User Manual

Cloud-Based AI Tool for PERCIST Analysis of PET/CT Studies

RECOMIA

Digital PERCIST version 1.0

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1. Login to the RECOMIA Platform

The RECOMIA platform uses **two-factor authentication** to ensure secure access.

1. Enter your **email** and **personal password**.
2. A one-time **6-digit verification code** will be sent to your registered email address.
3. Enter this code in the login window to complete authentication.

Note:
Users participating in multiple clinical trials must select the desired **trial** before proceeding.

Figure 1. *Login screen showing two-factor authentication process.*

2. Upload PET/CT Studies

2.1 Export and Preparation

Ensure that **axial PET and CT images** are exported from your clinical system.
Images **do not need to be de-identified**—RECOMIA automatically performs DICOM-compliant de-identification upon upload.

2.2 Adding or Updating Patient Records

- For a **new patient**, click **Add Patient** in the **Repository** window.
- To add a new study for an **existing patient**, click **Add more images** next to the patient entry.

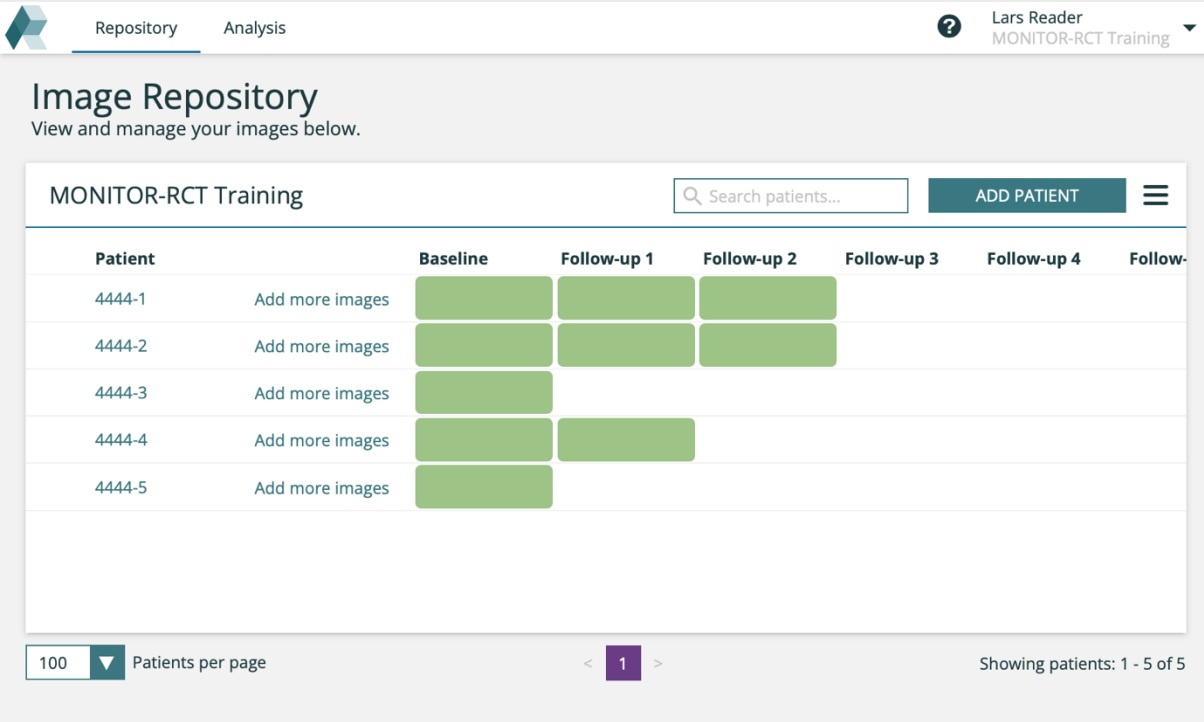

Figure 2. *Repository view with "Add Patient" and "Add more images" buttons.*

2.3 Uploading Studies

1. **Drag and drop** the PET/CT study into the browser window.
    - Upload **only one PET** and **one CT** series per visit.
    - Assign the appropriate **visit label** (default: *Baseline*).
2. Verify that the correct series have been selected.
    - Click **DICOM tags** to review metadata that will be altered during de-identification.
3. During de-identification and compression, images remain **on the local computer**.
    - Once complete, they are securely uploaded to the RECOMIA server.
4. For new patients, select the correct **Trial ID** from the dropdown list.

