CORE
GIFMI

Author	Stephanie Bogaert - BOS	Version	1	Status	Published
Name	DOC-Quality_check_scan_data			Effective date	19/02/2026

QUALITY CHECK OF SCAN DATA

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1   CHECKING IMAGE QUALITY IN VIEW&GO

The MR scanner uses a dual-monitor setup.
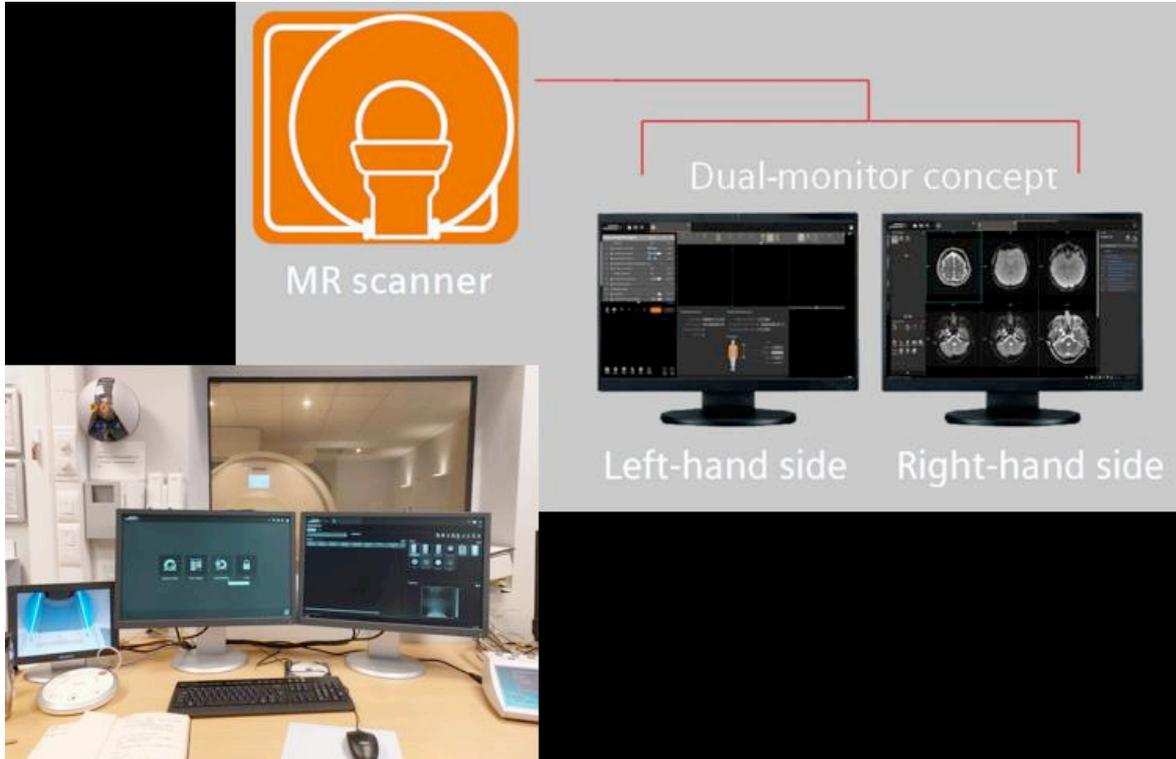
Once the acquisition is completed, the images are automatically transferred to the viewer View&Go, on the right-hand monitor.
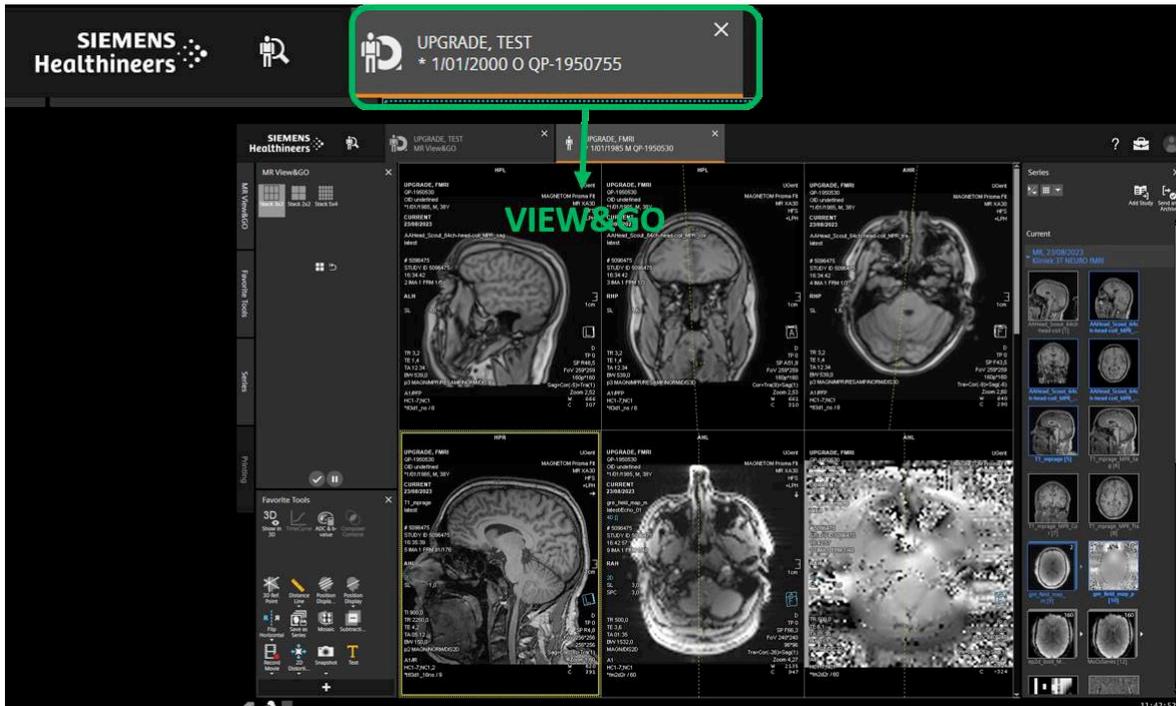
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Using the access bar, you can switch between **View&Go** (for viewing and post-processing) and the **Browser** (the database used for data transfer).

