MROQC Physics Training

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About MROQC Physics

Welcome to MROQC! Our goal is to ensure the physics data that is being uploaded is of high quality. This document will introduce each of the projects MROQC has and elaborate on what is required for each. We will also provide information about the reports relevant to physics data and quality measures. As you become familiar with using the databases, this document can also serve as a reference. Additional resources, including brief videos covering the same content, can be found here https://www.mroqc.org/physics-resources.

Important Links:

MROQC Website: www.mroqc.org

Database access and instructions: https://www.mroqc.org/access-instructions

Incentive program resources: https://www.mroqc.org/bcbsm-incentive-programs

Facility Performance Report: https://www.mroqc.org/facility-performance-dashboard

Physics Data Dashboard: https://www.mroqc.org/physics-dashboard

MROQC Physics & Dosimetry Resources: A copy of this document and other physics & dosimetry related resources may be found at the following link:

https://www.mroqc.org/physics-resources

Contact:
If you have questions after training, please don't hesitate to email support@mroqc.org!
This is strongly encouraged over contacting individual team members.

Projects

All projects require physics survey submission along with DICOM data upload if applicable.

1. MROQC Database

Breast: The Breast Radiotherapy Technical Details form (BRTD) is required for all patients. Full DICOM data upload is required for EBRT only. In the case of incomplete treatment, only enter physics data if the patient has received 50% or more of their fractions.

Lung: The Lung Radiotherapy Technical Details form (LRTD) and full DICOM data upload is required for each patient. In the case of incomplete treatment, only enter physics data if the patient has received 50% or more of their fractions.

2. Bone Mets Database

The Bone Mets Radiotherapy Technical Details form (MRTD) is required for each treated plan; therefore, it is possible for a patient to have multiple MRTDs. In addition, a patient can be retreated, so it is necessary to enter the RT start date on each form in the Bone Mets database to assist in data management. Full DICOM data upload is only required for a patient's first complex course (**SBRT and/or IMRT**). Only the DICOM files for SBRT and IMRT are required when uploading data for the first complex course. In the case of incomplete treatment, enter physics data if the patient has received *any* treatment.

3. Prostate Database

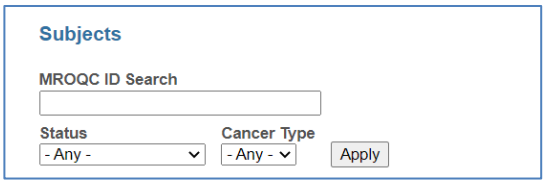
The Prostate Radiotherapy Technical Details form (PRTD) and full DICOM data upload is required for each patient. The patient needs to be matched (MUSIC partner facility) or have a P7 form uploaded. In the case of incomplete treatment, only enter physics data if the patient has received 50% or more of their fractions.

Project Name	**Physics Survey**		**Full DICOM Data**
Breast	BRTD		EBRT patients only
Lung	LRTD		All patients
Bone Mets	MRTD for each **plan**		First complex course
Prostate	Matching Facility: PRTD entered if patient has matched or has P7 form completed	P7 Facility: PRTD entered for all eligible patients	All who meet PRTD criteria

Uploading Survey Data

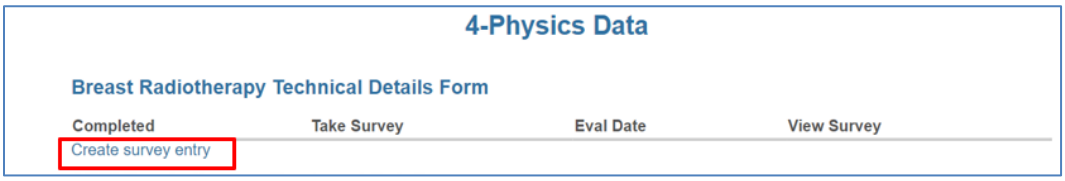
Physics Form:

- Log into the database that corresponds with the patient's cancer type. Click on the name of your institution to see a list of enrolled patients. Navigate to the patient record using the MRQOC ID search on the site page or by editing the web address.

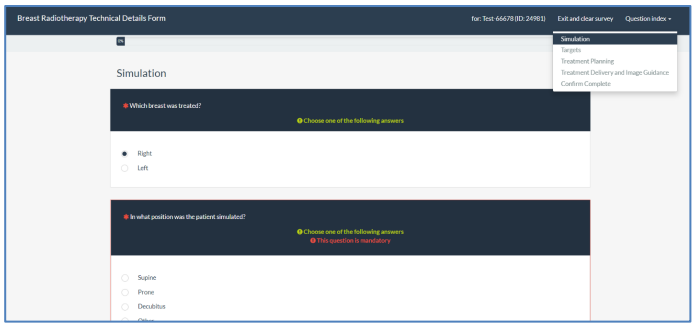


Tip: A quick way to access a patient record is to enter the MROQC ID in the webpage address.

- Once you open the desired patient record, click on the "Enter Physics Data" tab. Click "Create Survey Entry" to begin the patient-specific physics survey.

