

Βασικές ρυθμίσεις υπερήχου Τεχνική FLUS και φυσιολογικός πνεύμονας

**LET'S
GET READY**

ΗΧΟΒΟΛΕΙΣ



Linear



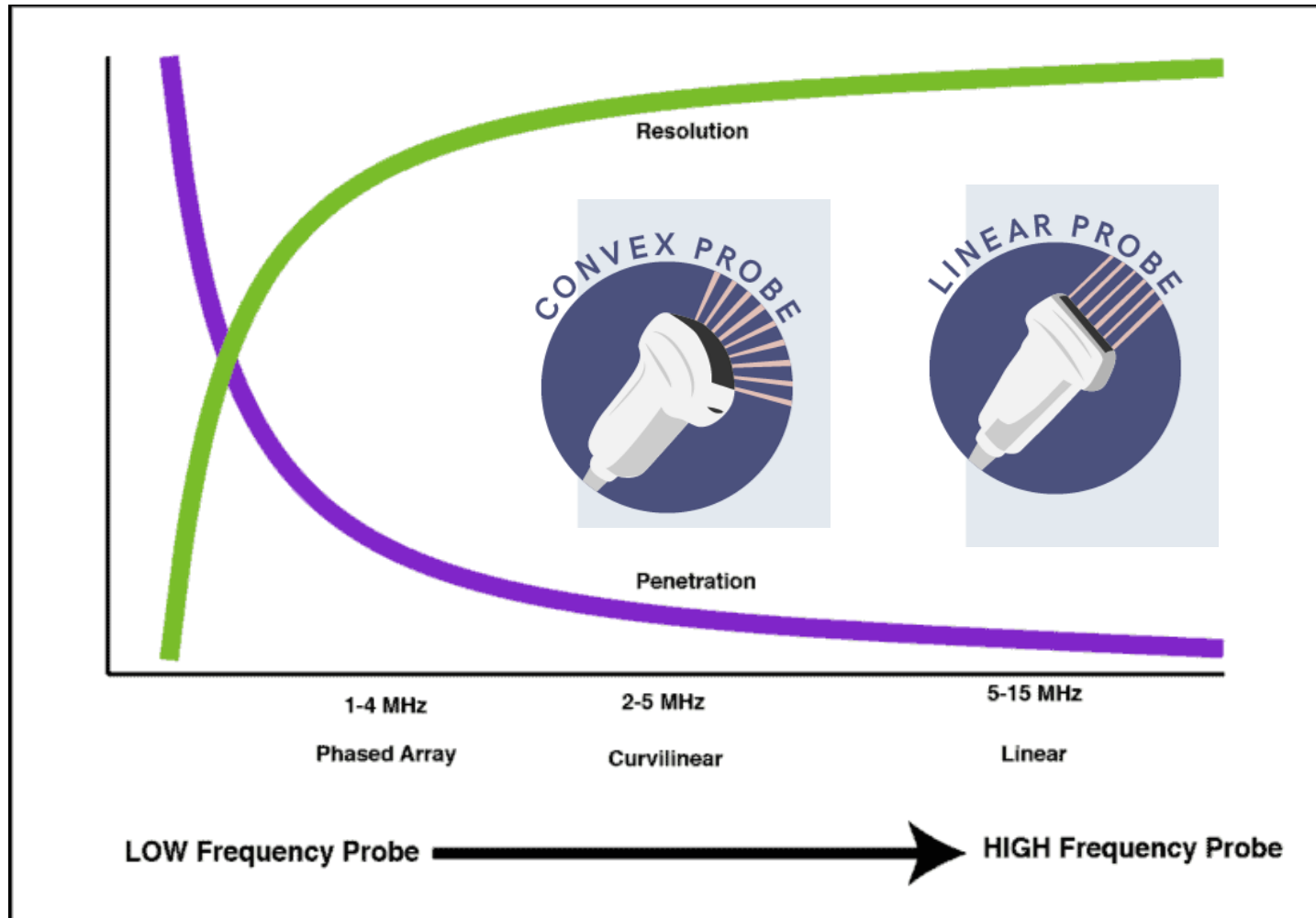
Curvilinear



**Phased
Array**



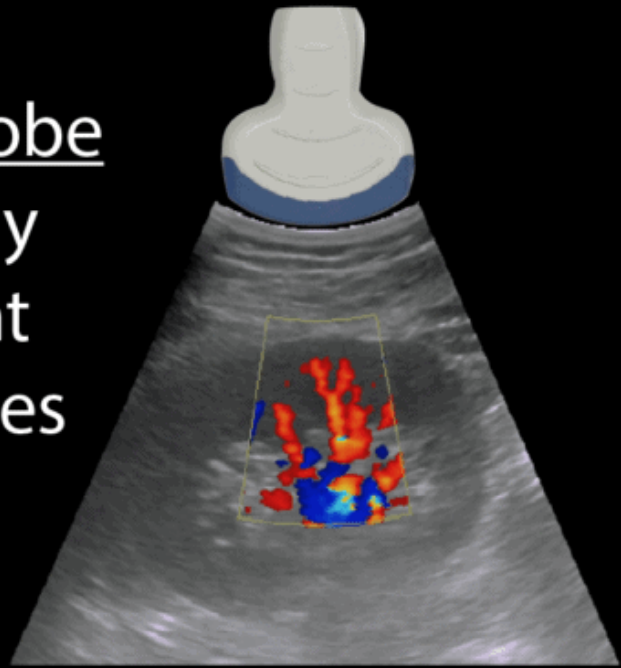
ΗΧΟΒΟΛΕΙΣ



ΗΧΟΒΟΛΕΙΣ

Curvilinear Probe

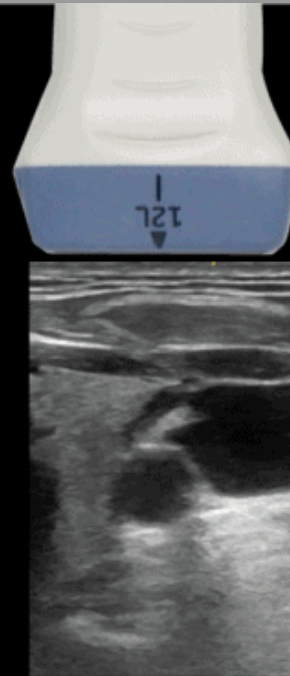
Low Frequency
Wide Footprint
Deep Structures



Ultrasound Probe	Frequency	Applications
Curvilinear	2-5 MHz	General Abdominal (Gallbladder, Liver, etc), eFAST, renal, aorta, IVC, Bladder, Bowel, OB/Gyn