In the **Navigator section** (green box), you can see a list of the acquired series. Series can be displayed either as thumbnails or by sequence name.

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Drag and drop the series you want to review into the viewing area. Use the mouse wheel to scroll through the images and assess their quality.

If the series section is not visible, check the '**Series**' field on the left-hand side (these are not tabs but tools that you can be enabled or disabled by clicking on their respective fields).
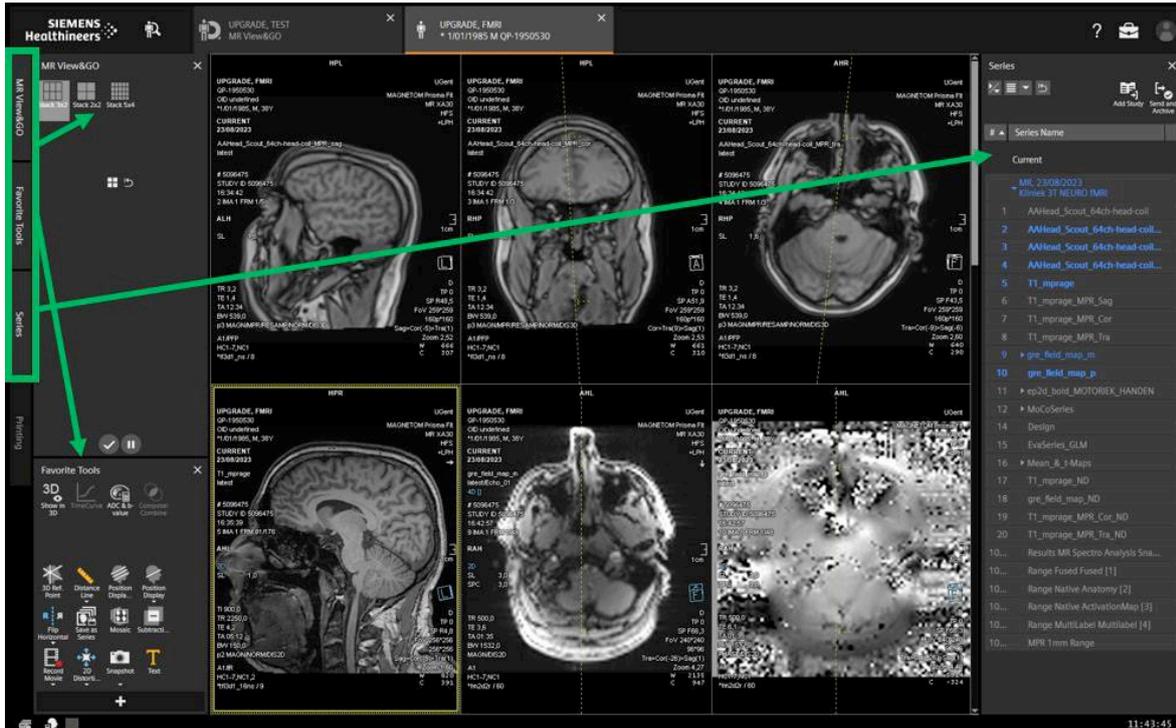
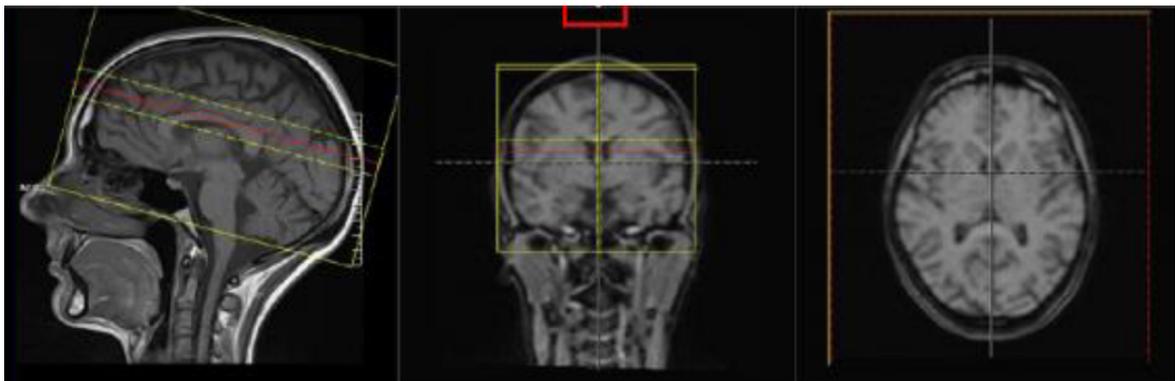Finally, select your preferred layout option for image display.
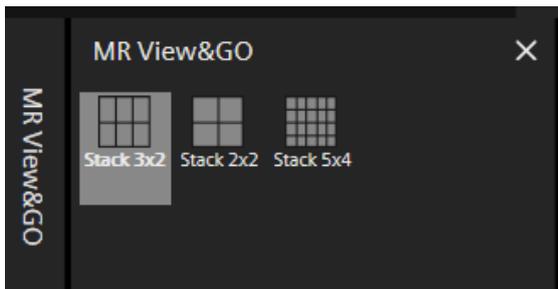
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2   CHECKING THE QUALITY OF THE LOCALIZER