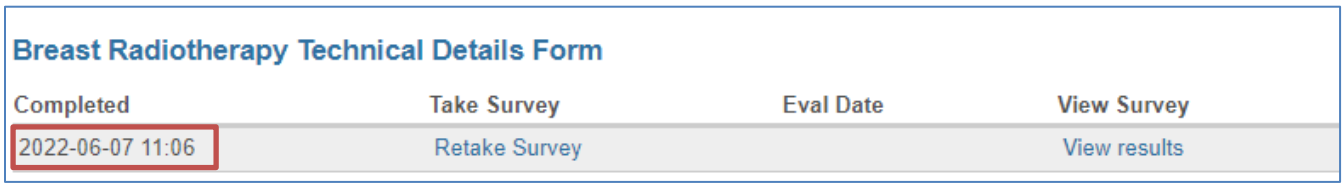


- Complete the physics survey. Note that branching logic is used in the online form, so additional questions may appear based on responses entered.



Example of BRTD form survey.
All MROQC surveys have a similar format.

- Once the form is submitted, the database will display the date and time of completion of the form.



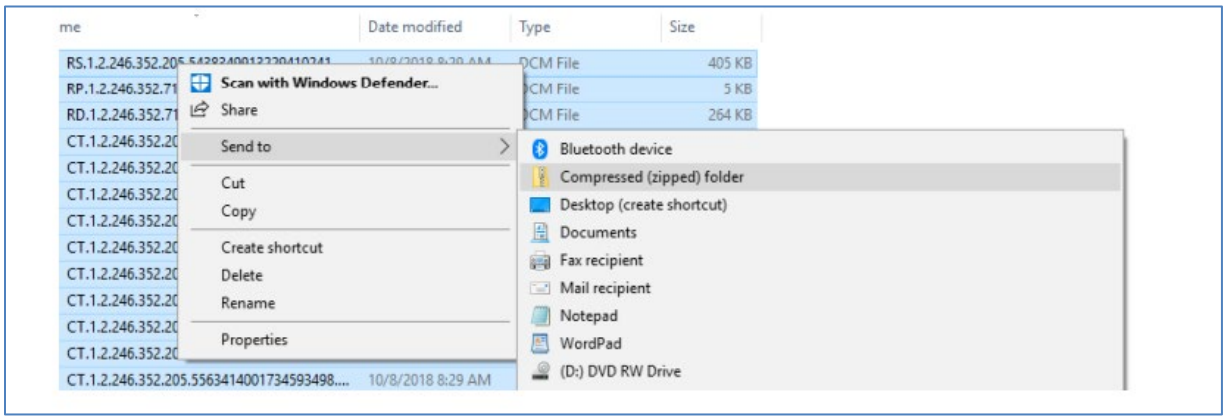
Uploading DICOM Data

DICOM Data:

- Preparation:
    - Ensure that all required structures have TG-263 compliant names. See the Physics Tip Sheet (also included in appendix of this document for convenience) to see the required structures for each project. The rules for TG-263 compliant target names are on the second page of the tip sheet.

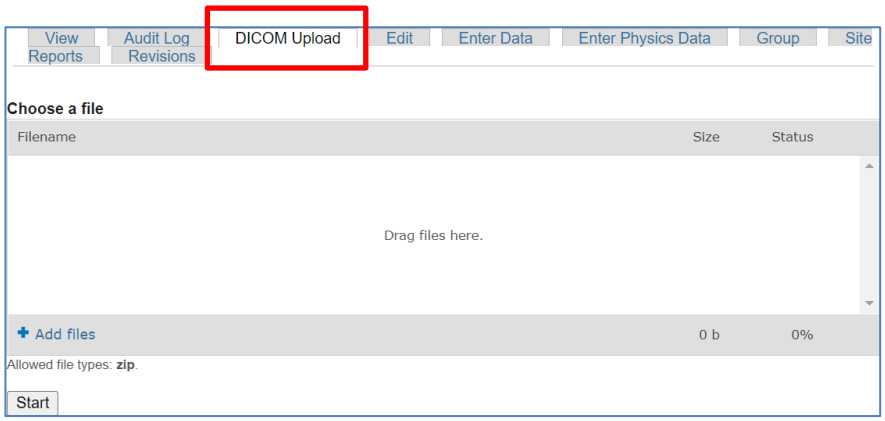
    Note: Many abstractors print off the tip sheet as a handy reference.

    - Export DICOM files from your TPS:
        - Imaging series (CT, MR, US)
        - RTplan
        - RTDose: one per plan. Please do not submit one per beam. It is not necessary to create a Dose Sum for submission to MROQC.
        - RTstruct
        - Please do not submit RTRecord or RTImage format files. These cannot be anonymized by the MROQC tool and will be rejected at the time of upload.
    - Compress DICOM files into a zip folder for upload. Do not use any sub-folders. **If a patient was resimulated, include the files for all treatments in a single zip folder.** The upload tool will sort and summarize the files by series.

