

NIH SIREN
Emergency
Trials
Network



MOBERG DEVICE PROCEDURES

PRECision Care In Cardiac arrest - ICECAP Ancillary

Supported by: The National Institute of Neurological Disorders and Stroke (NINDS)

Purpose of this Document

This document contains general instructions on how to operate the Moberg CNS Monitor and its accessories in the context of data collection for the PRECICECAP study (ICECAP ancillary).

Note: These instructions are not meant to replace complete familiarity with the User Manual prior to operating the Moberg CNS Monitor.

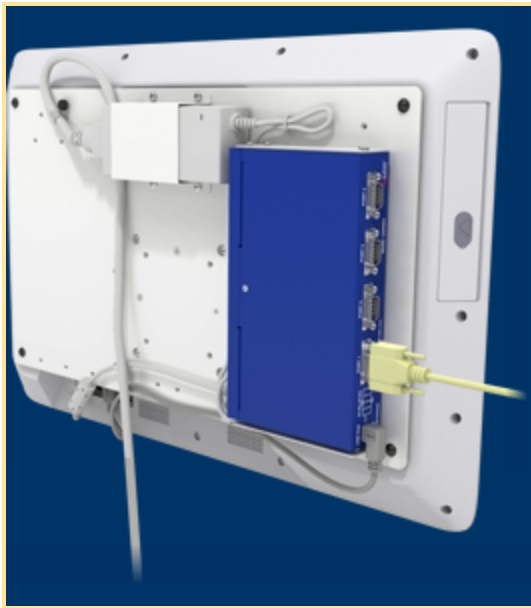
I. MONITORING A NEW PATIENT

Connecting Patient Monitor to Moberg

Ensure that the cable connecting the CNS Monitor to the patient monitor is plugged in on both ends.

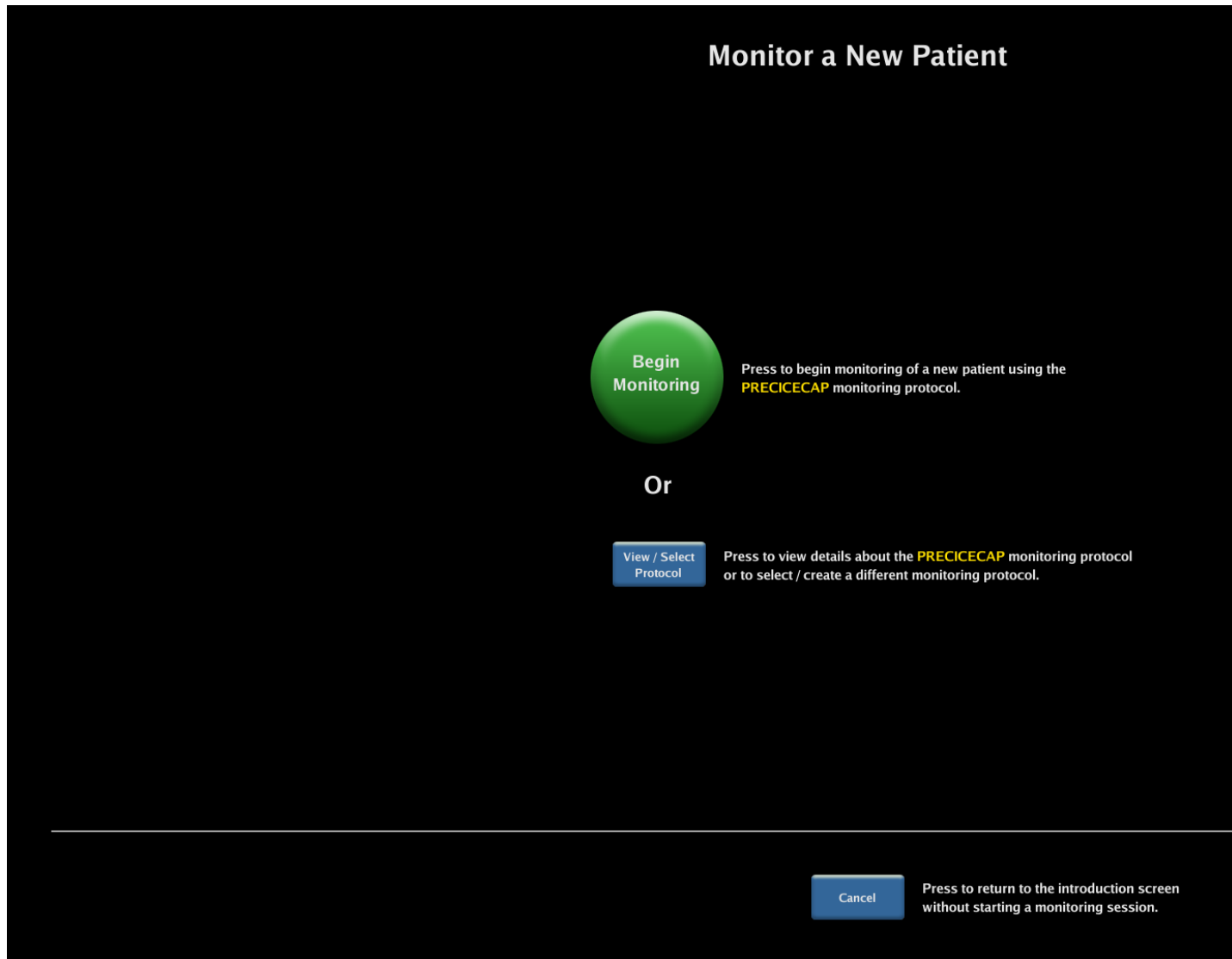
For Philips IntelliVue: Locate the Serial/MIB board on your IntelliVue monitor: it contains two RJ45 “Ethernet” type ports. Connect the RJ45 “Ethernet” end of the cable to the selected port and connect the serial end of the cable to any available serial port labeled 1 through 4 on the Serial Input Expander mounted to the back of the CNS Monitor.