2.1   Confirm good positioning in the receiver coil

Review the very first localizer to confirm a good position of the head within the receiver coil and the magnet.

- On the left monitor, in the EXAMINATION section, the head should be roughly in the middle of the screen. A little off top to bottom is ok, but it should not be outside of the screen.
- If the head is to far off, the participant was not "landmarked/lasered" properly.
    - Stop the scan as soon when you see this issue in the localizer.
    - Go into the scanner room - Match the subject's eyebrows with the center line on the head coil by having the participant move up or down accordingly if possible.
    - Laser on the center of the coil; if the subject's anatomy could not be matched up with the center line due to a short neck etc, then laser to the participant's eyebrows only (not to the coil line).
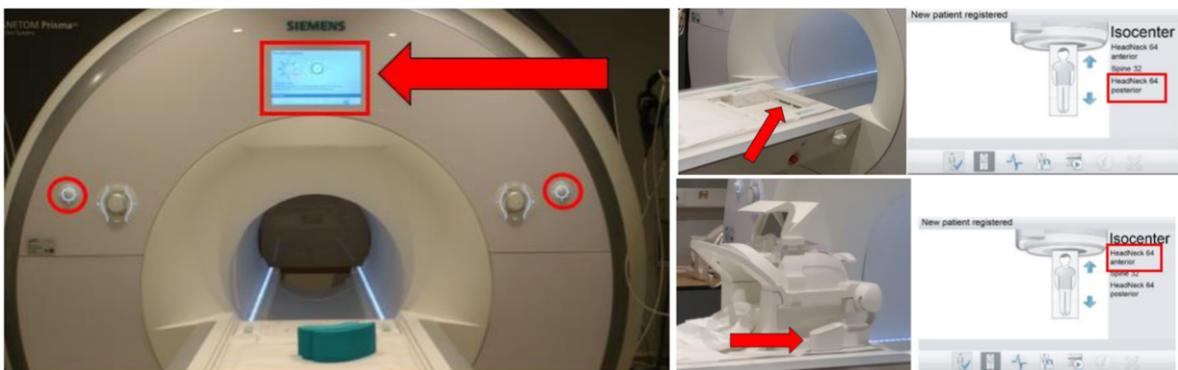
2.2 Rule out artifacts

Artefacts are features that appear on a reconstructed image but are not part of the original anatomy.

