CCN Operations Manual

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Update Log

| Last Updated By:	Date:
Jared Gilbert	Nov. 2019
Jared Gilbert	Nov. 2020
Jared Gilbert	Oct. 2021
Jared Gilbert & Melodie Yen	Aug. 2022

Quality Assurance (QA) Testing

Overview: QA should be run every morning before data collection.

Procedure:
1. Place phantom into holder, and slide into head coil

2. Align phantom to markers on coil using laser tool
3. Move bed into isocenter
4. At the console, select **Options ➤ Service ➤ Local Service**
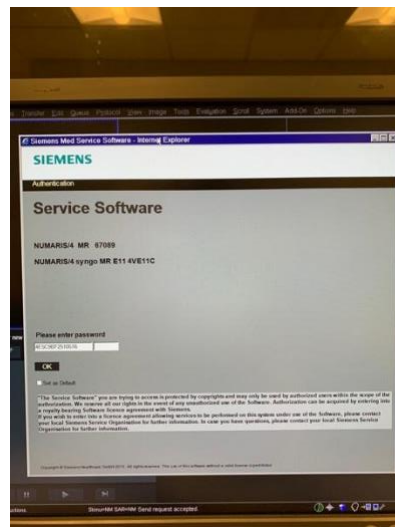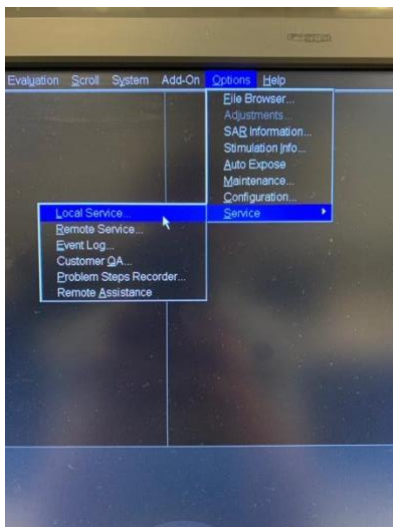
5. Input service key (printed label on monitor stand), press **OK**
6. Choose the **Quality Assurance** option
7. Under "WorkFlow", open up the *Quality Assurance Expert* list by selecting the icon to the left
8. Click on *Long Term Stability Check*, a menu of parameter should appear
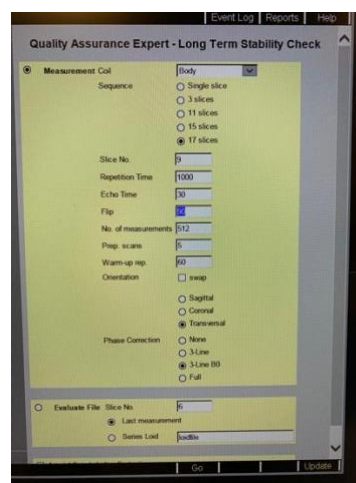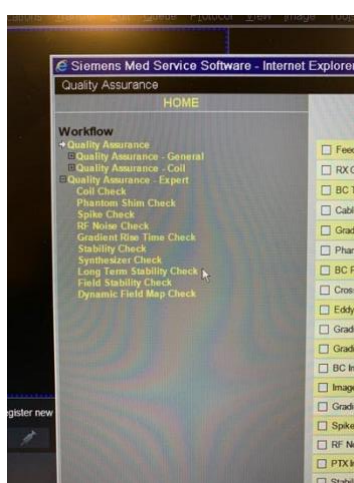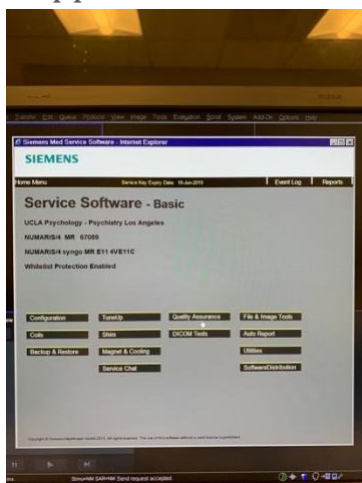
9. Change "Flip Angle" to 45, click **Go** at bottom of screen
10. Workflow will take ~15 minutes to complete
11. Once done, a results page will pop-up on the console screen
    i. If successful, you are free to continue with scan setup
    ii. If not successful, make sure phantom is pushed all the way back in the head coil, realign, and run QA a second time

Activating Advanced User

Overview: Advanced User grants access to various tools on the MR system, such as twix (raw data) and terminal. When the system reboots, default status is logged out of Advanced User.