For GE CARESCAPE: Connect the USB Device Adapter labeled “GE CARESCAPE” into one of the USB connectors of the CARESCAPE monitor. If not attached already, connect one end of the data cable into the 9-pin end of the USB Device Adapter, labeled “CNS -SERIAL CABLE”. Connect the other end of the data cable to any available serial port labeled 1 through 4 on the Serial Input Expander mounted to the back of the CNS Monitor.



Beginning the Patient Monitoring Session

Begin Monitoring: To begin monitoring a new patient select “new patient”, press the green “*Begin Monitoring*” icon. (Confirm that to the right of the green button that the “PRECICECAP” protocol is the one that is selected in yellow). (To view details about the protocol or to select a different protocol, press *View/Select Protocol*.)

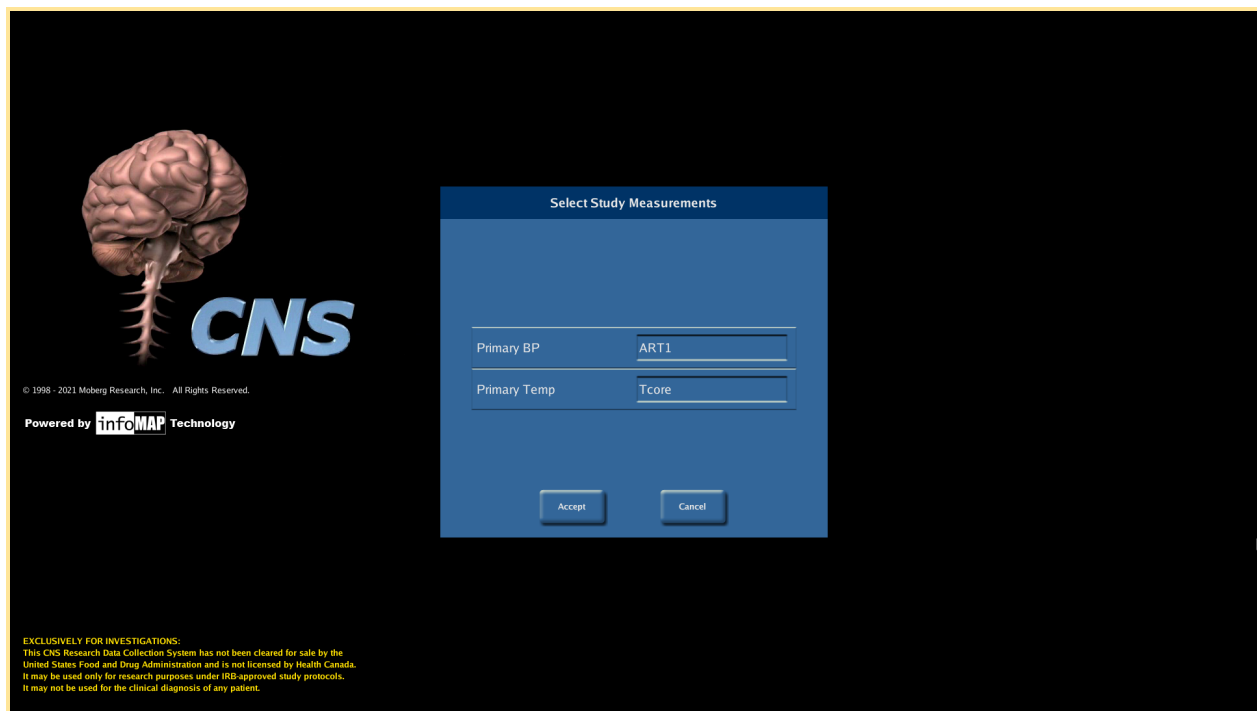


Once the desired protocol is selected, press *Confirm* to return to the previous screen and *Begin Monitoring*.

Note: A “Monitoring Protocol” is the set of devices, measurement, displays, etc. used for a monitoring session. Users are encouraged to customize the protocol to include any additional measurements collected from the devices connected to the CNS Monitor. For details on how to create or edit a monitoring protocol refer to the [“editing protocols on the CNS monitor”](#).