> **!! The artifacts listed below should catch your eye from the very first localizer. Do not proceed, as subsequent acquisitions will likely be affected as well and the solution is often straightforward. Apply the suggestions below and repeat the localizer. If the problem persists, inform the GIfMI Site Manager and Research Assistant.**

### 2.2.1 Rule out grainy/noisy images
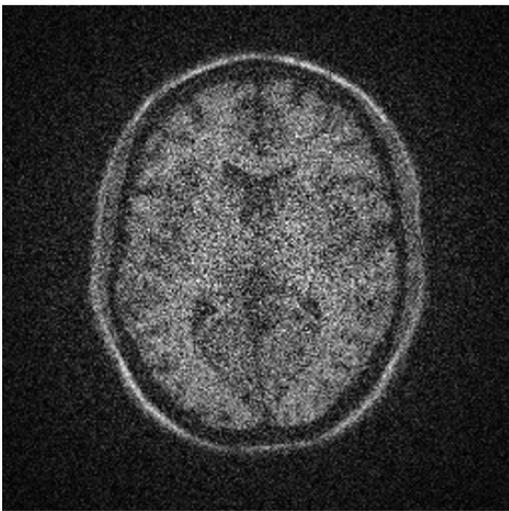
- **Appearance:** Reduced signal intensity
- **Cause:** Electronic interference or receiver coil turned off/disconnected.
- **Action:** Check the coil connections.
  - Remove the upper part of the coil.
  - Unplug the lower part of the coil.
  - Reconnect the lower part and check the display; it should indicate **'Posterior Head/Neck 64'.**
  - Reposition the subject if necessary.
  - Reconnect the upper part and check the display; it should indicate **'Anterior Head/Neck 64'.**
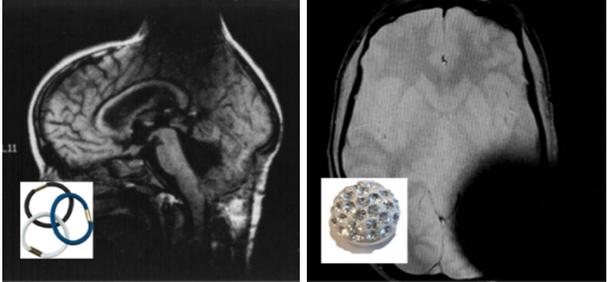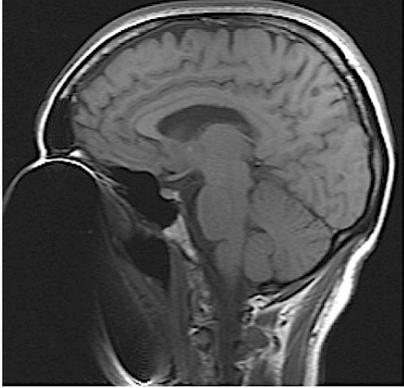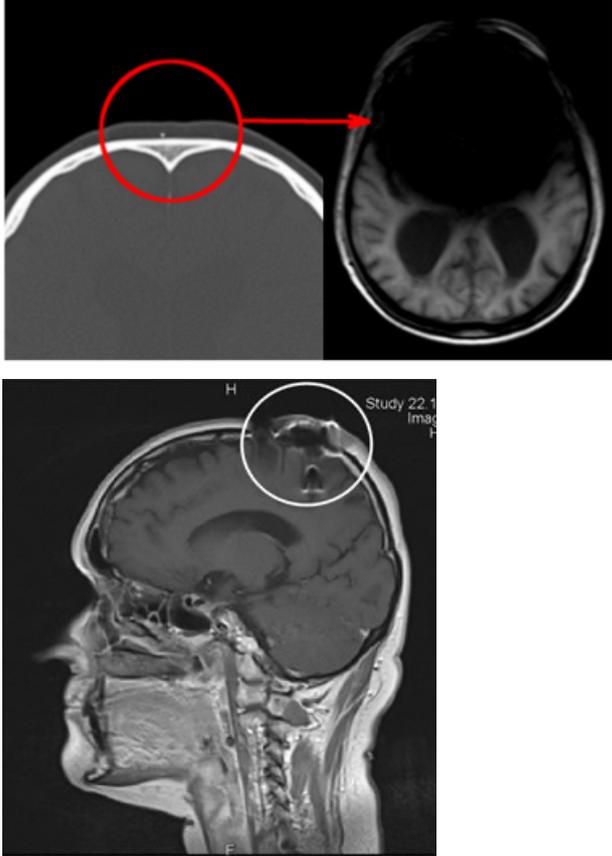

  - Repeat the localizer.