After upload, the study is automatically processed for **PERCIST AI analysis**, which typically completes within **5–10 minutes**.

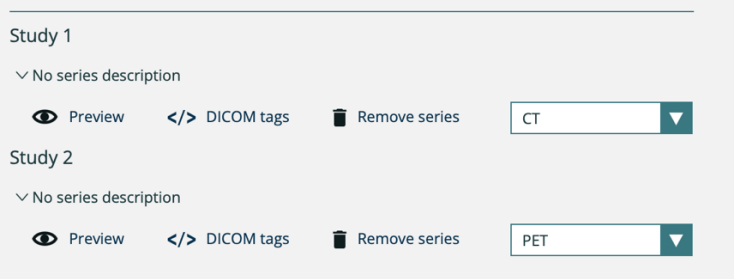

Figure 3. *Upload window showing images before de-identification.*

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3. Prepare Study for Analysis

3.1 Preparing the Study

1. In the **Repository**, select the study and click **Preview Image**.
2. Click **Prepare for Analysis** in the left column.
3. Click **Create** to initiate preparation.

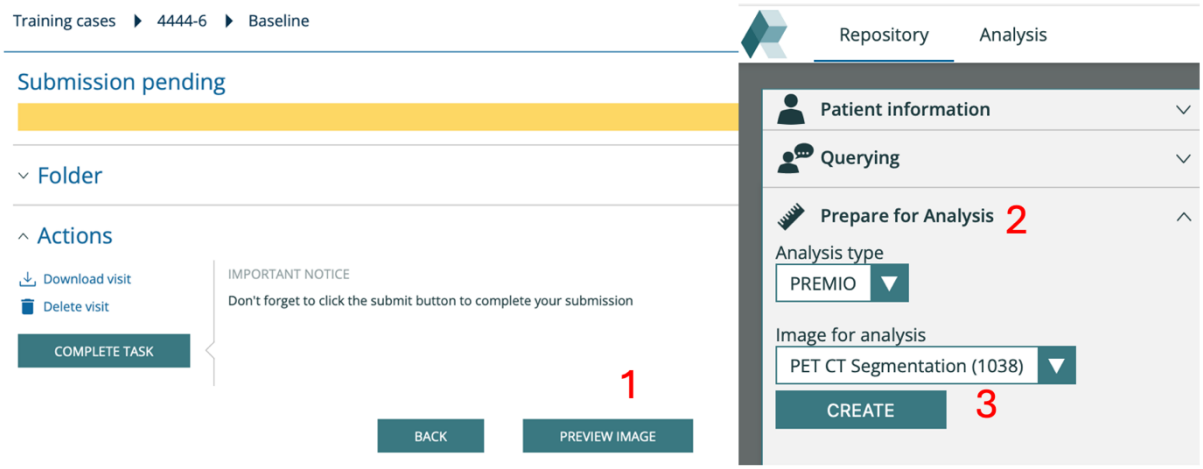

Figure 4. *Preparing the Study.*

3.2 Assigning Readers

1. Assign one or more **readers** to the study for PERCIST analysis.
2. Click **Create** when all readers are added.
3. Close the preview using the **X** in the upper-right corner.
4. Click **Complete the task**, then **Back** to return to the Repository.

The study box will turn **green**, indicating it is ready for PERCIST analysis.

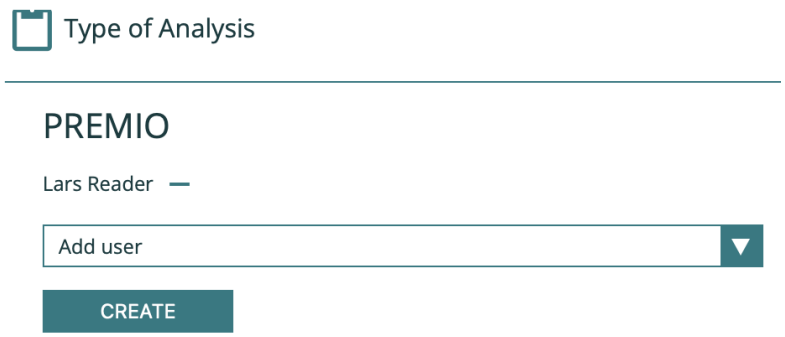

Figure 5. *Assigning Readers.*

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4. Analyse Baseline Study

4.1 Overview

The **Analysis List** displays all studies assigned for analysis.
A **red dot** indicates a new study awaiting review.