Procedure:
1. Click CTRL+ESC on keyboard, Windows OS menu will appear
2. Select the *Advanced User* option
3. Enter password (if unknown, please contact MR Tech)

NOTE: IF YOU ENTER PASSWORD INCORRECTLY TWICE, STOP AND CALL MR TECH. ENTERING A WRONG PASSWORD THREE TIMES IN A ROW WILL LEAD TO AUTO DELETION OF ALL DATA, SYSTEM, CONFIGURATION, AND SEQUENCE FILES.

Standard Shutdown Procedure

Overview: Standard shutdown should be initiated if system errors occur, and reboot is determined to be the best course of action.

Procedure:
1. Make sure the participant is closed, and the scanner bed is in the HOME position
2. On the console, navigate to the menu bar at the top of the screen and select **System ➤ End Session**
3. A pop up will appear with a few options, click *Shutdown System*
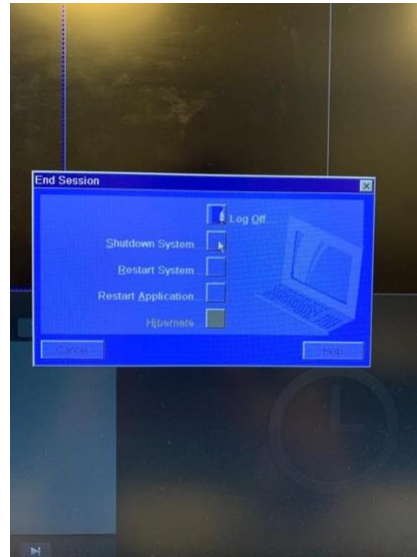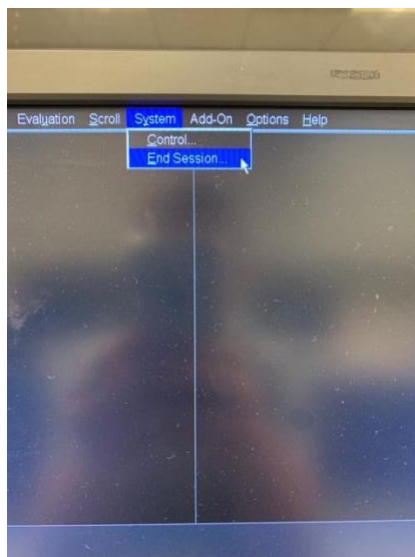
4. It will ask you if you're sure, select *Yes*
5. Red lights will begin to flash on the intercom and the console will change to a blue countdown screen
    a. This process normally takes between 10 – 15 minutes

6. Once the system has shutdown successfully, a message will appear on the console that reads: "It is now safe to turn off your computer"
7. On the alarm box to the right of the window, press the *System Off* button (circle with dot above it)

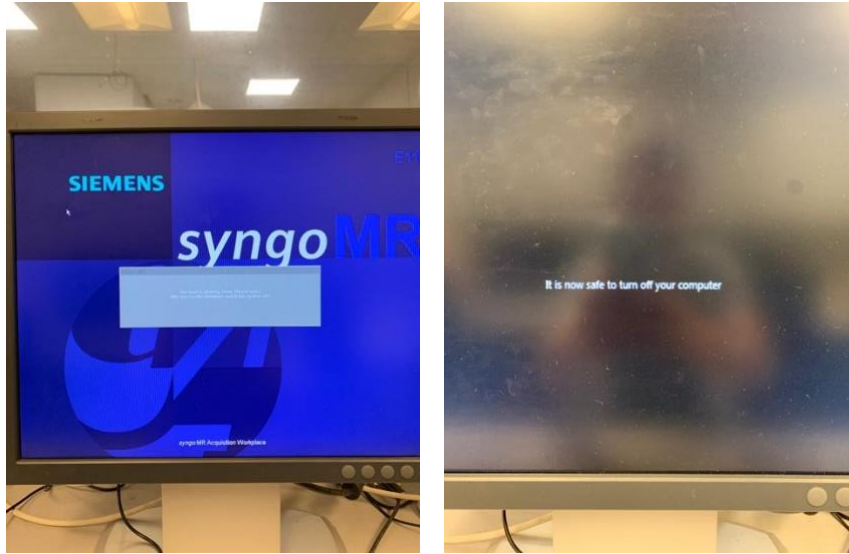8. Shutdown procedure is now complete

Standard Boot Up Procedure

Overview: Standard shutdown should be initiated if system errors occur, and reboot is determined to be the best course of action.

Procedure:
1. System should be completely off, with no text on the console
2. On the alarm box to the right of the window, press the *System On* button (circle with dot inside it)

3. The console screen and screen on top of the scanner will turn on
4. You will see some typical Windows OS boot up screens on the console
5. The count up process will then initiate
   a. This process normally takes 10 – 15 minutes

6. The normal console screen will appear, but the system is **NOT** ready to use
7. Wait for three loud knocks on the intercom (turn sound on) and red line to **disappear** from the wave-form icon

8. Bootup procedure is now complete
   a. Once the system has booted successfully, it is recommended to run the QA

Hard Reboot

Overview: Hard shutdown should be done as a last resort.