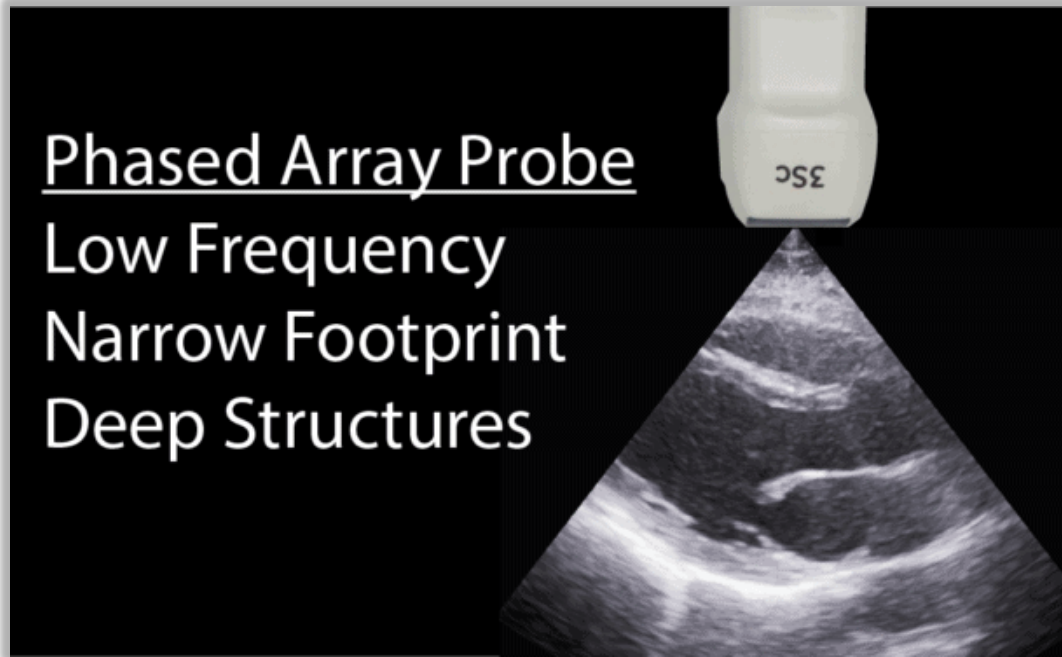
ΗΧΟΒΟΛΕΙΣ

Linear Probe
High Frequency
Linear Footprint
Shallow Structures (< 8cm)



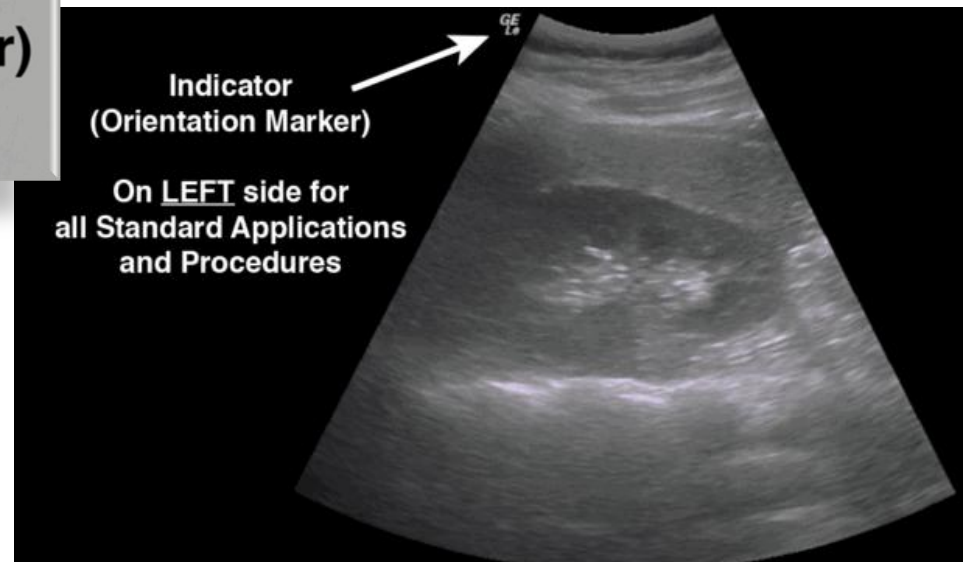
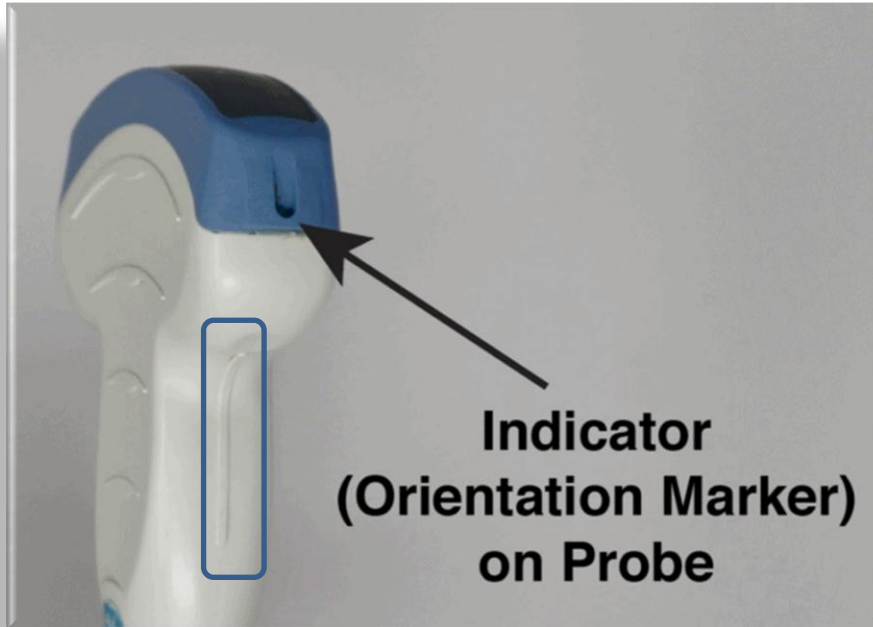
Ultrasound Probe	Frequency	Applications
Linear	5-15 MHz	Soft tissue, Musculoskeletal, Pediatric, Ocular, Trachea, Thyroid, Thoracic, Most Procedures, DVT, Appendicitis, Testicular

