PVDOMICS Chest CT Imaging - Specifications and Instructions
Center 41 – Mayo Clinic

This MOP Section is for PVDOMICS Study Center 41-Mayo Clinic only. Print out this section and provide it to the CT Technologist prior to participant scanning. Also, have available the participant's BMI (calculated on Form 132) or provide measured height and weight closest to the day of this CT scan.

This section includes the following information:
General Information, Patient Positioning, Scan Coverage, Radiation Dose Selection (BMI) and Participant Breath Hold Instructions

General Information

- Study coordinators will provide the effective mAs using Table 1 and display field of view (DFOV) settings. All other scan parameters are provided below in Table 2.
- If you do not have the appropriate baseline information, do not perform the CT scans. DO NOT repeat spiral scans for any reason, unless indicated as part of clinical evaluation which will be determined by local thoracic radiologist. Scout films may be repeated as needed.
- It is important that the patient fully understands the breath hold and scanning procedure and that all of the participant's concerns are addressed prior to performing the CT scan.

Patient Positioning

- Place patient in a supine position, arms positioned comfortably above the head in a head-arm rest, lower legs supported.
- Using the laser positioning lights, line up the patient so the chest is iso-center (in the middle: left-right; up-down) of the CT gantry.
- Move the table so the patient is in the correct position for a chest CT scan.

Scan Coverage

- CT scan must include the lungs and minimize additional exposure.
- Start the scan slightly above the apex of the lungs and stop it once the scan is through the base of the lungs as shown in Figure 1.
  - The DFOV should fit the lung and include some of the chest wall as shown in Figure 2.

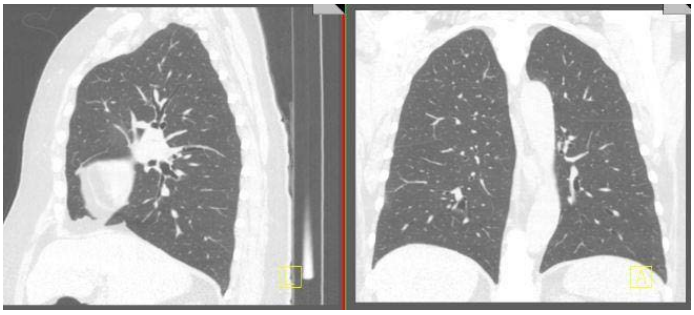

Figure 1.

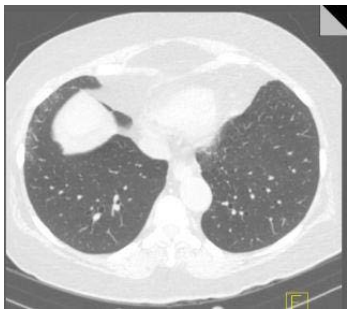

Figure 2.

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Radiation Dose Selection

BMI must be provided to the technologist to set the effective mAs. Extra small, small, medium or large effective mAs settings for the PVDOMICS scans are based upon the Body Mass Index (BMI). Please use the table below to select the correct effective mAs setting based on the patient's BMI.

Table 1 - Effective mAs as a Function of BMI

Body Size	BMI Range	Use mAs Setting
Large	>30	165
Medium	20 - 30	110
Small	15 - 19	90
Extra small	<15	60

The following parameters must be implemented for performing chest CT scans at your center.

Center Specific CT Scanner Parameters

Scout scan uses default parameters. Use center discretion on type and number of scouts, however, must maintain ALARA principle.

Table 2 – Center-Specific Scanner Parameters

Center Specific Scanner Parameters	Center 41- Mayo Clinic
Scanner Make	Siemens
Scanner Model	Sensation 64 slice
Scan Type	Spiral
Rotation time (s)	0.5
Detector Configuration	64x0.625
kV	120
mA/mAs	BMI setting
Pitch	1.0
Reconstruction Algorithm Standard	B35
Reconstruction Algorithm Lung	B60
Additional Image Filters	None
Iterative Reconstruction	Not to be used
Dose modulation	Off
Thickness (mm)	1.0
Interval (mm)	0.8

SCANNING:

Use these breathing instructions to perform the following:

- Conduct a practice breathing session with participant
- Take scout films - as needed - to position the FOV to cover the entire lung and as little soft tissue as possible
- Take inspiratory CT scan of participant

BREATHING INSTRUCTIONS:

- For this scan, I am going to ask you to take a couple of deep breaths in and out before we have you breathe all the way in and hold your breath.
- Ok, let's get started.
- Take a deep breath in *(watch chest to ensure a deep breath in)*
- Let it out (watch chest to ensure air is out)
- Take a deep breath in *(watch chest to ensure a deep breath in)*
- Let it out (watch chest to ensure air is out)
- Now breathe all the way IN...IN...IN *(watch chest to ensure a deep breath in as far as possible)*
- Keep holding your breath – DO NOT BREATHE!
- Count 10 seconds *(if practice or perform actual scan)*
- Breathe and relax (*at end of scan or practice)*