2.2.2 Rule out RF spikes and zipper artifacts
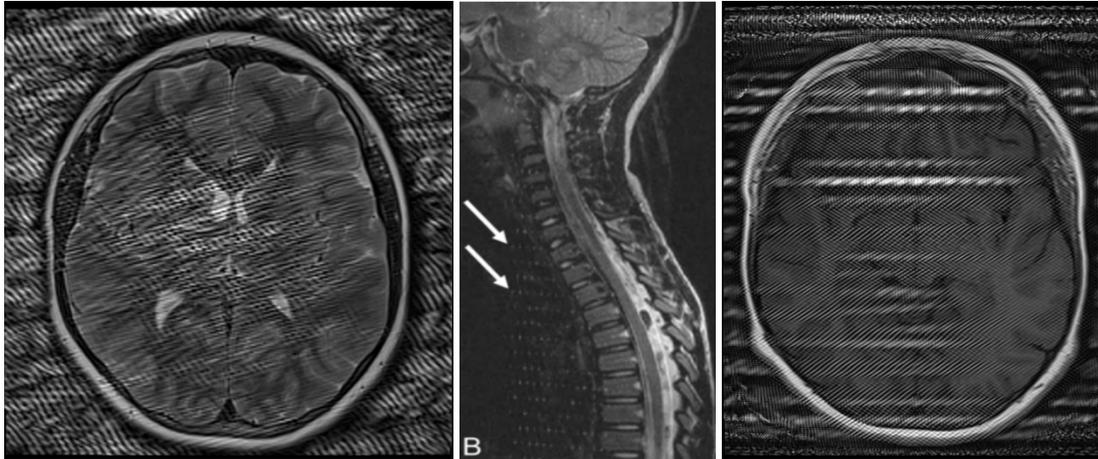
- **Cause:** RF leak
- Action:
  - Close the scanner room door thoroughly.
  - Repeat the localizer.

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### 2.2.3   Rule out metal artifacts

	• Cause: external ferromagnetic object due to insufficient screening and/or preparation • Action: remove the source. • Repeat the localizer.
	• Cause: internal ferromagnetic object of known origin, mentioned during the screening • Action: if MRI safe, you may want to take a chance and give it a try to see the extend of the artifact; if it affects the dataset too much, you must abort the session; if the quality is acceptable, you may proceed.
	• Cause: internal ferromagnetic object due to insufficient screening or of unknown origin • It is unsafe (risk of heating) to proceed! Abort the session!

3 CHECKING THE QUALITY OF THE MPRAGE IN VIEW&GO

3.1 Check for full coverage of the anatomy (in plane)

- In plane = in the plane that you acquired, in this case: the sagittal result.
- Does the FOV cover the anatomy:
    - o from front to back
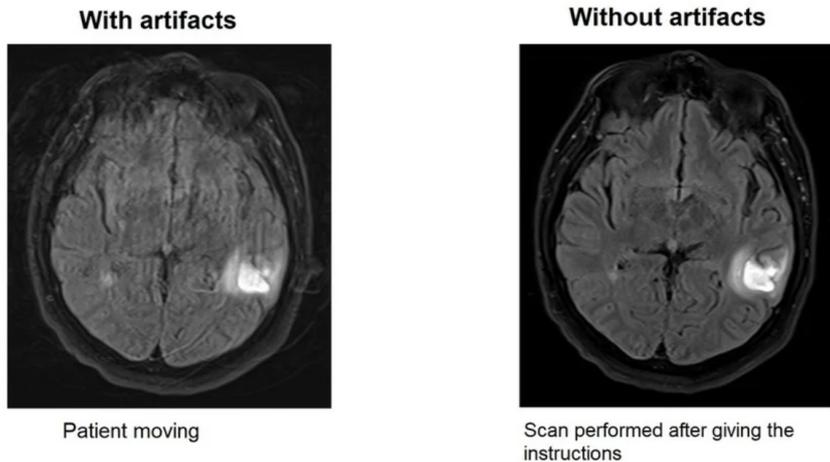   - o from bottom to top
    - o is there no aliasing artifact
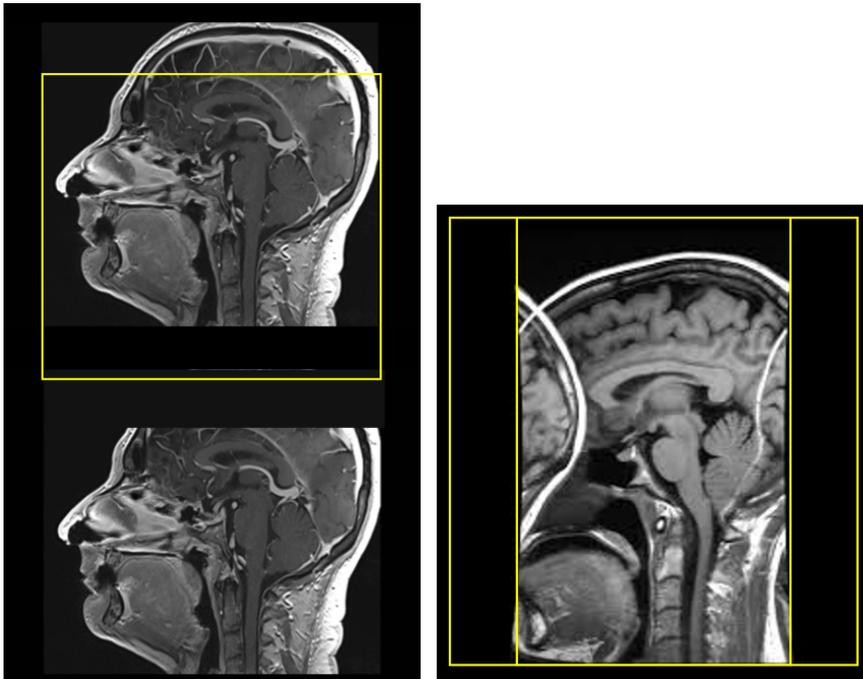
3.2 Check for acquisition of all the slices (through plane)