Study Measurements: Confirm that the selected labels/sources for blood pressure and temperature are correct : PrimaryBP, and Primary Temp. Press *Accept*.

Note: In case your site has more than one patient monitor, the Study Measurement dialog will also ask to confirm that the correct patient monitor is selected.



Start EEG Monitoring

Connect the data cable to the EEG Amplifier connector. Connect the other end of the data cable into any of the four USB ports that are free at the bottom of the rear panel.



Indicate whether you will be starting EEG data collection by pressing *Start Now* or *Start Later*.

Start Now opens the *EEG Config* dialog to guide the user through EEG configuration step by step. *Start Later* skips the *EEG Config* dialog and continues through the patient setup steps described below. EEG data collection can be enabled at any time by pressing the *EEG Config* button in the bottom left system buttons.

Note: impedance checking on the Moberg should be set to occur hourly. For details on how to set impedance checking to hourly intervals can be found [here](#).

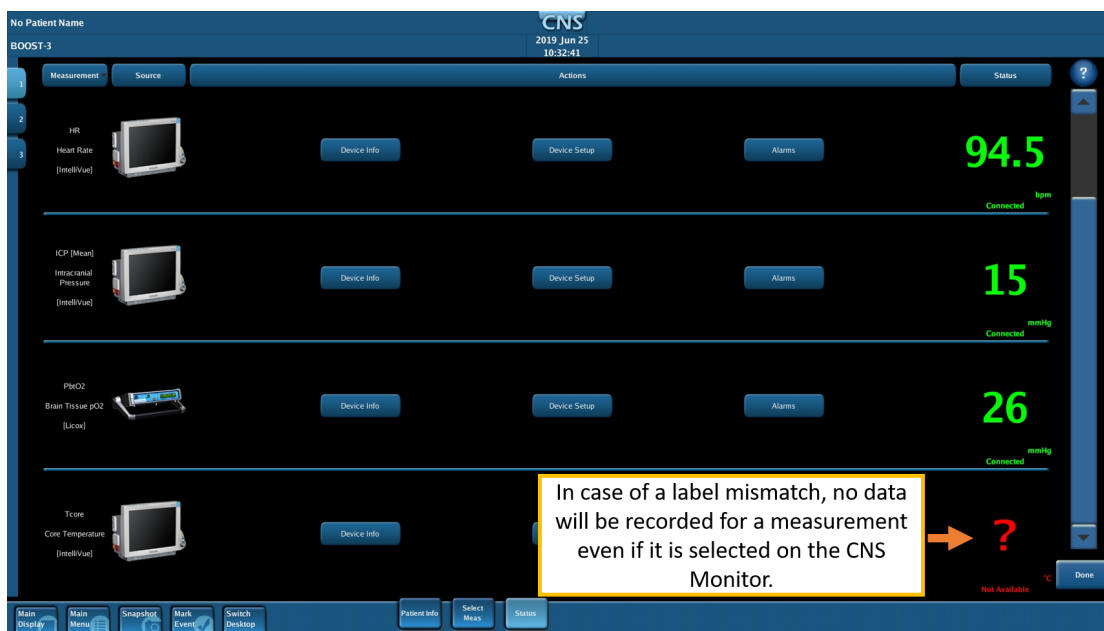
II. SETUP STEPS

Patient Info: Enter the ICECAP *Subject ID* and *Site ID* provided by WebDCU at the time of randomization, so that they will be included in the stored data. Press *Done* to advance to the next screen.