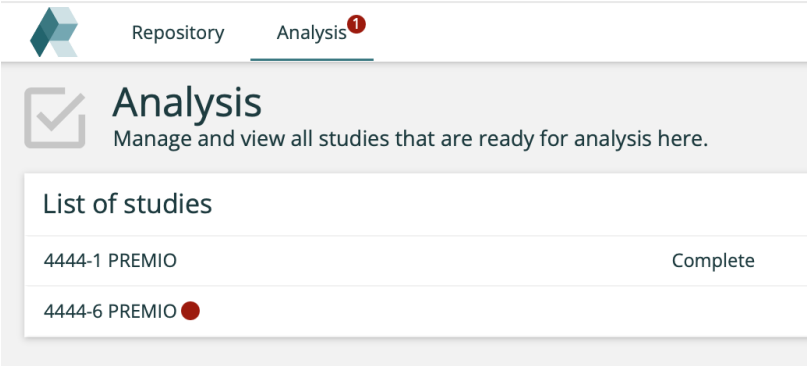

Figure 6. *Analysis List view highlighting new (red dot) studies.*

4.2 Automatic AI Preprocessing

- The **liver** is automatically segmented, and a **spherical VOI** is positioned in the most representative region.
- The **aorta background** is calculated using a **cylindrical VOI**.
    - Click **Switch to aorta** to toggle between background reference

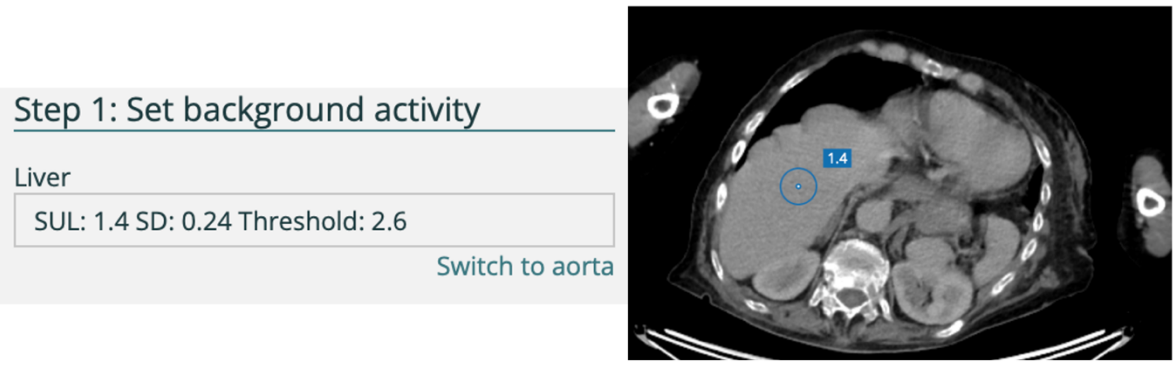

Figure 7. *Automatic liver background segmentation.*

4.3 Lesion Detection and Review

- AI identifies all potential hypermetabolic volumes exceeding the liver or aorta thresholds.
- Volumes are listed **from highest to lowest SULpeak**.
- Physiological uptakes (brain, heart, urinary tract) are marked **green**.
- Suspected tumor-related volumes are marked **red**.
- Click an entry to highlight it in the image viewer.
- Use the **X** shortcut to toggle segmentations on or off.