- Click on the resulting sagittal images.
- Scroll through them: do the slices cover the anatomy from right to left?

3.3 Check for motion artifacts

- **Appearance:** Blurred, distorted or ghosted images.

(figure from mrimaster.com)

- **Cause:** Subject movement.
- **Action:**
  - o Instruct the subject again and clearly emphasize the importance of remaining completely still throughout the scan. Communicate clear, concise and constantly throughout the scan session. Use immobilization padding. Subjects may mistakenly believe that moving body parts away from the area being scanned, such as crossing the legs is permissible. However, such movements can cause localized blurring of the image.
  - o Check the subject comfort. Discomfort can be caused by incorrect positioning on the MRI table. Comfort can be improved with a variety of cushions and wedges.
 - o

(figure from mrimaster.com)

- Depending on the severity of the artifact:
  - o **If unusable:** Repeat the MPRAGE immediately. This will help you assess the capability subject's ability to remain still. If the motion artifacts are equally severe in the second attempt, consider aborting the session, as epi-images are even more susceptible to motion.
  - o **If usable**: If you believe the subject can remain still after additional instructions, repeat the MPRAGE at the end of the session. This allows you to first acquire a complete fMRI dataset first before attempting to improve the MPRAGE image quality.

4 CHECKING THE QUALITY OF EPI (FMRI, DTI, ASL) IN THE INLINE DISPLAY

In the case of EPI scans, you can either choose to check the quality using the Inline Display (during acquisition) or load the sequence to MR View & GO (after completion of the acquisition). We strongly advise you to open the inline display either way, so you can interrupt the (often very long) sequence if necessary.