Select Measurements: Verify that ECG, RR, and SpO2 are being recorded (adjust as needed). The measurements associated with the Study Blood Pressure and Study Temperature chosen at the beginning of the monitoring session will be automatically pre-selected.).

Status: View the status of each measurement being recorded. Use the *Actions* buttons to view device information, instructions for connecting devices, instructions for patient setup, and also to configure settings and alarms. The right-hand column of the Status Bar indicates if the CNS Monitor is receiving data from the intended device. Once setup is complete and signal connection is verified, press *Done* to begin data collection.

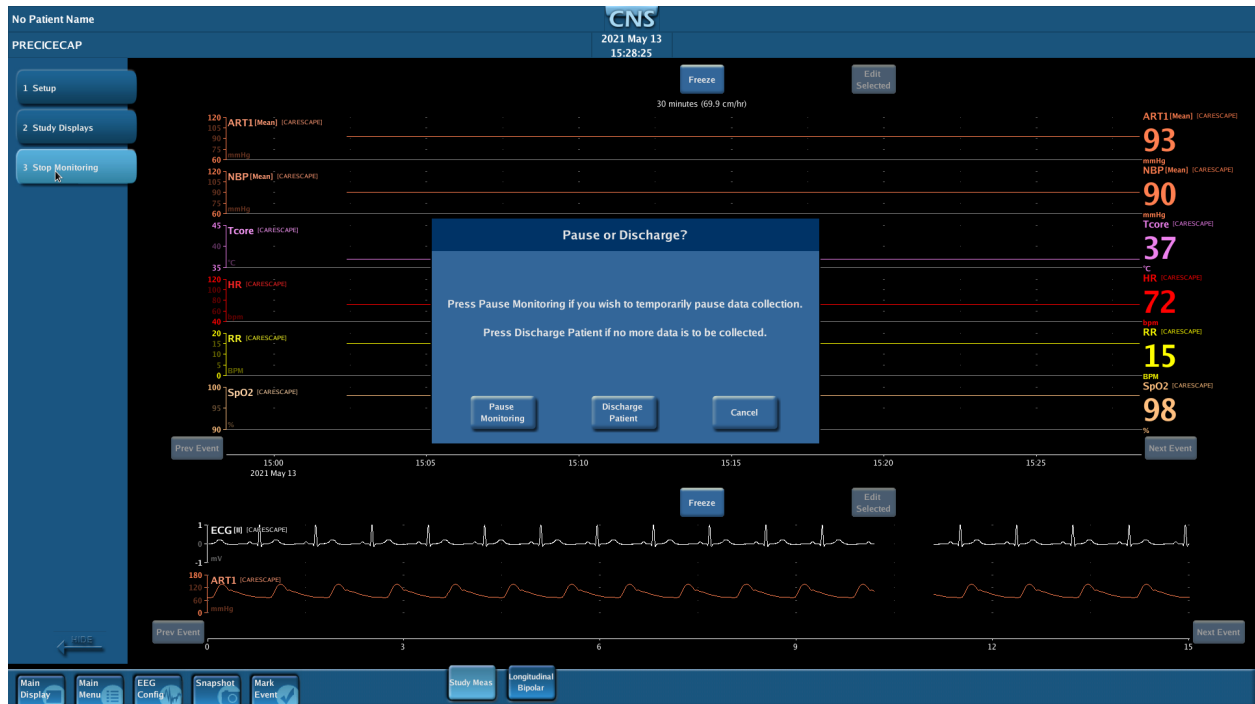
Note: In order for a measurement to be recorded by the CNS Monitor, the measurement needs to be identified using the same label that appears on the external monitoring device. For example, if the temperature measurement on the vital signs monitor is labeled 'Temp' but the temperature measurement selected on the CNS Monitor is 'Tcore', no temperature information will be recorded and a red question mark will appear next to the measurement in the *Status* tab, as seen in the screenshot below.