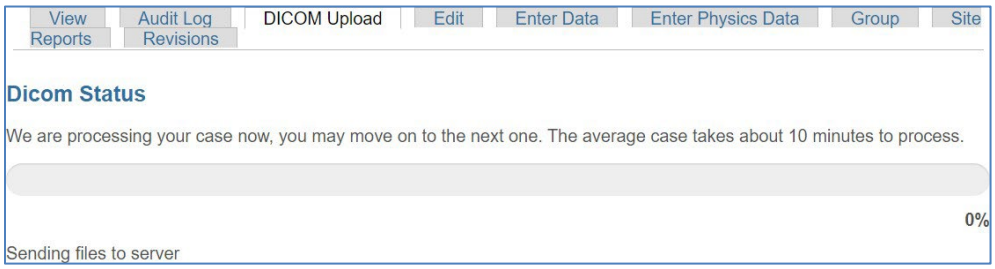


DICOM Data (continued):

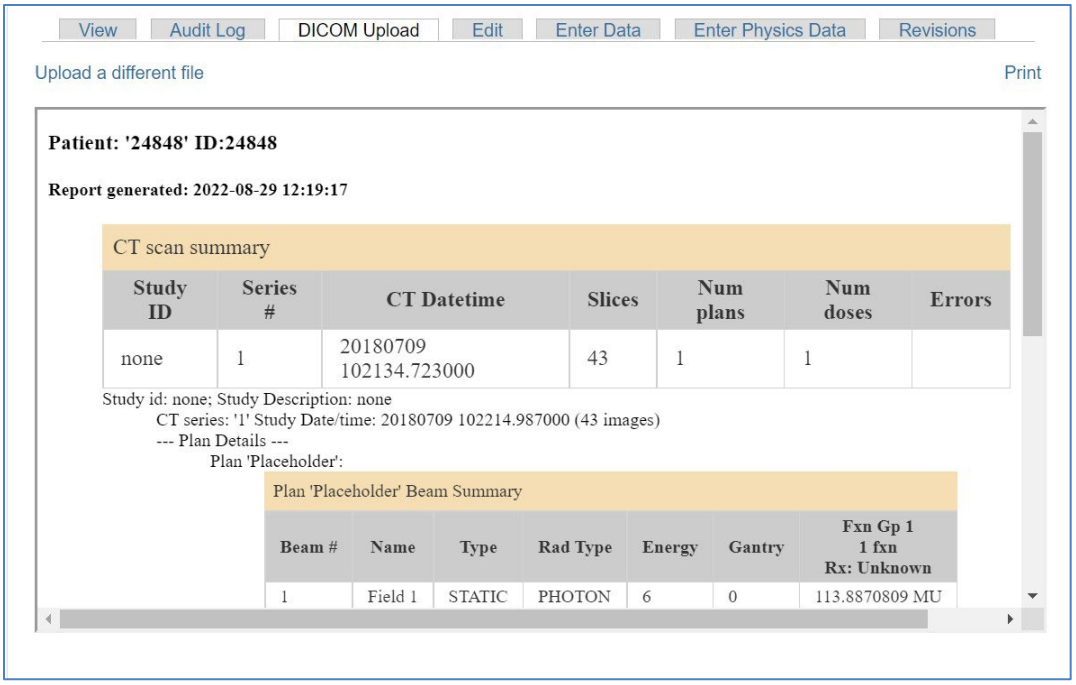
- Click on the "DICOM Upload" tab in the database for the desired patient.



- Drag the compressed folder into the box where it says "Drag files here" or click "Add files" in the lower left corner of the tool. Click "Start" to submit the files. A progress bar will appear.



During the upload process, files are anonymized and summarized. Once the files are finished uploading, a summary report will appear for your review. The report includes a file summary, beam summary, and DVH data. Please review each section of the report to ensure the files were interpreted correctly by the DICOM upload tool. DICOM data uploads typically take less than 10 minutes, depending on the size of the upload and available computing resources for the upload tool. If the upload is taking longer than 30 minutes, please contact support@mroqc.org for assistance.



Note: The DICOM upload tool summary may show a warning that structures are missing. There will be text "Best guess:" followed by a project (breast, lung, prostate, or mets). If the DICOM upload tool is not correctly guessing which project this case belongs to, you can safely ignore this error message. The upload tool is not connected to physics survey responses and does not reflect how the data for that case is processed for data checker errors and incentive program compliance.

Reuploading DICOM Data:

- If you reupload DICOM data to the database, the previously submitted DICOM data will be deleted and overwritten by the new upload. For example, if a patient had two plans and you only uploaded the DICOM files for the first plan by mistake, you will still need to include the DICOM files for both plans when you reupload.