Problem: Console computer not responding, unable to select any menu options.

Procedure:
1. If not done so already, remove participant from scanner
2. Make sure the scanner bed is in the HOME position (all the way out and all the way up)
3. On the alarm box, press *System Off*

4. After waiting a few minutes, press *System On*, and wait for system to go through boot up procedure

5. If system boots up properly without error (3 knocks, no lines across waveform icon), scanning may resume

NOTE: Sometimes Hard Shutdown causes errors when booting up due to improper shutdown procedure. If this is the case, performing a Standard Shutdown afterwards will usually reset the system. This may take an additional ~20 minutes.
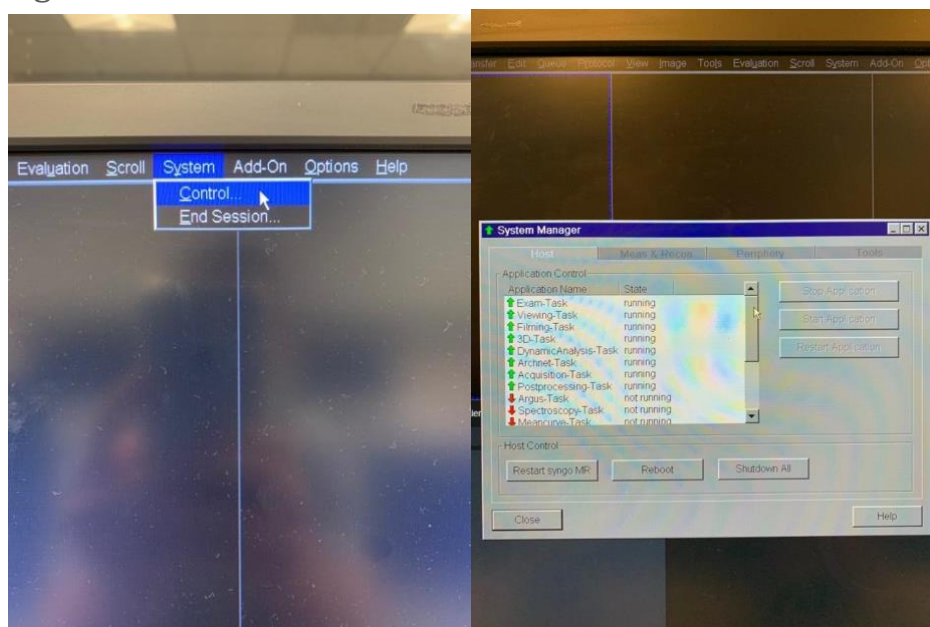
Syngo MR Restart

Overview: Syngo MR is the software application used to implement scanner operation interface.
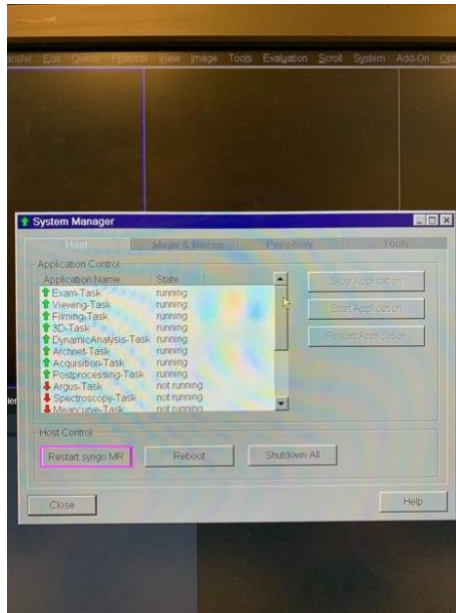
Problem: Syngo software is not responding, but the scanner hardware is operating normally.

Procedure:
1. Make sure the participant is closed, and the scanner bed is in the HOME position (all the way out and all the way up)
2. Navigate to **System ➤ Control**, a pop up should appear labeled "System Manager"

3. In the "System Manager" window, navigate to "Host" if not already opened to the "Host" tab
4. Select *Restart Syngo MR*

5. Console (i.e. Syngo software) will undergo restart, scanner LED should remain on
6. Scanning can commence once default Syngo screen reappears

MR Scanner Reboot

Overview: Scanner equipment and hardware can be controlled independently of the console computer.

Problem: Scanner hardware not responding; error messages indicating scanner reboot necessary.

