1/door handles, 3/changing area	13
Supply Packages Needed / Month		
Masks	50 masks/box	13
Gloves-Small	50 pair/box	8
Gloves-Medium	50 pair/box	16
Gloves-Large	50 pair/box	16
Hand Sanitizer	700 ml/bottle	16
Super Sani-Cloth	80 wipes/package	70