ΗΧΟΒΟΛΕΙΣ

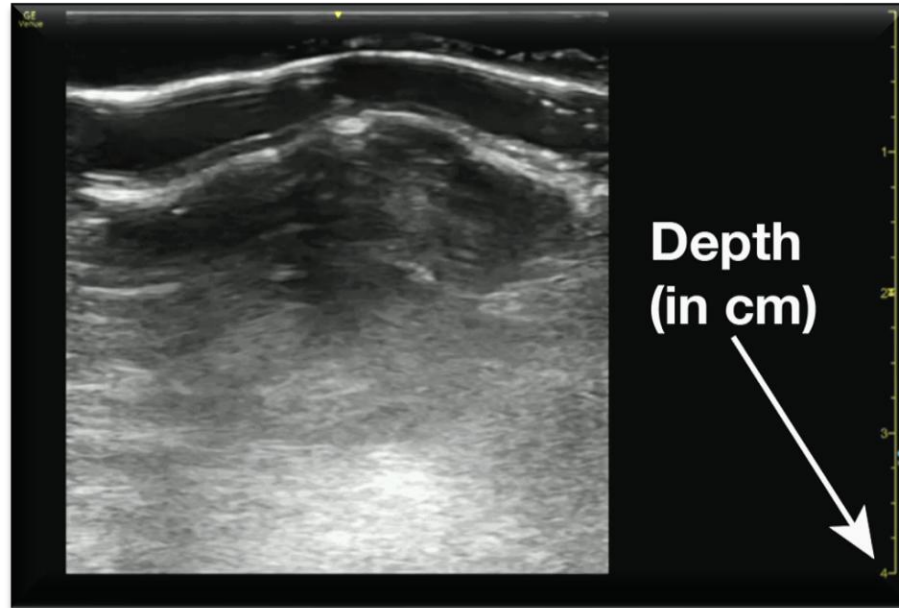


Ultrasound Probe	Frequency	Applications
Phased Array/Sector	1-5 MHz	Cardiac, Abdominal, eFAST, Renal, Bladder, Bowel, IVC