Procedure:

1. Make sure the participant is closed, and the scanner bed is in the HOME position (all the way out and all the way up)
2. Navigate to **System ➤ Control**, a pop up should appear labeled "System Manager"
3. In the "System Manager" window, navigate to "Host" if not already opened to the "Host" tab
4. Select *Reboot*
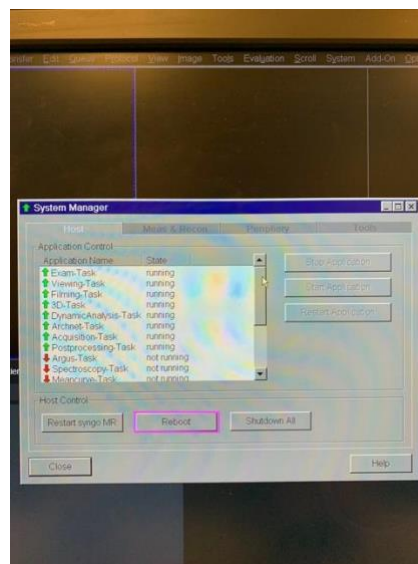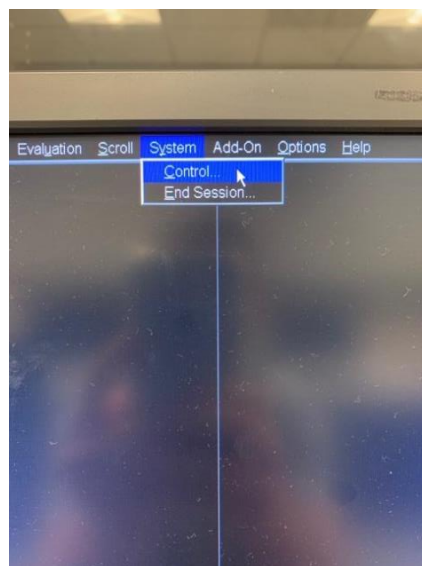
5. Scanner will go through full hardware reboot, console computer should stay on throughout
6. Scanning can commence once three loud knocks are heard over the intercom (turn sound on) and red line disappears from the wave-form icon

MR Exam Tab Restart

Overview: When too many processes on the console are running simultaneously, the Exam Tab may disappear or become unresponsive.

Procedure:
1. Navigate to **System ➤ Control**, a pop up should appear labeled "System Manager"
2. Under "Application Control" on the "Host" tab, there will be various applications set to "running" (green up arrows) or "not running" (red down arrows)
3. If not responding, *Exam-Task* will be "not running"
4. Select *Exam-Task* and click *Restart Application*
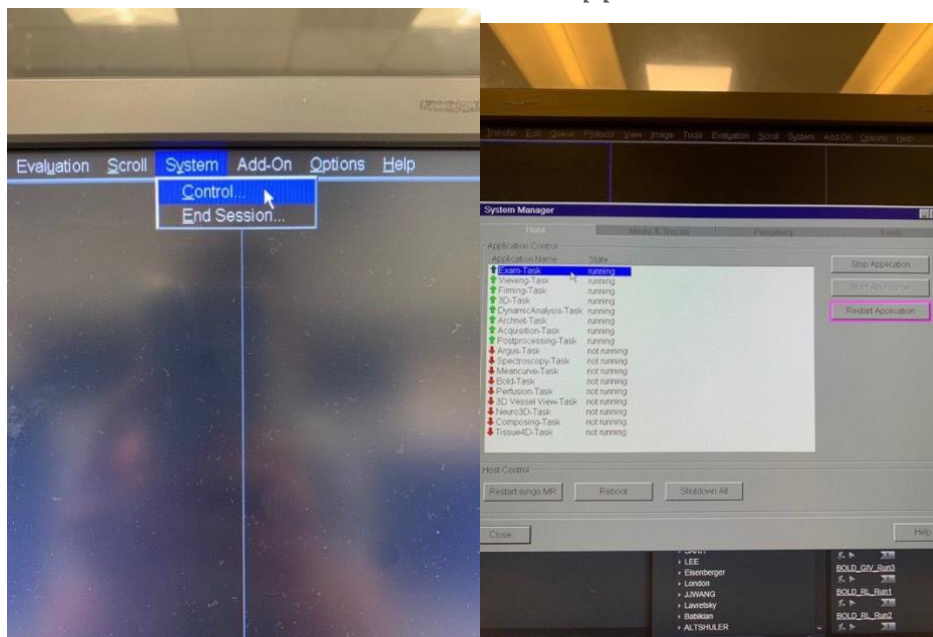
5. After a few minutes, *Exam-Task* should change to "running" and have a green arrow next to its name

Saving Log Files

**Overview:** Log files can be saved in order to record system or software errors.

Problem: Scanner errors occurring (either hardware or software), and the system suggests saving log files before restarting the system.