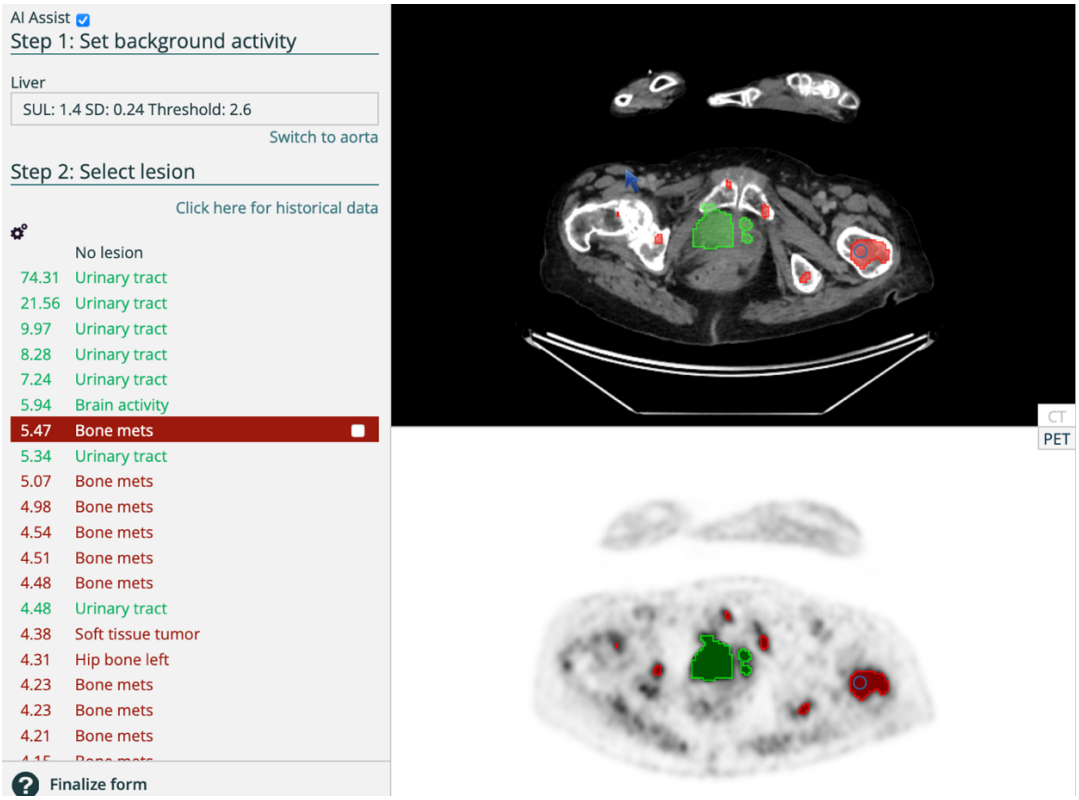

Figure 8. *Lesion detection list with green and red VOI classifications.*

4.4 Adjusting Thresholds

If no lesion exceeds the threshold:

- Click the **cogwheel icon** to reveal the threshold slider.
- Adjust as necessary to identify potential target lesions.

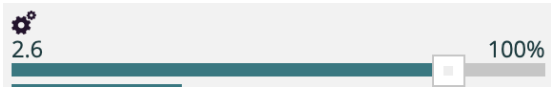

Figure 9. *Threshold adjustment slider.*

4.5 Target Lesion Selection

- Select the target lesion by checking its box.
- If no measurable lesion is present, select **No lesion**.
- To correct a mistake, click the **trash icon** next to the lesion's SULpeak value.
- Manual target definition can also be performed using the **Target Lesion circle tool**.

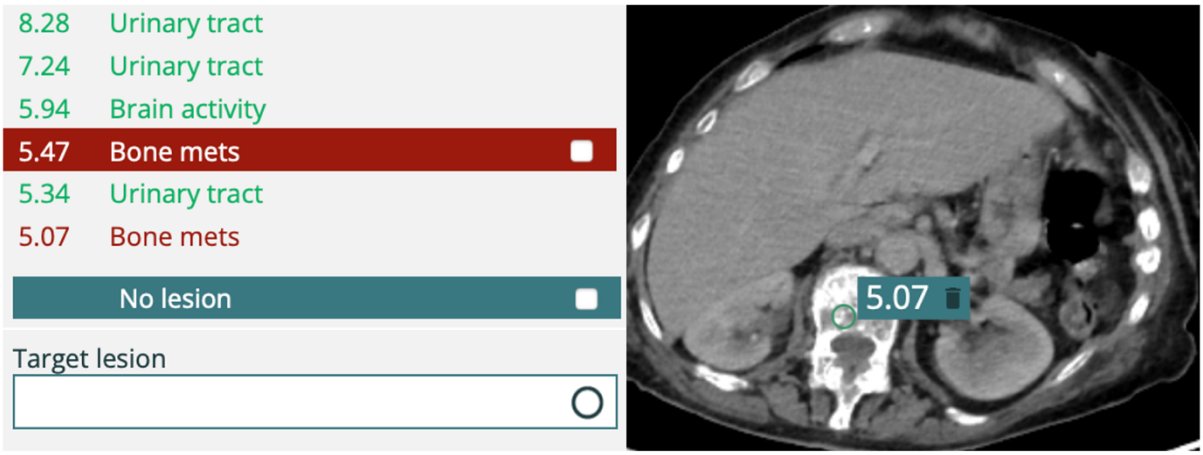

Figure 10. *Target lesion selection and manual measurement tool.*

4.6 Response Assessment

The **Digital PERCIST** system proposes a response classification.
For baseline studies, available options are:

- *Baseline measurable*
- *Baseline not measurable*

Users may accept or override the proposed classification.
If overridden, a short **explanation** must be entered in the text box.

Click **Complete form** to save the analysis to the server.

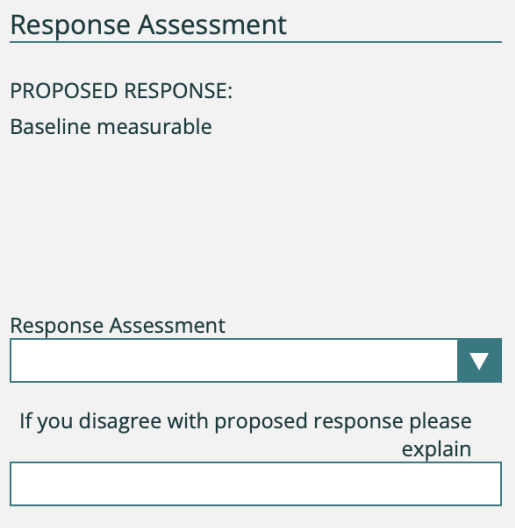

Figure 11. *Response assessment form for baseline studies.*

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5. Analyse Follow-up Study

5.1 Overview

In the analysis window:

- The **current (follow-up)** study is displayed on the **left**.
- The **previous (reference)** study is displayed on the **right**.
- The default reference is the **baseline** study, but previous follow-ups can be selected from the dropdown.
- Click **Click here for historical data** for an overview of earlier analyses.

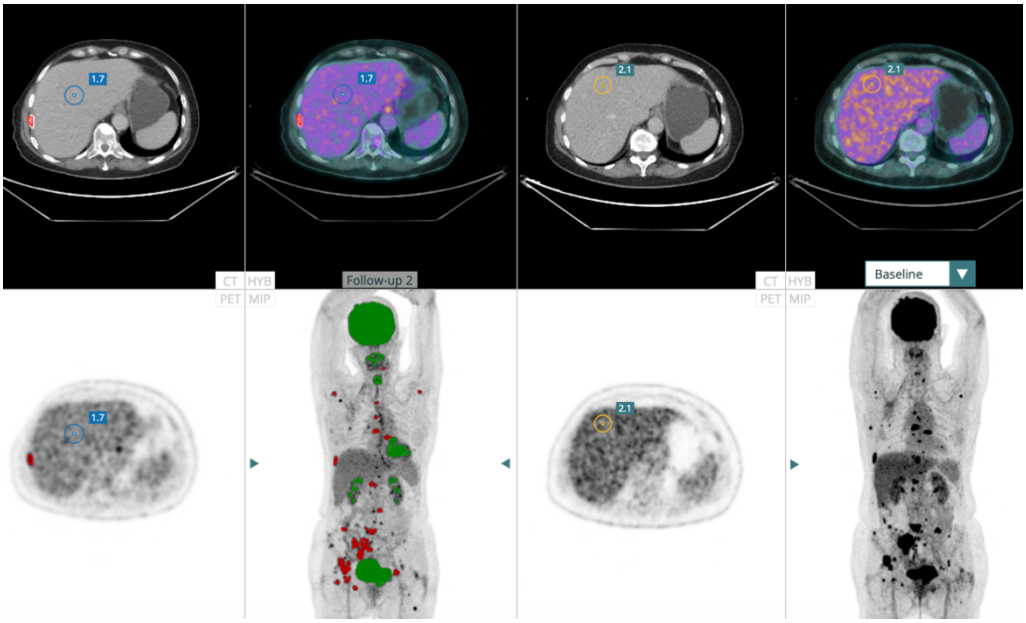

Figure 12. *Follow-up analysis interface showing baseline (right) and follow-up (left).*

5.2 Comparative Analysis

- The **SULpeak change** relative to the reference study is displayed for each red lesion.
- Click the small **arrow icon** to sort the list by the greatest increase.