ΠΡΟΣΑΝΑΤΟΛΙΣΜΟΣ

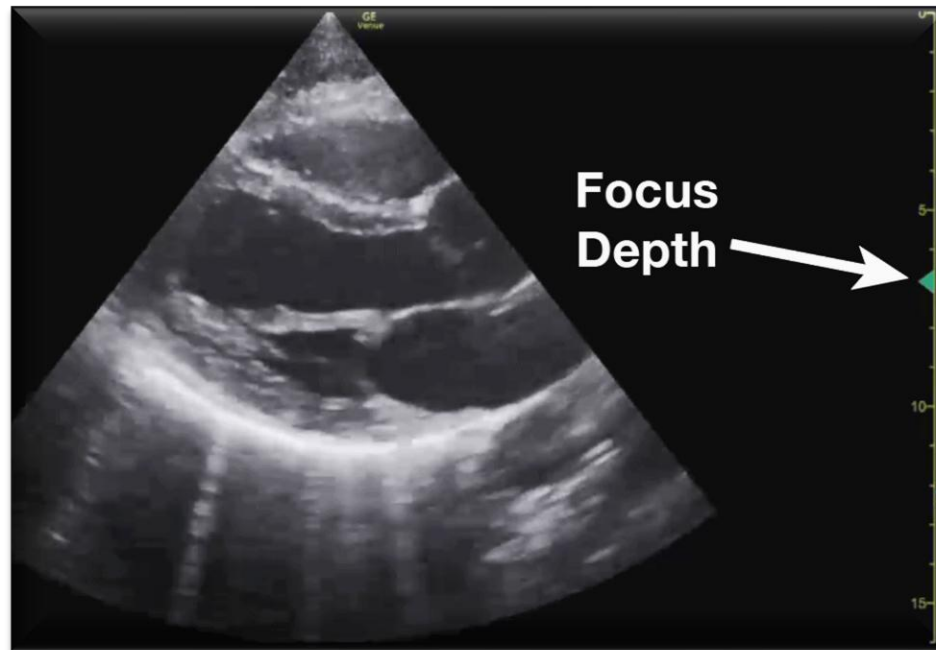


ΡΥΘΜΙΣΗ ΠΑΡΑΜΕΤΡΩΝ



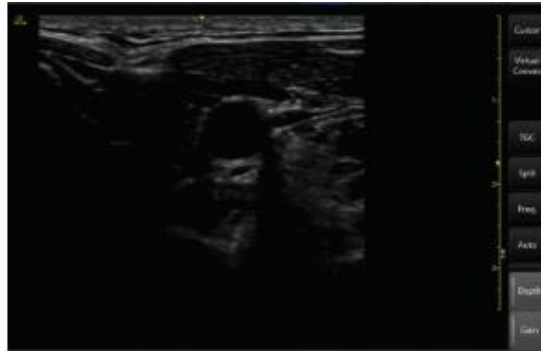
DEPTH is how far into tissue the US is imaging