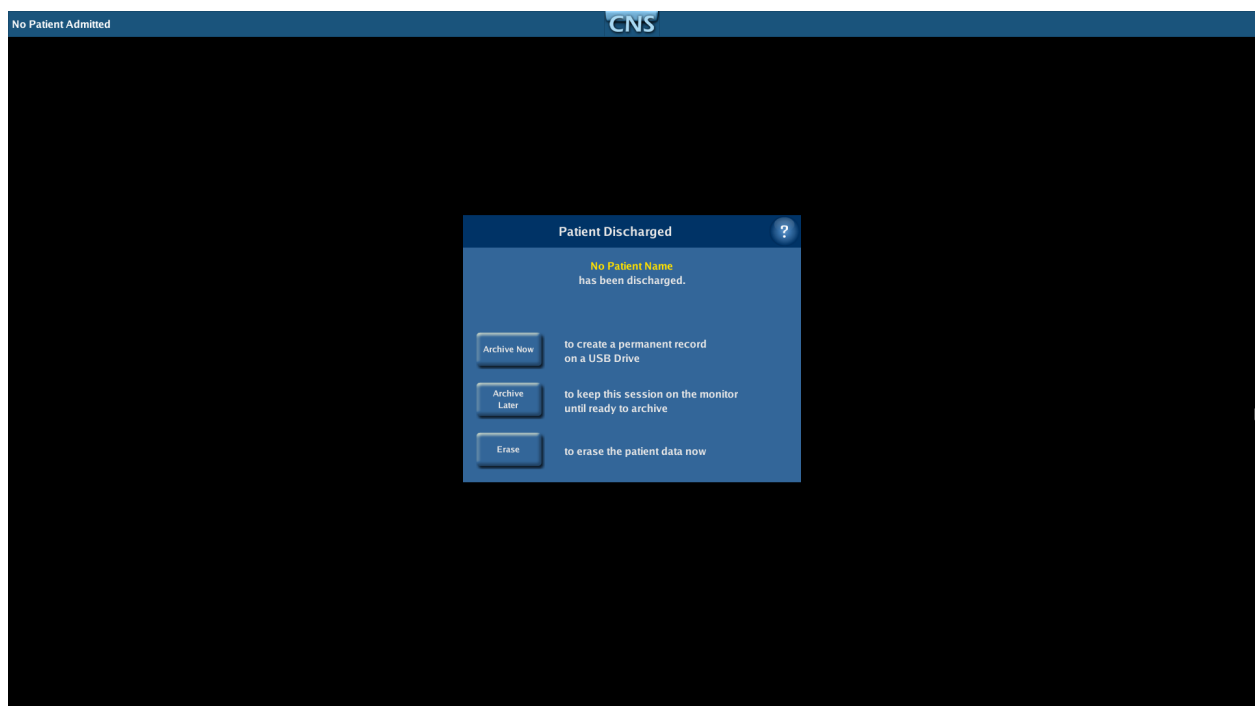
III. PAUSE OR END A MONITORING SESSION

Pause Monitoring: When in need of temporarily pausing data collection for a monitoring session, press *Stop Monitoring* on the Protocol Step Bar of the CNS Monitor (top left of the screen). To temporarily pause, press *Pause Monitoring*. A yellow message in the Alert area (top right of the screen) will alert the user that the data collection is currently paused. A dialog will also appear instructing the user to press *Resume Monitoring* (on the dialog itself or on the Protocol Step Bar of the CNS Monitor) when ready to continue the data collection.

Stop Monitoring: When ready to end the monitoring session, press *Stop Monitoring* on the Protocol Step Bar of the CNS Monitor (top left of the screen). To end monitoring and discharge the patient, press *Discharge Patient*. A dialog will prompt the user to confirm the intent to discharge the patient. Once confirmed, the monitor will address any changes made to the monitoring protocol (including changes to display screens, etc.). If changes were made, a dialog box will ask how to handle those changes.



Archiving Patient Data: Upon discharging the patient, the CNS Monitor offers options for managing the collected patient data. To create a permanent record of patient data on external media, press *Archive Now*. To keep the session on the monitor until you are ready to archive, press *Archive Later*.