Procedure:
1. Navigate to **System ➤ Control**, a pop up should appear labeled "System Manager"
2. Select the *Tools* tab and click *Save System Log-Files*
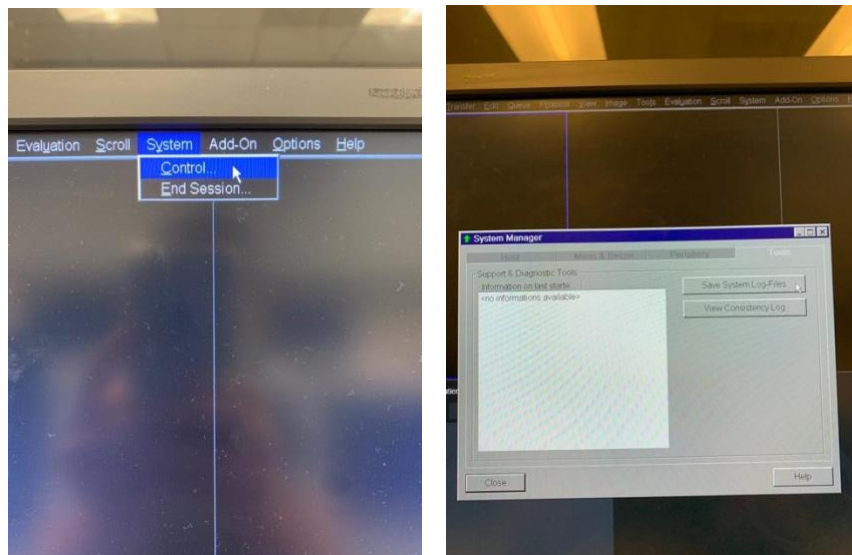
3. A red terminal window will appear, don't panic this is normal, do not close this window
4. A pop-up will appear titled "Save Log" asking for information regarding the user, date, time, error and any workaround
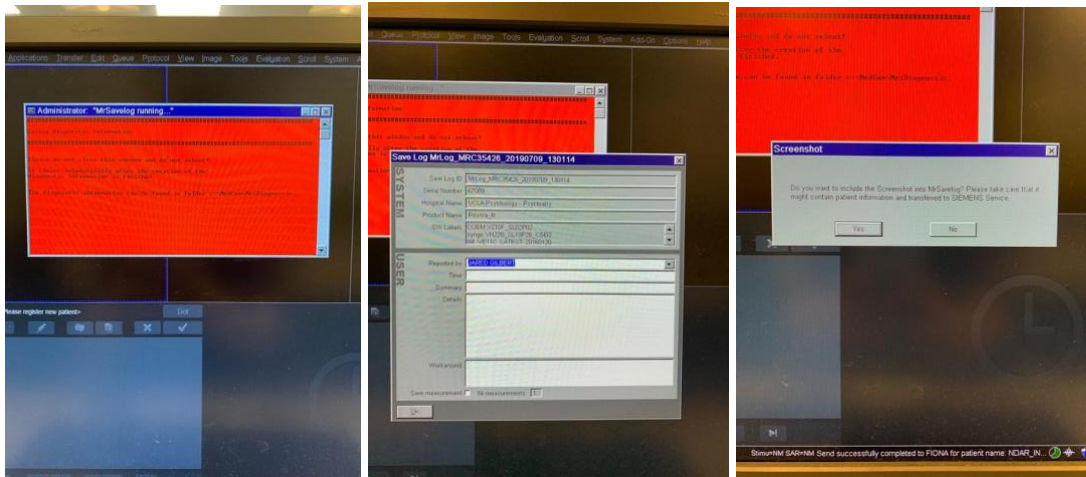
5. After inputting information, click *OK*, and it will ask if a screen shot should be added to the logs, this depends on whether error occurred manifested as something visible on the console screen
   a. Click *yes* or *no* and then no other user input is necessary
6. Log file production will begin automatically, and the red terminal window will disappear once process has finished
7. Notify CCN technician that log files were saved and they will send them to the appropriate Siemens personnel

Incidental Findings & Clinical Protocol

Overview: Incidental findings are brain abnormalities and possible pathologies. CCN has a process in place in order to have participant images reviewed by a radiologist. Participants SHOULD NOT be informed of such anomaly until after review.
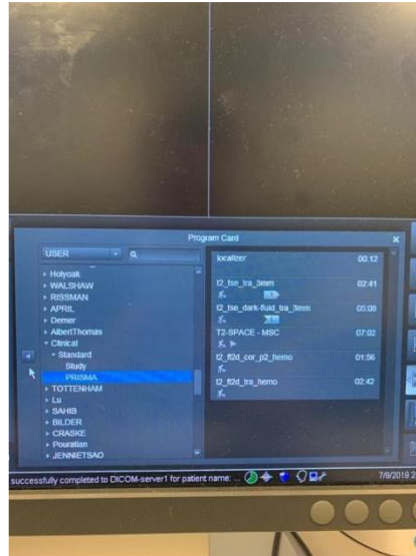
Problem: User suspects participant may have brain anomaly; clinical scan protocol should be added to queue. Feel free to contact CCN technician with questions regarding clinical scan application.