ΡΥΘΜΙΣΗ ΠΑΡΑΜΕΤΡΩΝ

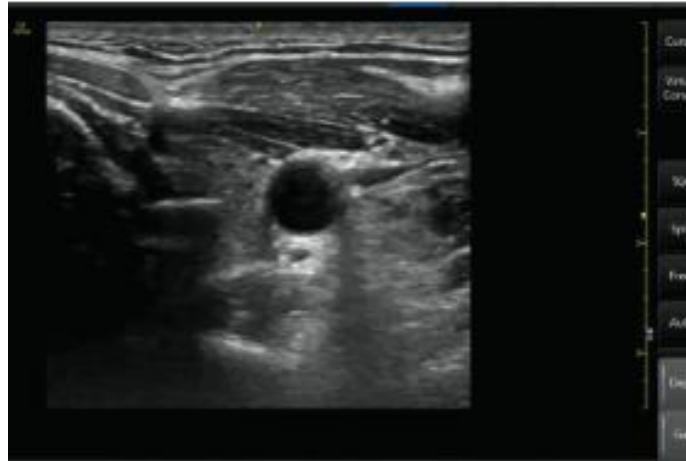


FOCUS defines the area of the image where the image is optimized

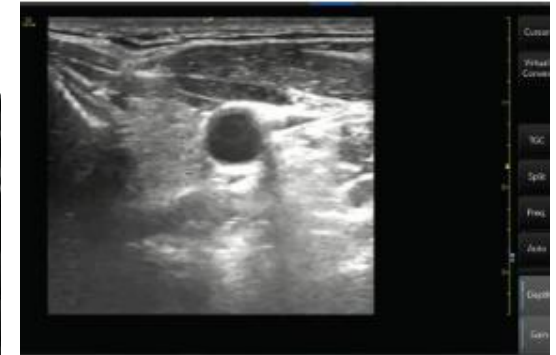
ΡΥΘΜΙΣΗ ΠΑΡΑΜΕΤΡΩΝ



Undergained Ultrasound Image



Optimal Gain Ultrasound Image

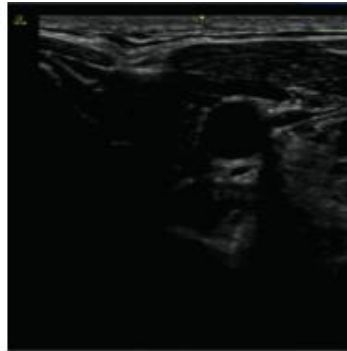


Overgained Ultrasound Image

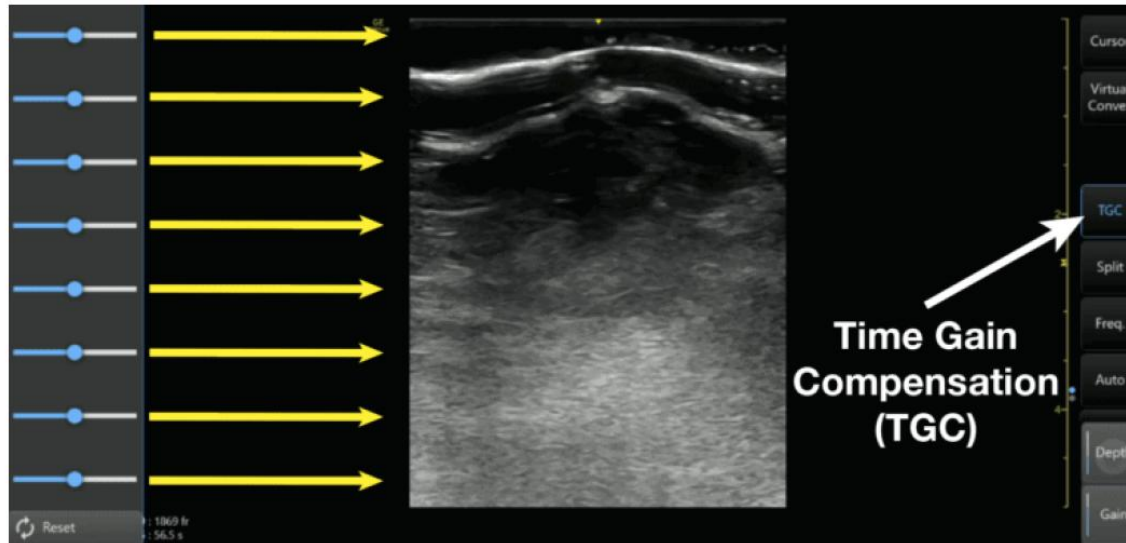


GAIN is signal amplification applied to the sound signal; adjusting gain makes the entire image lighter or darker

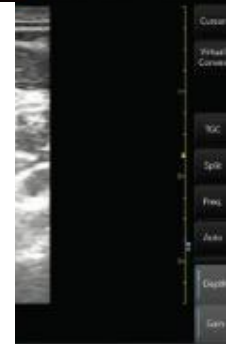
ΡΥΘΜΙΣΗ ΠΑΡΑΜΕΤΡΩΝ



Undergained Ultrasound



Time Gain Compensation (TGC)



nd Image



TIME GAIN COMPENSATION adjusts the brightness at different depths (e.g. near or far parts of the image)