- Archive Now: Pressing *Archive Now* gives the user the option to archive collected data to an external USB drive. The user will be instructed to insert the USB drive. Once the USB drive has been verified, archiving will begin and a moving status bar will indicate the progress of archiving. A dialog box will appear once archiving is complete.
- Archive Later: Pressing *Archive Later* saves the patient file on the CNS Monitor for review or archiving at a later time. Saved files can be found by pressing *Manage Data Files* on the CNS opening/start-up screen. Selecting the desired patient provides information about the file and allows the user to *Review*, *Archive*, or *Erase* data.

Note: It is recommended to password protect the *Erase* option to avoid accidental deletion by non-study personnel. Password protection settings can be changed when in the opening/start-up screen by pressing *System Configuration* and then selecting *System Administration*. Enter the administrator password (default: *moberg*) and press *Password Setup* to select the desired level of protection.

Moberg Set-Up

Moberg External Device/Cable Set-Up Overview

Position the Monitor and Connect Devices: Position the monitor to the side of the bed, near the head of the patient so the monitor can be viewed when setting up the patient and it is accessible for nursing staff to acknowledge episode and document interventions. Use the cables supplied by Moberg to connect interfaced external devices to the USB or Serial Port connectors on the back or underside of the CNS Monitor. All device interface cables supplied by Moberg are labeled to indicate the appropriate compatible device.

Note: Digital port connectors should be plugged into any free USB port on the bottom of the CNS Monitor panel. If all four ports are taken, then the USB ports behind a small door on the right side of the monitor can be used. Serial device interface cables can be plugged into any free serial port labeled 1 through 4 on the back of the monitor. If these are unavailable, then the non-isolated serial port labeled COM on the bottom of the rear panel can be used.

Sites are encouraged, whenever possible, to keep all interface cables connected to the CNS Monitor even when it is not in use, to decrease set-up time and to reduce the likelihood of cable misplacement. The basket provided with the CNS Monitor will also be of help in storing cables between uses.

Power On: Plug the CNS Monitor power cord into the AC wall socket. Turn on power to the CNS Monitor using the power ON/OFF button located on the lower right corner of the display. The ON/OFF button will backlight with a soft green glow to show that the system is turning on. A power-up sequence will initiate.

Opening Screen: Following the power-up sequence, the opening/startup screen appears, offering a variety of options such as initiating a monitoring session or editing system configurations.