Green (physiological) volumes do not display changes unless manually reclassified.
Double-click a green lesion to toggle it to red and include it in the comparison.

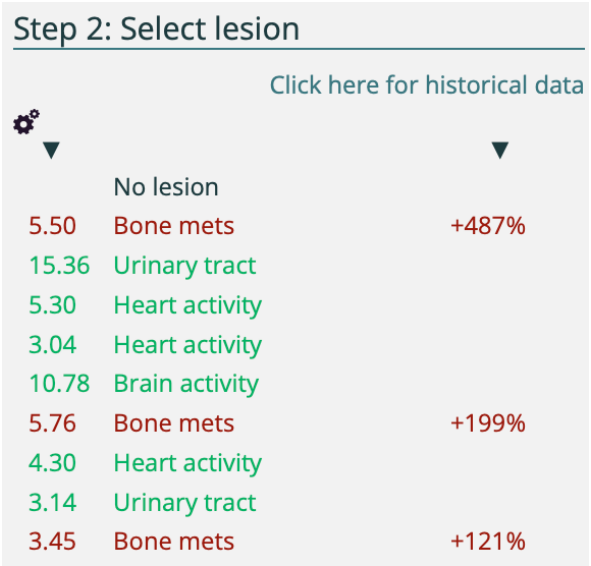

Figure 13. *Sorted lesion list showing SULpeak change compared to baseline.*

5.3 Identifying New or Progressing Lesions

Use the dropdown menu to indicate the presence of:

- **New lesions**
- **Unequivocal progression** (*Yes / No / Unknown*)

You may also **mark lesions** directly on the image with an arrow and add **comments**.

These inputs influence the **system-proposed PERCIST response**.

After confirming the final **response assessment**, click **Complete form** to save results.

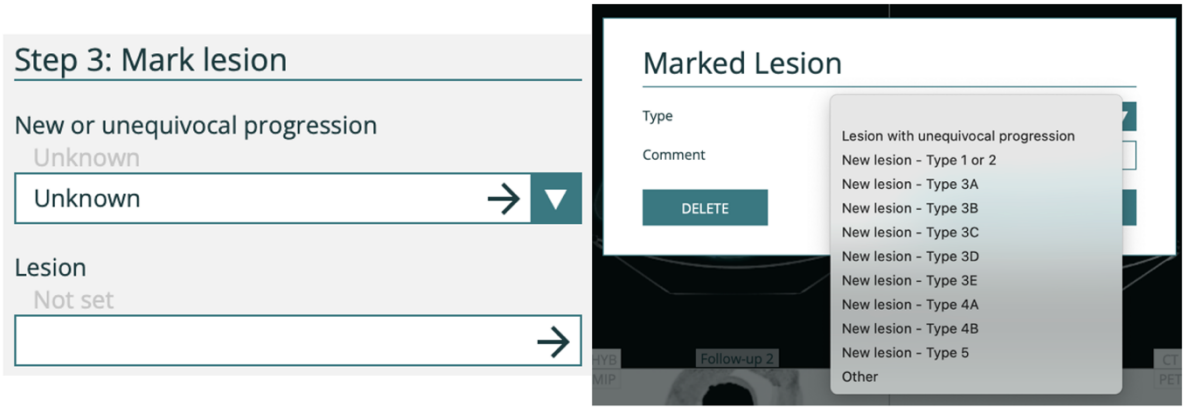

Figure 14. *Tools for marking and classifying lesions.*

5.4 Generate Report

After completing the analysis, click **Report** to generate a summary.
The report includes quantitative data and response classifications for all patient studies.

