4DMedical

×v LVAS™ Lung Imaging Protocol Radial (72,36,PA) US

XV Lung Ventilation Analysis Software measures the tissue motion of the lungs, at all locations throughout the lungs, and at all phases of the breath.

It uses these motion measurements to calculate the 4-dimensional ventilation of pulmonary tissues.

The cinefluorograph images are acquired on standard equipment using a 4DMedical imaging protocol. To support the acquisition of these inputs the following imaging protocol is to be utilized.

The thoracic CT is acquired using a standard imaging protocol, and therefore no further instructions are provided.

Important: Pre-Imaging Checklist

- Confirm there is a thoracic CT on file for the patient before acquiring the cineflourograph series.
- Please turn off/ remove screen overlay and burn annotation prior to capturing images (Please consult PACS administrator if you are unsure.)
- In all instances follow your institution's standard practice, such as verifying the patient information or radiation shielding of patients

Confirm the fluoroscope has the capability to:

- Set acquisition frame rate to 15 FPS or greater
- Save image stream to RTIMAGE or XA DICOM, uncompressed format
- Image complete lung (prioritize the area of interest if the entire lung does not fit within the FOV)
- Set desired viewing angle, preferred angles are (72° LAO, 36° LAO, PA, 36° RAO, 72° RAO)
- Use Automatic Brightness Control (either pre-configured to 'ON' or manually set)

Quick Reference

- 1 Position Patient
- 2 Select Required Cinefluorograph Settings
- 3 Set Isocenter
- 4 Confirm Consistent Patient Breathing
- 5 Acquire Images at Each Angle

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- 6 Complete Image Analysis
- 7 Review Data Check List
- *Please see Instructions for Use for detailed thoracic CT imaging specifications

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Position Patient

- Supine position, remain still
- Position at head of the table
- Ensure patient is not rotated or tilted
- Remove pillow and elevate chin as this provides better visualization of apices
- Ensure arms are out of the Field of View (FOV) (e.g. comfortably above or behind the head, or otherwise supported)



Figure 1

2 Select Required Cinefluorograph Settings

- Move C-arm into head position
- Select (cine)fluoroscopic mode
- Ensure Automatic Brightness Control (ABC) is active
- Select 15 Frames Per Second (FPS)
- Place detector in Landscape mode
- Do not use digital zoom/magnification
- Maximize the Field of View (FOV)

Tip: If you collimate the image, it may reduce the FOV which is utilized for the analysis

3 Set Isocenter

- Bring detector close to the patient's chest, without impeding breathing. Take a snapshot
- Adjust table or detector position to center the patient's lungs. Take a snapshot.
 Confirm lungs are centered to ensure the entire lung fields are in the FOV. This FOV will be a direct correlation to the output of the ventilation report
- Lock table to ensure no movement.
- Rotate C-Arm to Lateral Position. Take a snapshot. Confirm lungs are centered. If necessary, raise or lower table to center the lungs
- Isocenter is to remain unchanged





Figure 2

Figure 3



Figure 4

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4 Confirm Consistent Patient Breathing

- Prior to scan, remind patient that unlike other chest studies, this exam does not require breath hold
- Observe patient's breathing pattern for a few breaths. Ensure breathing pattern appears consistent and tidal
- Breathing shall be free from hiccups, sneezes, sniffing, coughing and hyper-ventilation, in each sequence
- Do not coach the patient on breathing techniques



5 Acquire Images at Each Angle

- All five sequences must be taken while maintaining isocenter
- Acquire images at the required angles:
 - 72° LAO
 - 36° LAO
 - PA
 - 36° RAO
 - 72° RAO
- Begin image capture mid-expiration, capture a complete continuous breath during stable tidal breathing
- Stop image capture at the beginning of inspiration
- Ensure that each cinefluorograph series is saved prior to moving to the next position



- Verify that all five cinefluorograph series are saved (RTIMAGE or XA DICOM)
- Review capture of a full tidal breath at each angle
- Send the cinefluorograph series from each designated angle to equal a total of 5 series





Figure 7

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Review Data Check List 7

Review each Cinefluorograph sequence using

INHALE-5

- Isocenter is maintained
- No breathing anomalies occurred
- Habitual tidal breathing imaged
- Arms are out of FOV
- Laying still for imaging duration
- Entire breath captured
- 5 unique angles were acquired

Before use, always read and follow the full Instructions for Use

To find out more about our products, including our FDA-cleared XV Lung Imaging Technology, get in touch with your local 4DMedical team today. info@4dmedical.com | www.4dmedical.com

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Approved By:

(CO-228) CO-228 Protocol and Setting Isocentre Materials Update

Description

This change order is for the update of XV LVAS (Dawson) protocols and educational materials, used by the Clinical Education Team. Refer to the document revision history of each document for changes made. Changes and rationales for the Lung Imaging Protocol can be found in DOC-4284 under related items. The Lung Imaging Protocol documents have been included in their respective country-specific IFUs (DOC-1174, AU and DOC-1102, USA). Updates to the IFUs are included in CO-175. DMR/DHF to be updated as per CO-235.

Justification

Protocols and educational materials requiring revision as per the request of the Clinical Education Team to improve readability and clarity.

Assigned To:	Initiated By:	Priority:	Im	pact:	
Fathiyya Laksono	Megan Blair	Medium	Mi	nor	
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