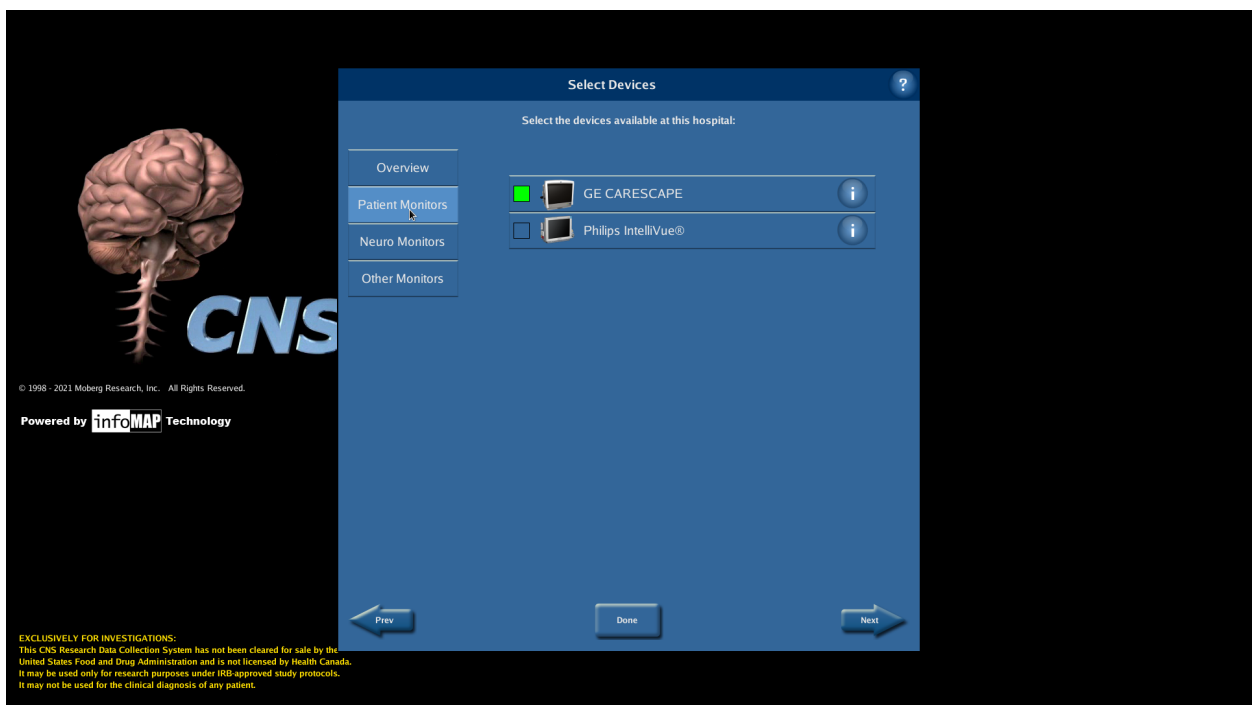
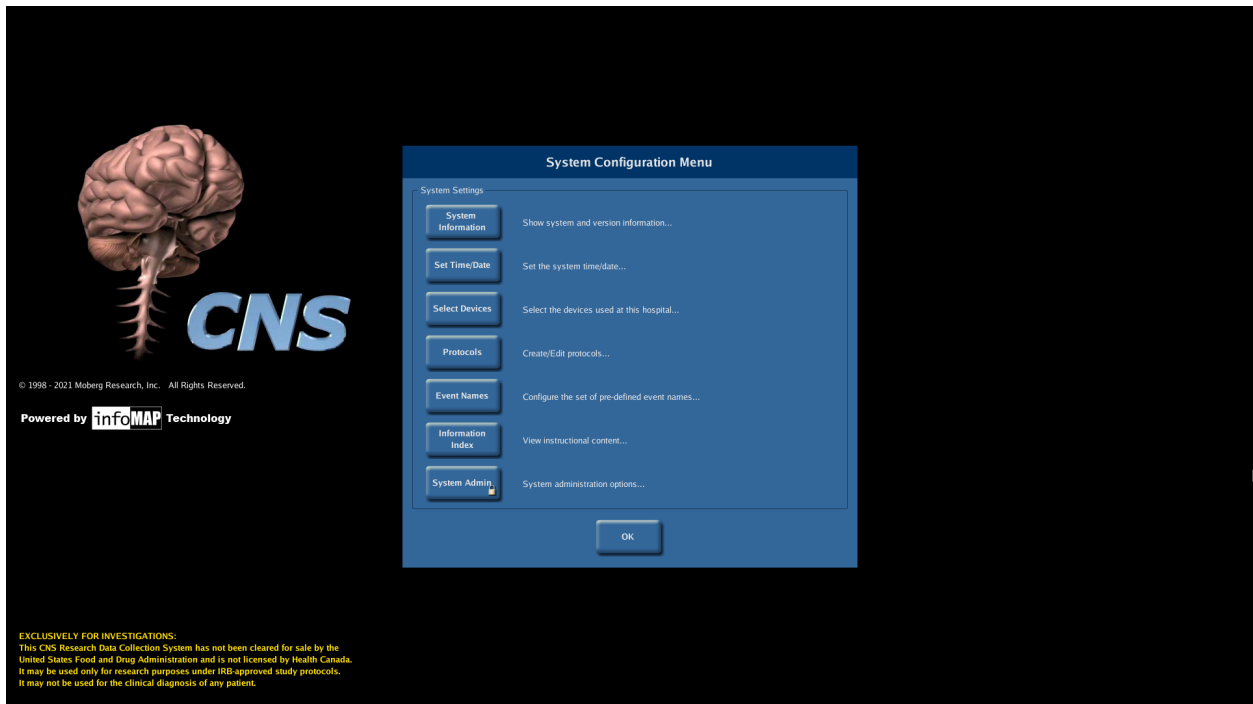
Built-in Information: Pressing *System Configuration* from the opening screen and pressing *Information Index* gives access to the built-in information. Under *Devices*, select the patient monitor of interest (GE CARESCAPE or Philips IntelliVue) and select *Device Setup* for detailed instructions on how to connect your patient monitor to the Moberg device.

Moberg Initial Internal Set-Up Overview

The below are one-time configurations that should be completed at the time of Moberg device set-up.