Click the **Inline Display button** in the bottom left corner to open the **Inline Display**.
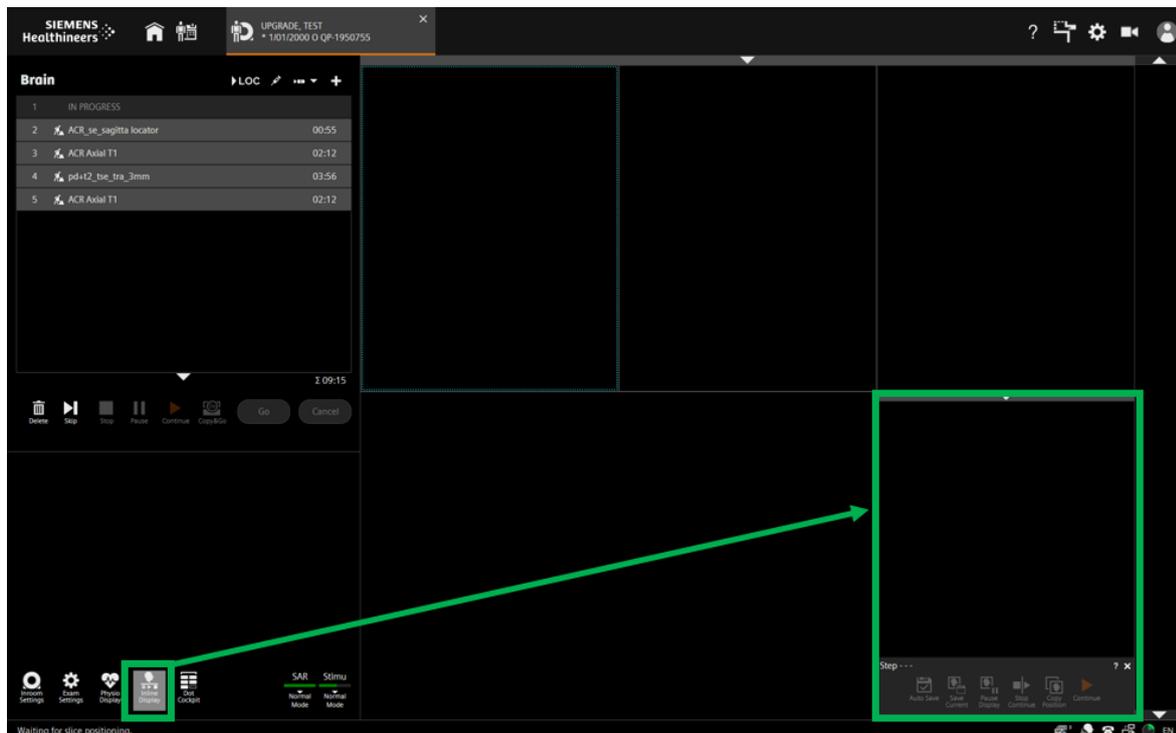
4.1 Check for full front-to-back coverage of the anatomy (in plane)
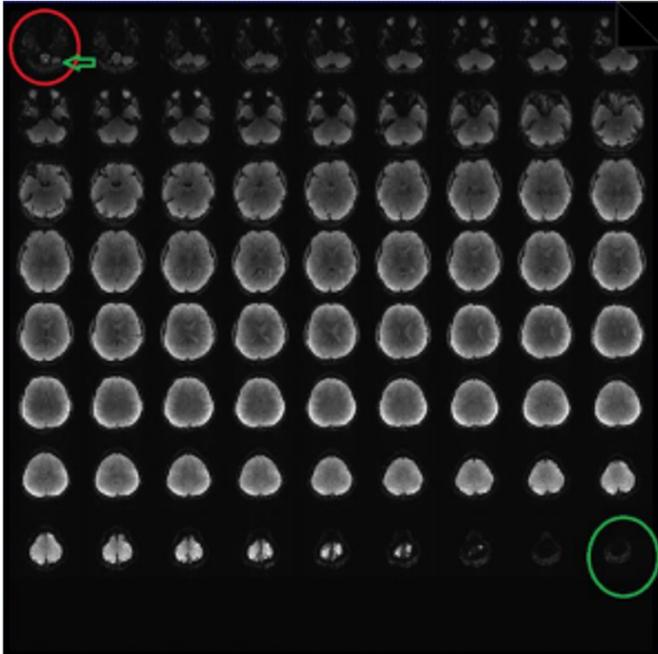
- **Check:**
  - Does the FOV cover the anatomy from right to left?
  - Does the FOV cover the anatomy from front to back? Is there no aliasing artifact?
   - **Appearance:** Infolding of the anatomy

4.2 Check for full top-bottom coverage of the anatomy (through plane)

- **Check:** Are all slices present from bottom (cerebellum) to top (skin or air)?