- To resubmit DICOM files for a patient click on "Upload a different file"

- If the upload is frozen and this button is not visible, you can add "/redo" to the URL to reset the upload. This method works for uploads in all three databases. For example, for a breast patient with MROQC ID 99999, the URL to reset the upload would be: https://access.mroqc.org/node/99999/dicom/redo

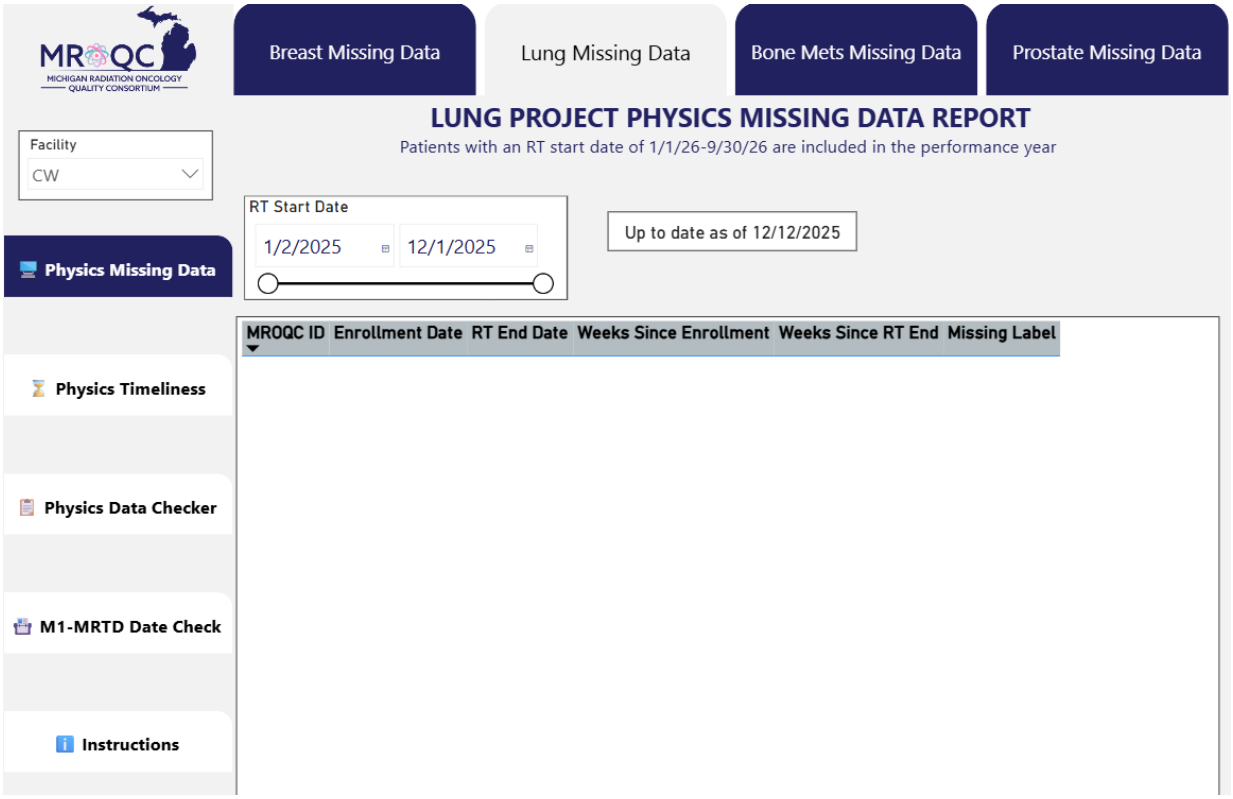
Power BI Reports

All reports related to incentive program performance, clinical data quality, and physics data quality are on the MROQC website as embedded Power BI reports. There are two reports that are essential to regularly check as a physics abstractor – the facility performance dashboard and the physics data dashboard. Please download and read the User Guide which explains how to set up your free Power BI access, how to navigate and interpret the facility performance dashboard, and how to export Power BI reports to PDFs. Afterwards please go through the following section, which is a brief tutorial on using the Physics Data Dashboard report. As always, please send an email to support@mroqc.org if you are having any issues using these reports but we encourage you to use this document as a reference.