Set-Up Appropriate Bedside Monitor:

From the opening screen, press **System Configuration**. When in the **System Configuration menu**, press **Select Devices**. In the *Patient Monitor* tab, enable the patient monitor of interest by pressing on the checkbox on the right hand side and turning it green. If both types of patient monitors are present at your site, enable them both. Then press *Done to return to the System Configuration menu* and press *OK to return to the opening screen*.



Set-Up Automatic Recording of EEG:

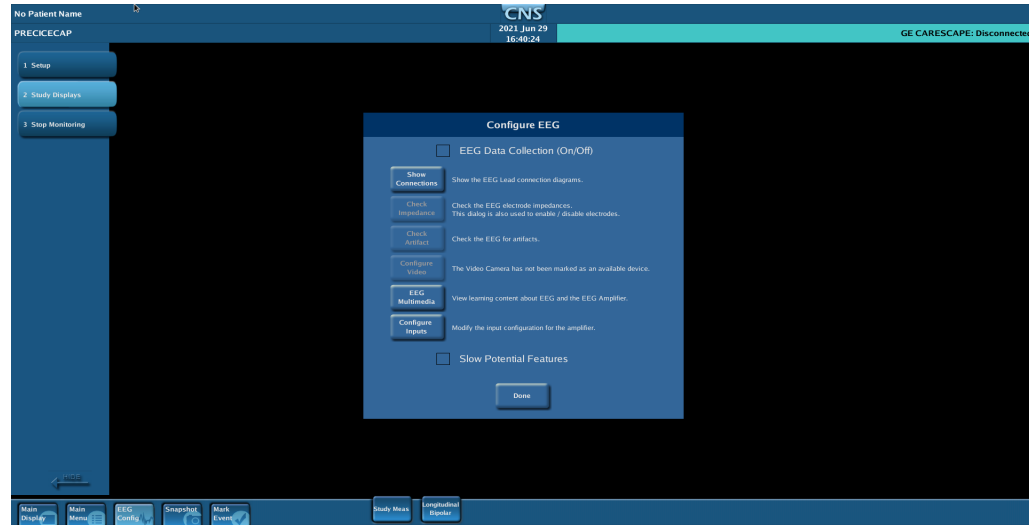
From the opening screen, press **System Configuration --> System Admin**, enter the admin password (default: *moberg*) and press OK.

- Press **Configure Preferences --> EEG Preferences** and for EEG Startup select "Start Automatically".
- Press **Done** to return to the Preferences menu, then press **Done** to return to the System Administration menu, and then press **Exit Menus** to return to the opening screen.

Moberg FAQ

- **What is the best way to disconnect a participant from the Moberg device? (For example: if participant is going to MRI)**
 - **Pause the data collection.**
 - **Disconnect the patient from the bedside monitor.** If you foresee that the patient will be moved to a different bed (and therefore the Moberg CNS will need to be moved), you will also need to turn off the Moberg CNS. We suggest that the interface cables be left connected to the Moberg, simply because it helps avoid misplacing equipment.
 - **Disconnect the EEG equipment - consult your EEG techs.**
However, we have included some general guidance below:
 - Depending on where the patient is going, you could simply disconnect the amplifier from the CNS and leave the leads connected to the patient and to the amplifier to streamline the reconnection process.
 - If the participant is going to MRI - Generally, disconnecting the leads from the amplifier is the safest option. Depending on the leads used, you may or may not need to remove them from the patient.
- **How do I stop EEG data collection without disrupting the other Moberg CNS data collection?**

- When ready to end the EEG data collection after the first 3 days, press on *EEG Config* (on the bottom left of the CNS Monitor). Press the *EEG Data Collection (On/Off)* checkbox to disable EEG data collection. Press *Done* to return to the data displays (see screenshot below).



- I am getting an error message indicating that I do not have enough space on my drive when I try to download the data for my patient, but I have ensured that there is indeed enough space. What are the next steps?

You can try formatting the USB drive on a Windows computer as follows:

1. Copy anything you need to save currently on the USB drive to your local computer, as this process will delete everything from the USB drive.
2. In Windows Explorer, right-click the USB drive, then select 'Format...'.
 3. In the 'File system' dropdown, select NTFS, leave all other options as they are, and press Start.

When the format finishes, safely eject it from your computer, then try archiving from the CNS Monitor again.