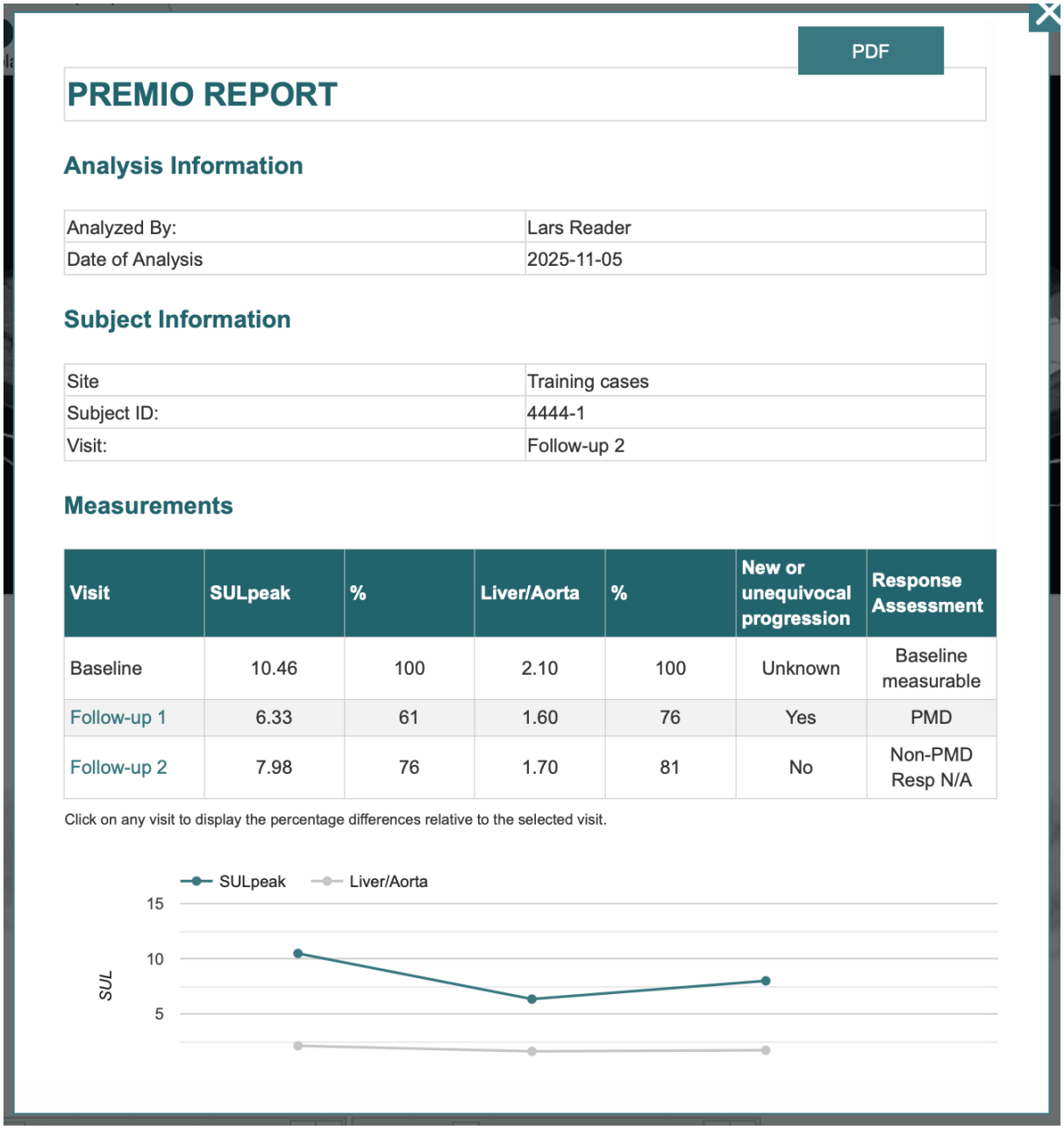

Figure 15. *Example of the PERCIST summary report.*

6. Viewing Tools

Function	Mouse / Keyboard Shortcut
Move image	Left mouse + drag
Zoom in/out	Right mouse + move up/down
Reset zoom	**R**
Change slice up	**W** / Scroll up
Change slice down	**S** / Scroll down
Toggle PET/CT image	**C**
Toggle planes (axial, sagittal, coronal)	**V**
Full screen	**F**
Exit full screen	**Esc**
Measure distance (A–B)	**M**
Change CT window preset	**1–7**
Adjust CT window length	Scroll click + move up/down
Adjust CT window width	Scroll click + move left/right
Toggle smoothing (none/medium/high)	**O**
Measure SUVmax in circular ROI	**N**
Toggle segmentation opacity	**X**

Figure 16. *Overview of mouse and keyboard viewing tools.*