Physics Data Dashboard

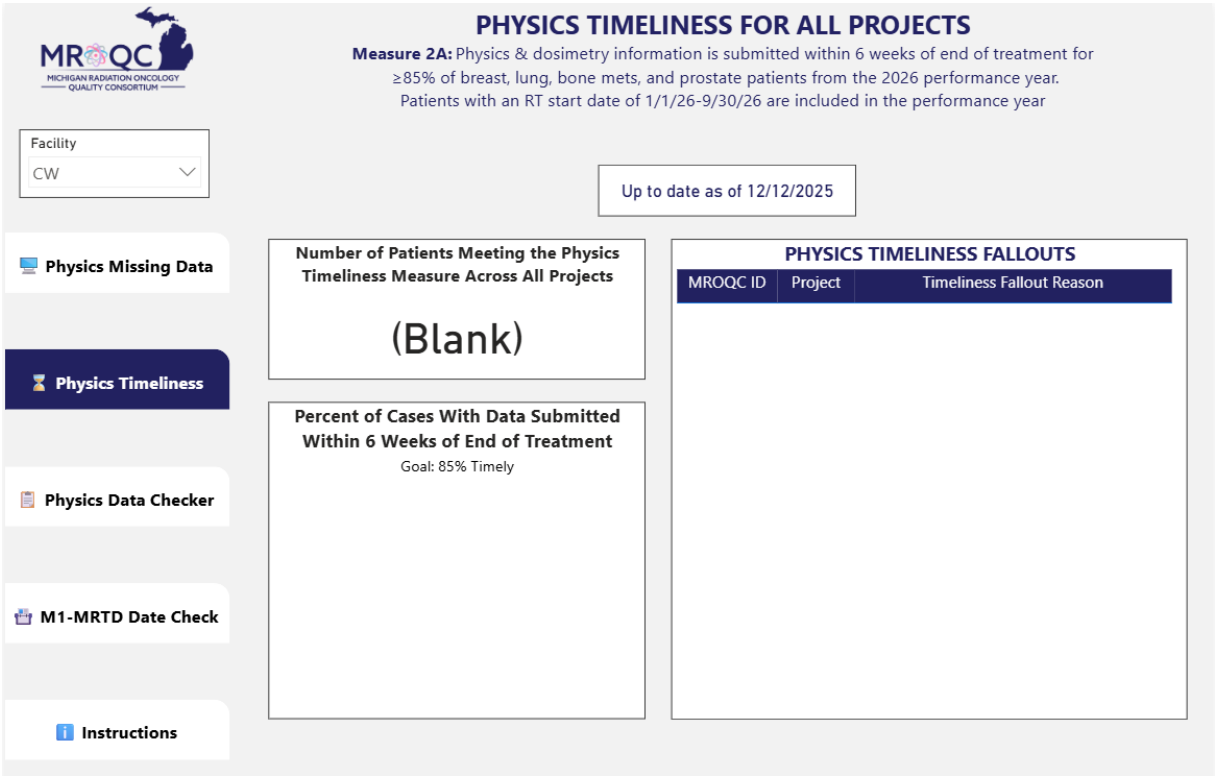
There are five report tabs (on the left side with icons):

- **Physics missing data**: Shows cases that do not have physics data uploaded yet. There are 4 tabs on the top of the report (for breast, lung, bone mets, and prostate patients) to navigate between projects.



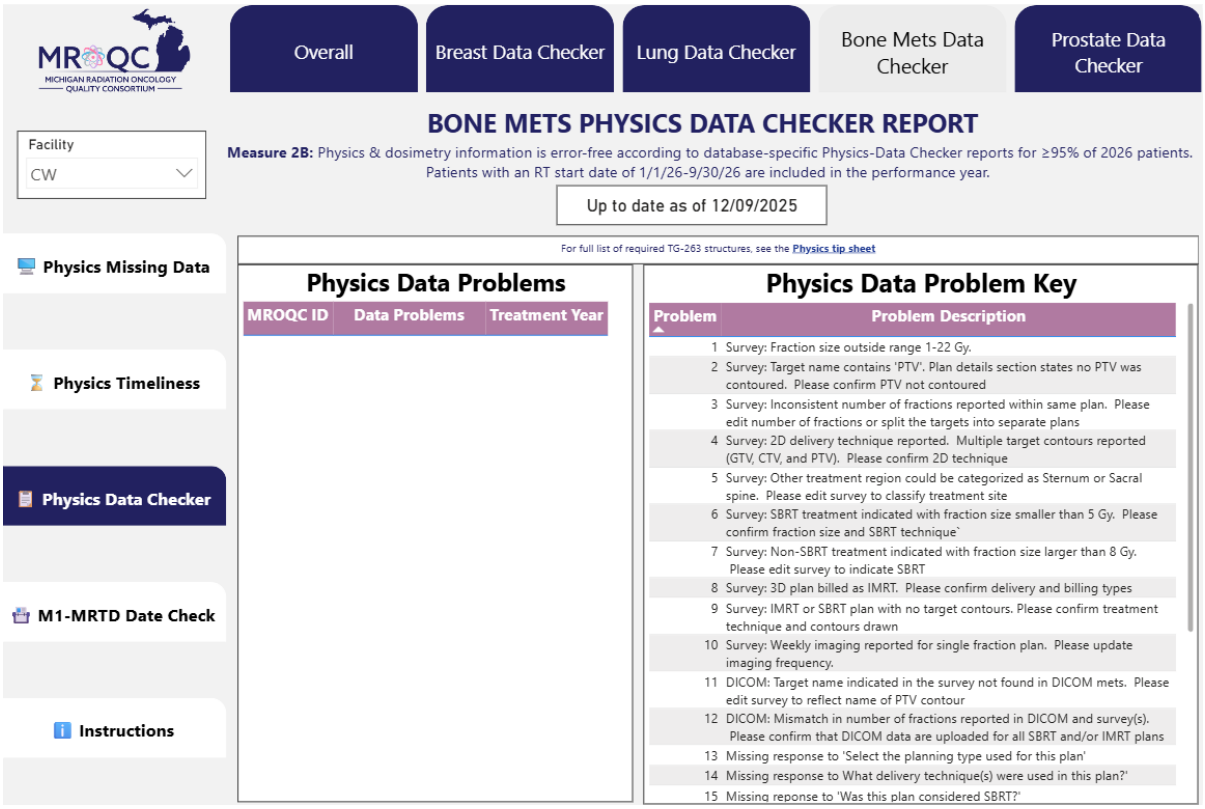
- **Physics timeliness**: Shows performance for physics timeliness for your facility overall. The P4P incentive target for physics timeliness is >85% of patients in the performance year have data submitted within 6 weeks of RT end. Make sure to regularly check the RT end date column in the physics missing data report to ensure data is submitted within 6 weeks of RT end date.