4.3 Check for signal dropout

- **Appearance:** Missing slices.
- **Check:** Are all slices present or are there any missing?
- **Action:** Stop scanning and check the connection of the coil. Reconnect the plugs and reposition.
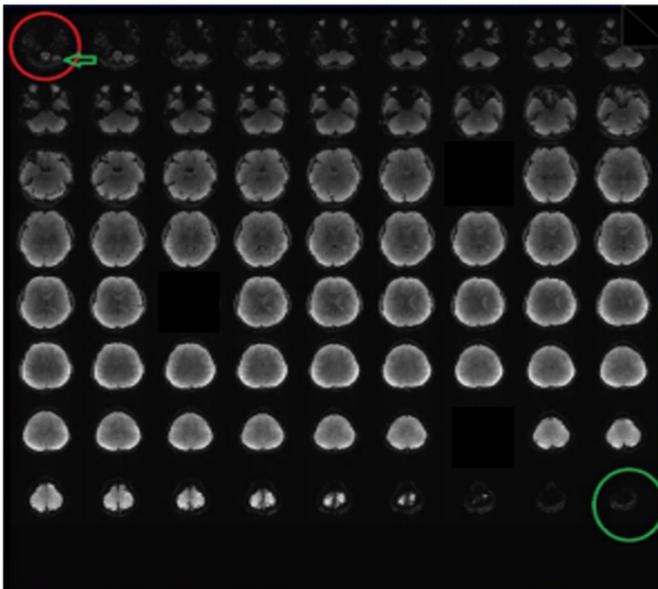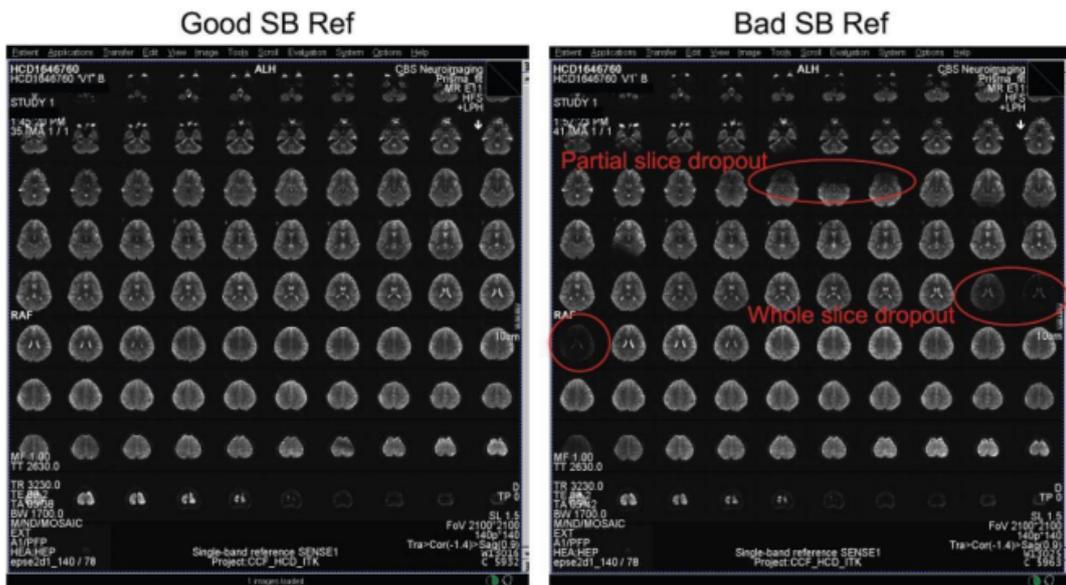
5   CHECKING THE EPI (FMRI, DTI, ASL) IN VIEW&GO

View&Go offer the opportunity to review the image quality more thoroughly (after completion of the acquisition). Check EVERY sequence after completion.
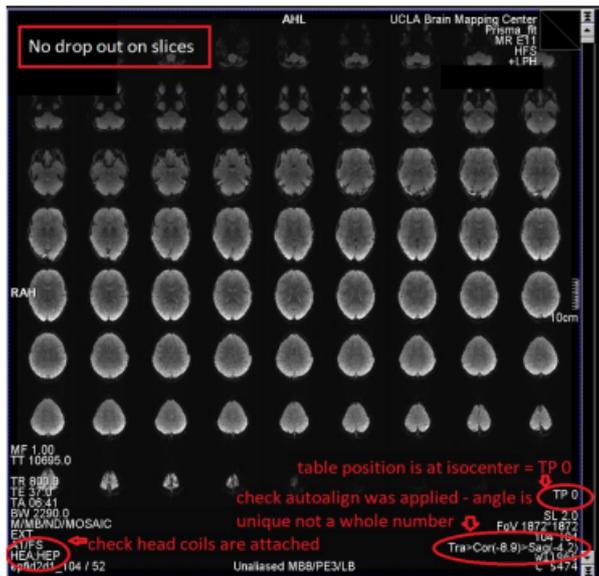
To learn how to load the images into View&Go, return to pages 2-4.

5.1   Check for signal dropout

- **Appearance:** Missing slices or parts of slices.

- **Check:** Check that the table is at isocenter; the display should say **TP 0.**

- **Action:** Stop scanning and check the connection of the coil. Reconnect the plugs and reposition.

6   HOW TO REPEAT A SEQUENCE?

- Right-click on the sequence you want to repeat and modify.
- Select **APPEND**. A copy of the sequence with the most recent settings will be added at the bottom of the sequence list.
- Double-click the copy to adjust the settings.
- Select **GO** to confirm.
- Drag the sequence upward in the protocol (to the top if you want it to run next, or to the desired position among the other sequences).