Procedure:

1. Navigate to the clinical protocol in the program card
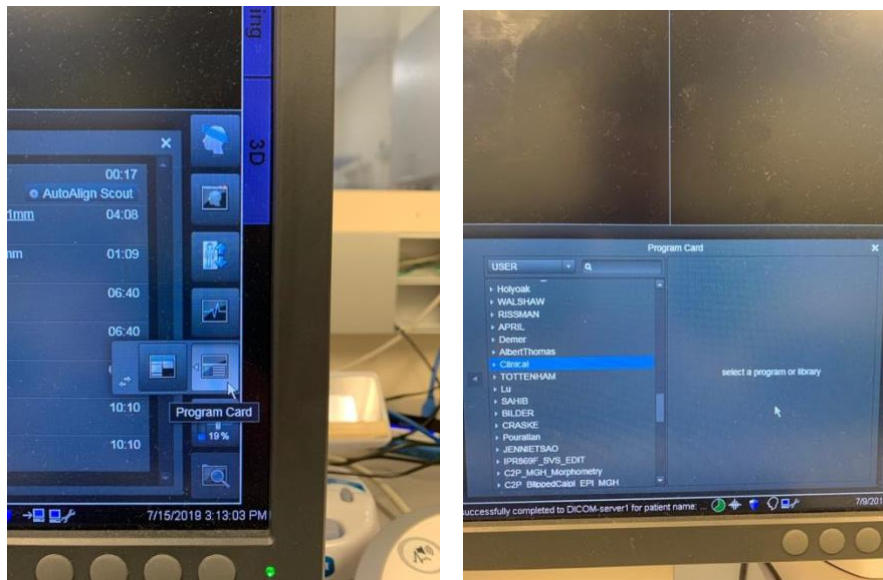
2. Click on the down arrow and select *Prisma*

3. Click on the left facing arrow ⬅ on the left side of the program card; the entire protocol will be added to the queue
    i. If you are adding this to the end of your normal research protocol, localizer can be deleted
    ii. If you do not have time to run all 5 clinical sequences (ignoring the localizer), prioritize the first 3 scans (both t2_tse and the T2-SPACE)
4. Once the scans have finished, email CCN technician with project title, PI, subject ID, age and sex of the participant
5. Technician will download data, and send relevant clinical images to Dr. Susan Bookheimer

NOTE: The Staglin Center is a research facility, and we are not obligated to perform clinical review, but we do our best to identify abnormalities.
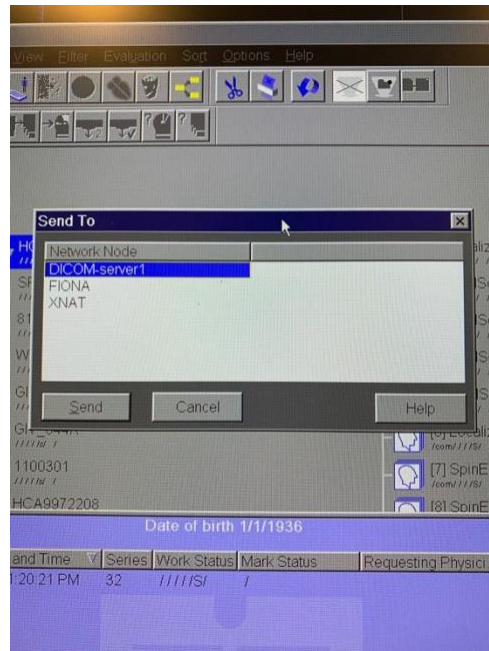
Sending Data to Servers

Overview: Re-send data to the DICOM server, or any external server.