  Note: We encourage you to do survey data and DICOM data submission in the same abstraction session to ensure both are submitted in a timely manner.

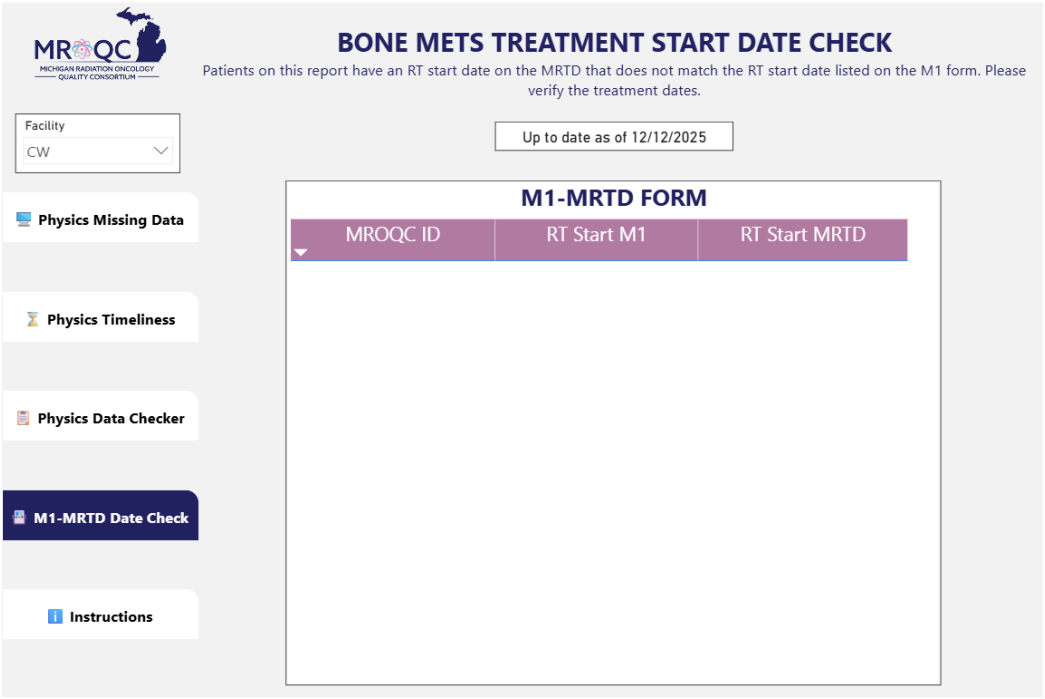


- **Physics data checker**: Shows data quality errors for submitted cases. There are five tabs on the top of the report, the first being the overall error-free rate and the other four to navigate between projects. The P4P incentive target is ≥95 percent of cases without a data check error for cases in the performance year, though we encourage you to clear all data check errors so the data can be properly used for quality improvement analysis. There is a problem key on the right side of the report that shows which problem is associated with which number.