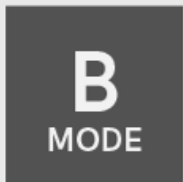


GAIN is signal amplification applied to the sound signal; adjusting gain makes the entire image lighter or darker

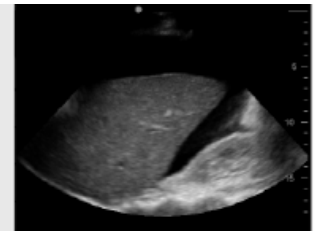
MODES

how the ultrasound machine creates an image using sound waves

2D mode / B mode (Brightness mode)



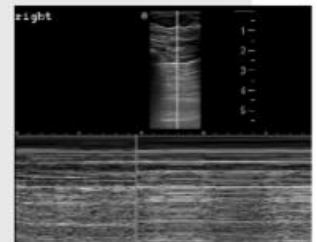
Brightness mode: the standard 2D imaging technique, used for most POCUS exams



M mode (Time-motion mode)



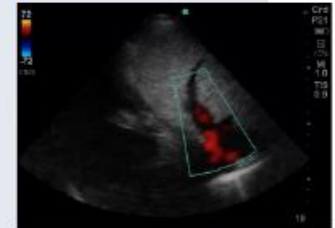
Mono-dimensional or **Motion** mode: represents a single plane (vertically) with respect to time (horizontally)



Doppler modes are used to identify and measure movement (e.g. blood flow).