Procedure:
1. Navigate to **Patient ➤ Browser**, patient browser should appear
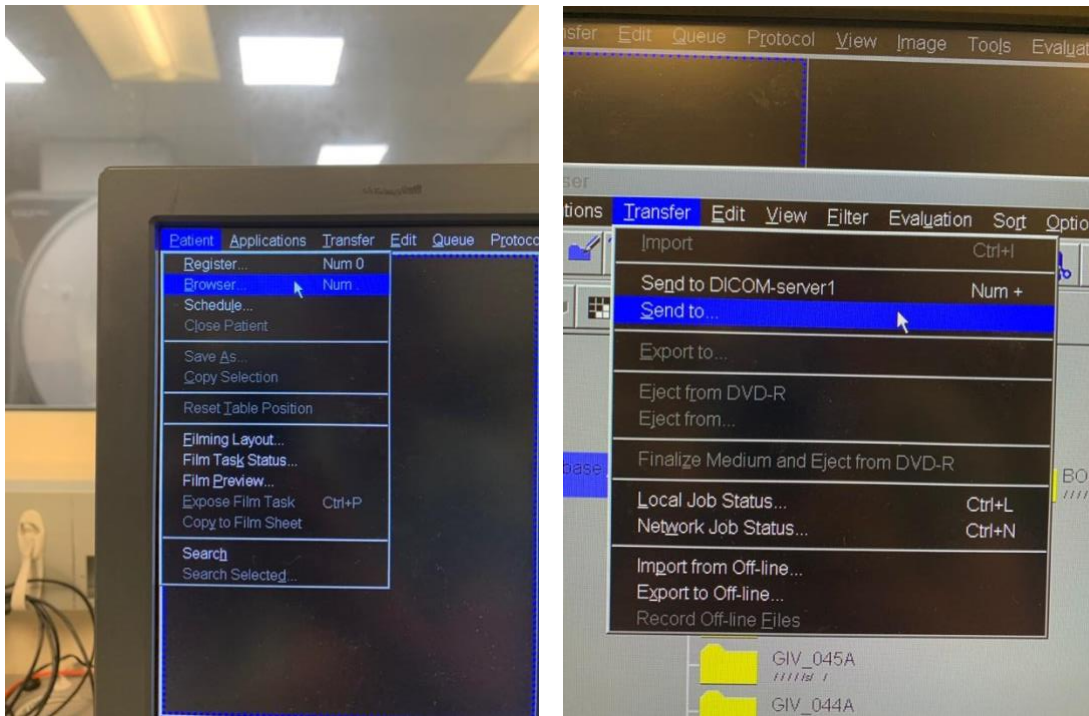
2. Select the patient folder, subfolder, or individual sequence data
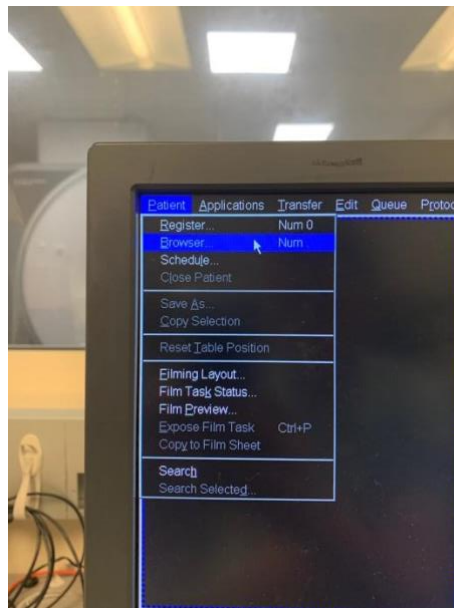3. Click on **Transfer ➤ Send to**, a window should appear with three server locations

a. **NOTE:** If you would like to merely re-send data to the DICOM server, there is an option to do so under the **Transfer ➤ Send to DICOM-server 1**

Burning DVD

Overview: If the subject would like a copy of their anatomical data, or a physical copy of data is needed, DVDs can be burned. DVDs can be found to the right of the console area, and DVD covers can be found in the Office Supplies cabinet next to the Linens cabinet.
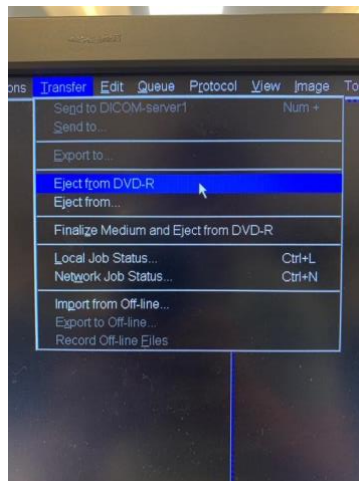
Procedure:
1. Press the eject button for the bottom CD drive