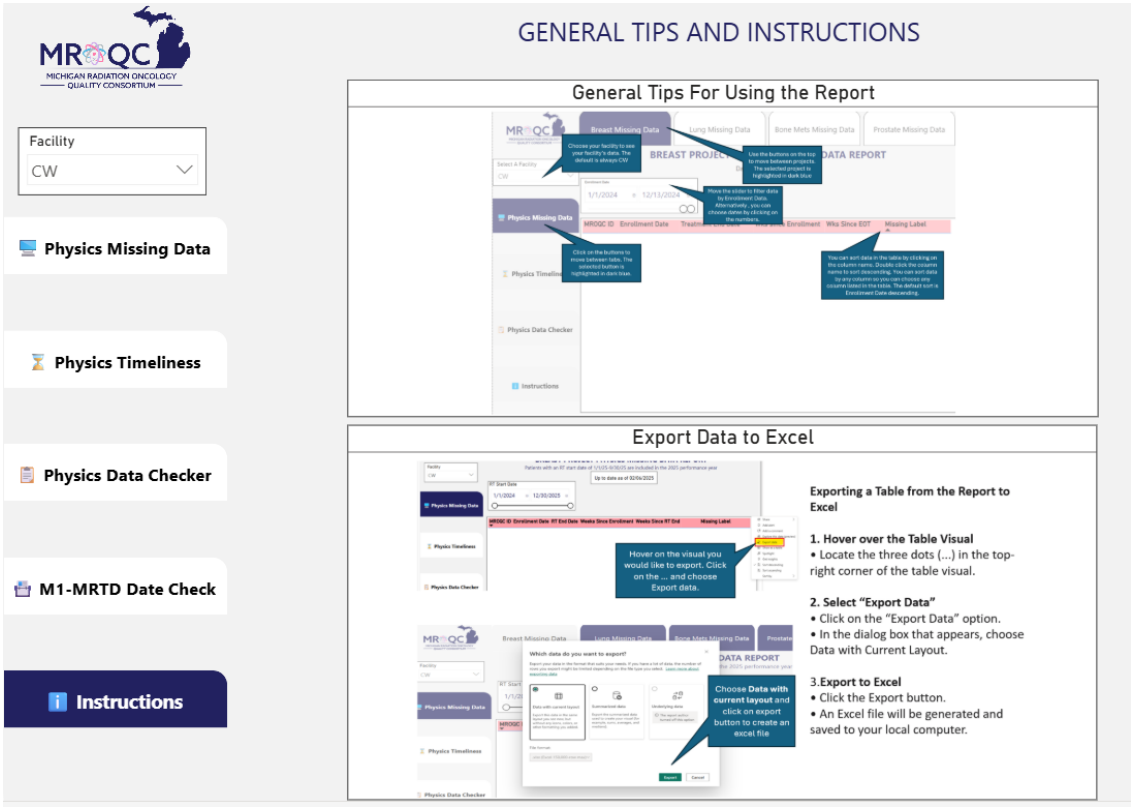
  Note: If you think a case has been improperly flagged with an error, please reach out to us immediately at support@mroqc.org.



- **M1-MRTD Date Check**: For the bone mets project, data for multiple courses of treatment may be submitted. This page checks if the start dates reported on the physics surveys (MRTD) correspond with the start date reported on the M1 baseline clinical form for that course of treatment. Since the error may be on the physics form or the clinical form, make sure to communicate with the CDA when correcting these errors.



- **Instructions**: This tab shows a diagram of the report (shown below) to help you take advantage of the functionality of the Power BI interface. The steps for exporting the report as a PDF are also included below the diagram.



How to Complete Training

To obtain credit for completing training, please submit a ticket or email support@mroqc.org with the subject “Physics Training Completed”.

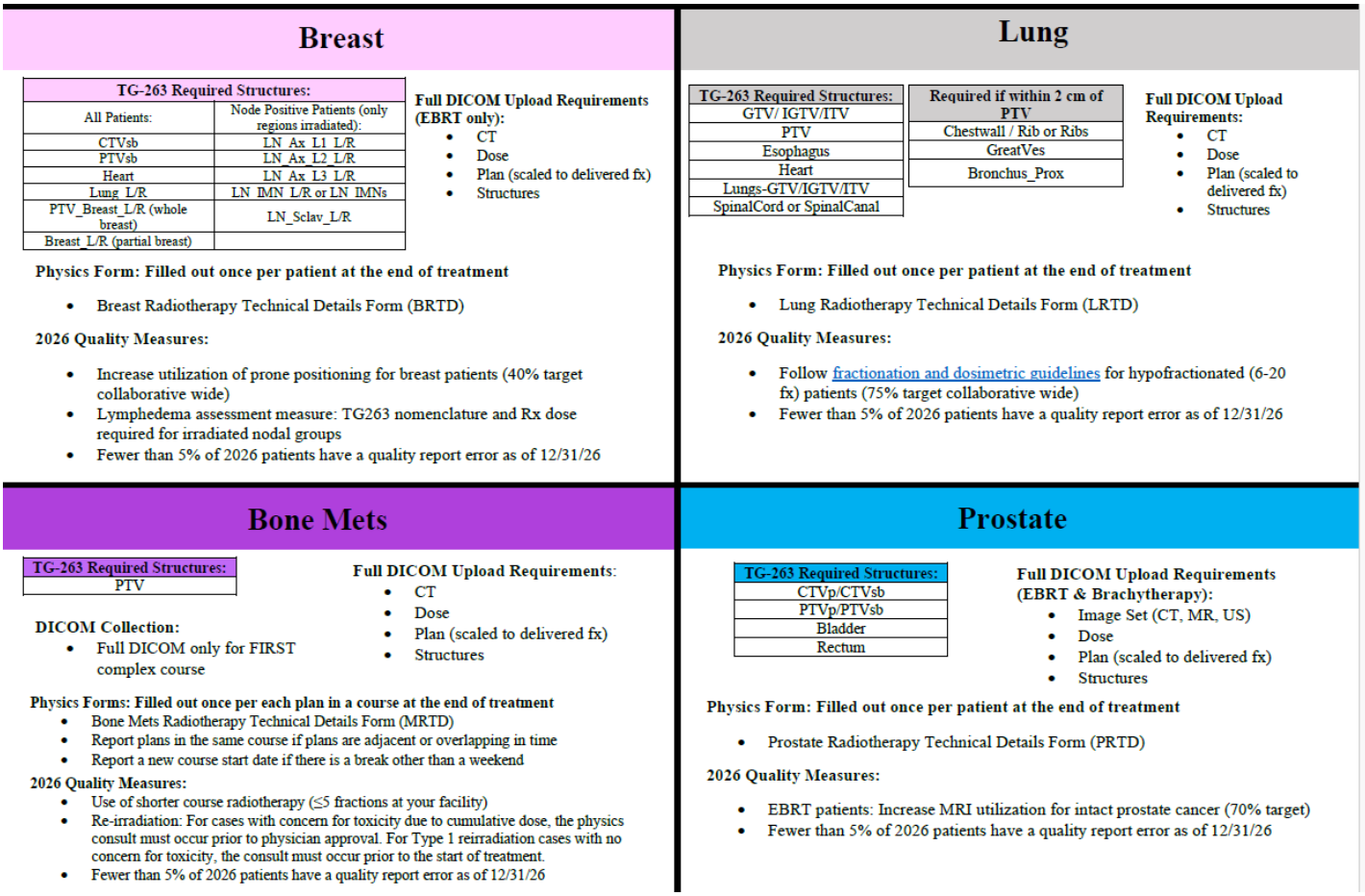
Once you have submitted data for two cases, we will schedule a brief check-in with you to review the submitted cases and answer any questions you have.