Color DOPPLER

Color doppler mode: color is overlaid on a selected area of the ultrasound image representing the direction of movement as red/blue



CW DOPPLER

Continuous wave doppler mode: measures movement on one line within the image continuously over time

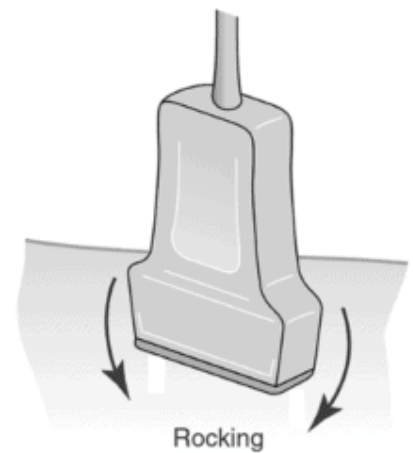
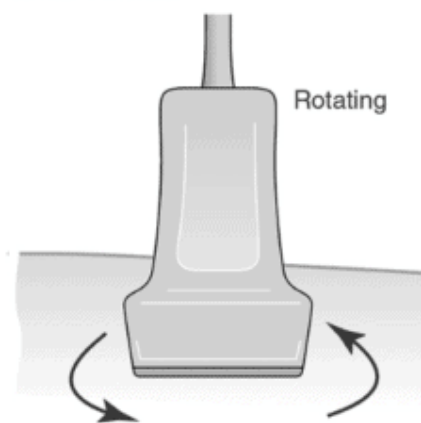
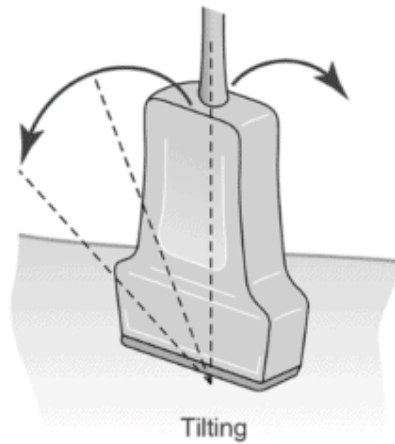
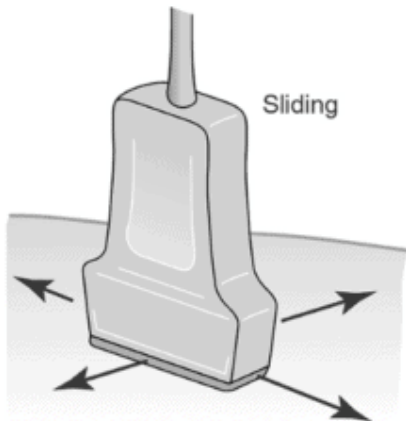
PW DOPPLER

Pulse wave doppler mode: measures movement within a defined area of the image in short bursts over time



Spectral or tri-mode doppler: combines B-mode, color doppler, and either CW or PW doppler, often used for complex measurements

ΒΕΛΤΙΣΤΟΠΟΙΗΣΗ ΛΗΨΗΣ



Χαμηλός φωτισμός χώρου

Επιλογή κατάλληλου ηχοβολέα – παραθύρου

Άφθονο τζελ!