2. Insert your DVD and press button again
3. Navigate to **Patient ➤ Browser**, patient browser should appear
4. Select the patient folder, subfolder, or individual sequence data
5. Click on **Transfer ➤ Export to**, a window should appear with a DVD option, select and press "OK"
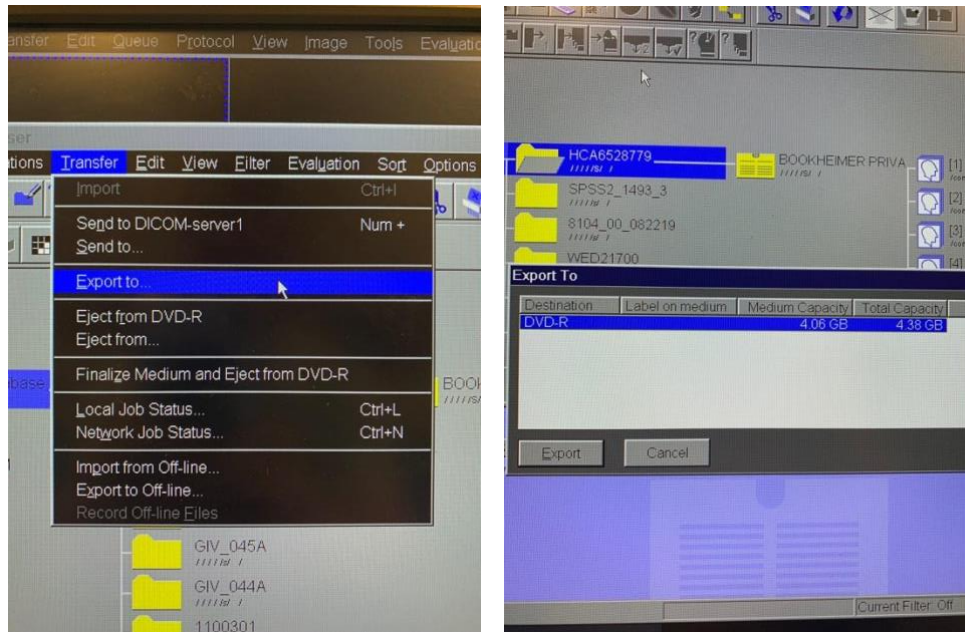
6. DVD icons should appear at the bottom of the console, and once burning is complete they should disappear
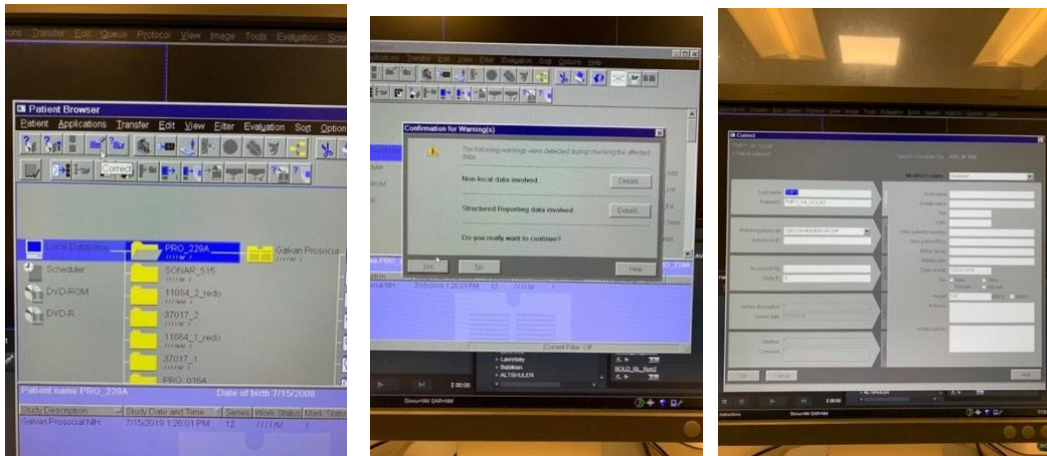
7. Navigate to **Transfer ➤ Eject from DVD-R**

Editing Subject Info on Console

Overview: If the Subject ID or Referring Physician are input incorrectly, users can correct such information and resend to the DICOM server.

Procedure:
1. Navigate to **Patient ➤ Browser**, patient browser should appear
2. Select the "Correct" button, and a *Warning* window should appear

3. Select "Yes" and a Correct options window will pop up
4. Make necessary changes and select "OK", resend to DICOM server (see instructions above)

Keypad Failures

Overview: CCN has two keypads used to limit access. The first is located on the door to the suite, C7-439. The second is located on the door to the control room and subsequently the MR room. At times the keypad may fail to work, either due to battery or bad connection. Follow below instructions

Procedure: CCN Suite Keypad Unresponsive
1. If walking towards the exit on C-floor, there is a trashcan on the right, just past the drinking fountain
2. Behind this trashcan there is an off-white Kiddie-brand lockbox
3. Enter code (16093) and press down on black tab at top of lockbox, key should be attached to clip inside
4. Use key to enter suite
5. Place back after use

Procedure: CCN Control Room Keypad Unresponsive
1. There is a spare key located in the drawer next to the sink beneath the drawer labeled "Test Magnet"
2. Inside that drawer there is a key labeled "MR"
3. MAKE SURE YOU LEAVE THE KEY OUTSIDE THE CONTROL ROOM AT ALL TIMES
   a. Open the door, use the door stop and place key back in drawer