Please don’t hesitate to reach out to us at support@mroqc.org.

Thank you!

Appendix: Physics Tip Sheet

Download Physics Tip Sheet



Breast

TG-263 Required Structures:	
All Patients:	Node Positive Patients (only regions irradiated):
CTVsb	LN_Ax_L1_L/R
PTVsb	LN_Ax_L2_L/R
Heart	LN_Ax_L3_L/R
Lung_L/R	LN_IMN_L/R or LN_IMNs
PTV_Breast_L/R (whole breast)	LN_Sclav_L/R
Breast_L/R (partial breast)	

Full DICOM Upload Requirements (EBRT only):
- CT
- Dose
- Plan (scaled to delivered fx)
- Structures

Physics Form: Filled out once per patient at the end of treatment
- Breast Radiotherapy Technical Details Form (BRTD)

2026 Quality Measures:
- Increase utilization of prone positioning for breast patients (40% target collaborative wide)
- Lymphedema assessment measure: TG263 nomenclature and Rx dose required for irradiated nodal groups
- Fewer than 5% of 2026 patients have a quality report error as of 12/31/26

Lung

TG-263 Required Structures:	Required if within 2 cm of PTV
GTV/ IGTV/ITV	Chestwall / Rib or Ribs
PTV	GreatVes
Esophagus	Bronchus_Prox
Heart	
Lungs-GTV/IGTV/ITV	
SpinalCord or SpinalCanal	

Full DICOM Upload Requirements:
- CT
- Dose
- Plan (scaled to delivered fx)
- Structures

Physics Form: Filled out once per patient at the end of treatment
- Lung Radiotherapy Technical Details Form (LRTD)

2026 Quality Measures:
- Follow fractionation and dosimetric guidelines for hypofractionated (6-20 fx) patients (75% target collaborative wide)
- Fewer than 5% of 2026 patients have a quality report error as of 12/31/26

Bone Mets

TG-263 Required Structures:
PTV

DICOM Collection:
- Full DICOM only for FIRST complex course

Full DICOM Upload Requirements:
- CT
- Dose
- Plan (scaled to delivered fx)
- Structures

Physics Forms: Filled out once per each plan in a course at the end of treatment
- Bone Mets Radiotherapy Technical Details Form (MRTD)
- Report plans in the same course if plans are adjacent or overlapping in time
- Report a new course start date if there is a break other than a weekend

2026 Quality Measures:
- Use of shorter course radiotherapy (≤5 fractions at your facility)
- Re-irradiation: For cases with concern for toxicity due to cumulative dose, the physics consult must occur prior to physician approval. For Type 1 reirradiation cases with no concern for toxicity, the consult must occur prior to the start of treatment.
- Fewer than 5% of 2026 patients have a quality report error as of 12/31/26

Prostate

TG-263 Required Structures:
CTVp/CTVsb
PTVp/PTVsb
Bladder
Rectum

Full DICOM Upload Requirements (EBRT & Brachytherapy):
- Image Set (CT, MR, US)
- Dose
- Plan (scaled to delivered fx)
- Structures

Physics Form: Filled out once per patient at the end of treatment
- Prostate Radiotherapy Technical Details Form (PRTD)

2026 Quality Measures:
- EBRT patients: Increase MRI utilization for intact prostate cancer (70% target)
- Fewer than 5% of 2026 patients have a quality report error as of 12/31/26