**LET'S
GET READY**

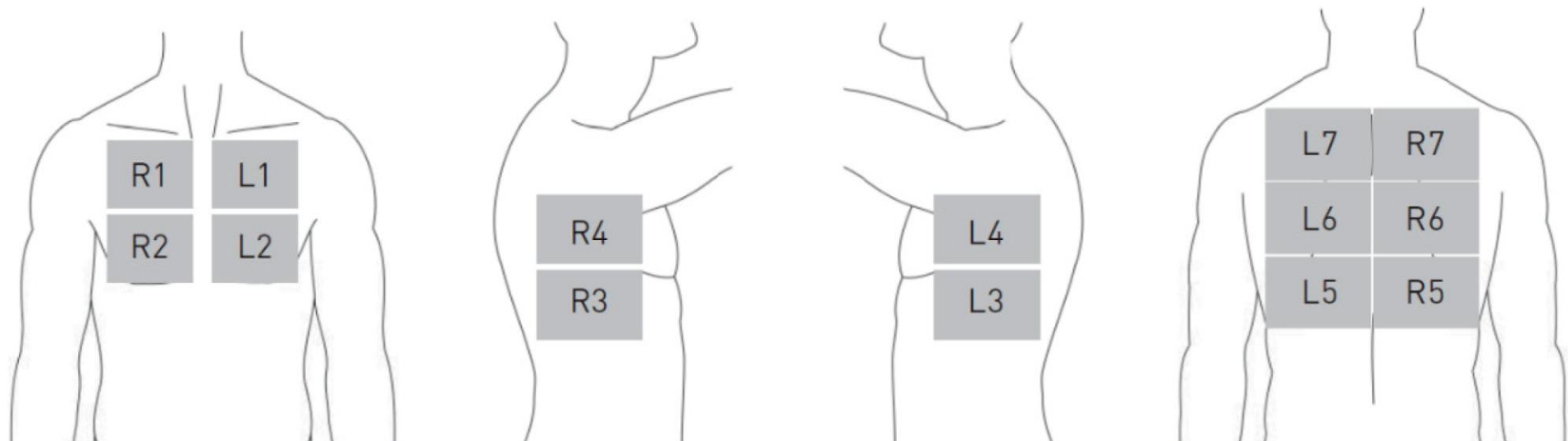
Αναγνώριση δείκτη προσανατολισμού

Κατάλληλο βάθος πεδίου και εστίαση σήματος

Χαμηλή ένταση σήματος για αναγνώριση ευρημάτων

ΠΡΩΤΟΚΟΛΛΟ FLUS

- Πνευμοθώρακας ;
- Πλευριτική συλλογή ;
- Διάμεσο σύνδρομο ;
- Άλλη εμφανής παθολογία ;



ΗΧΟΒΟΛΕΙΣ



Linear



Curvilinear



**Phased
Array**



ΚΛΙΝΙΚΗ ΕΦΑΡΜΟΓΗ

Probe Positions

A



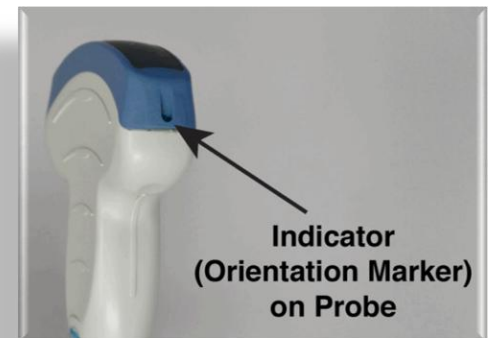
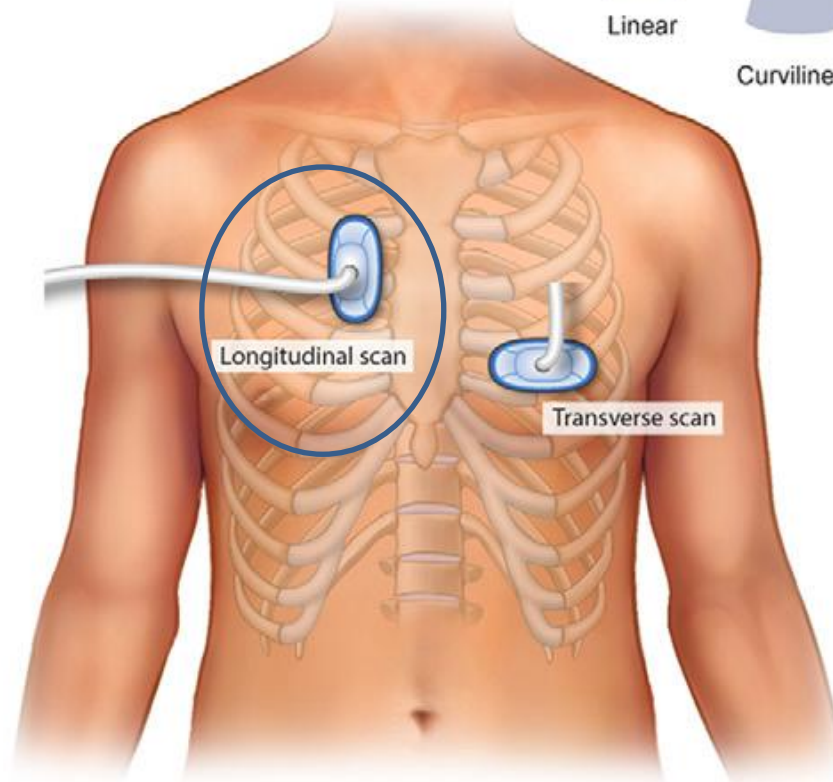
Linear



Curvilinear

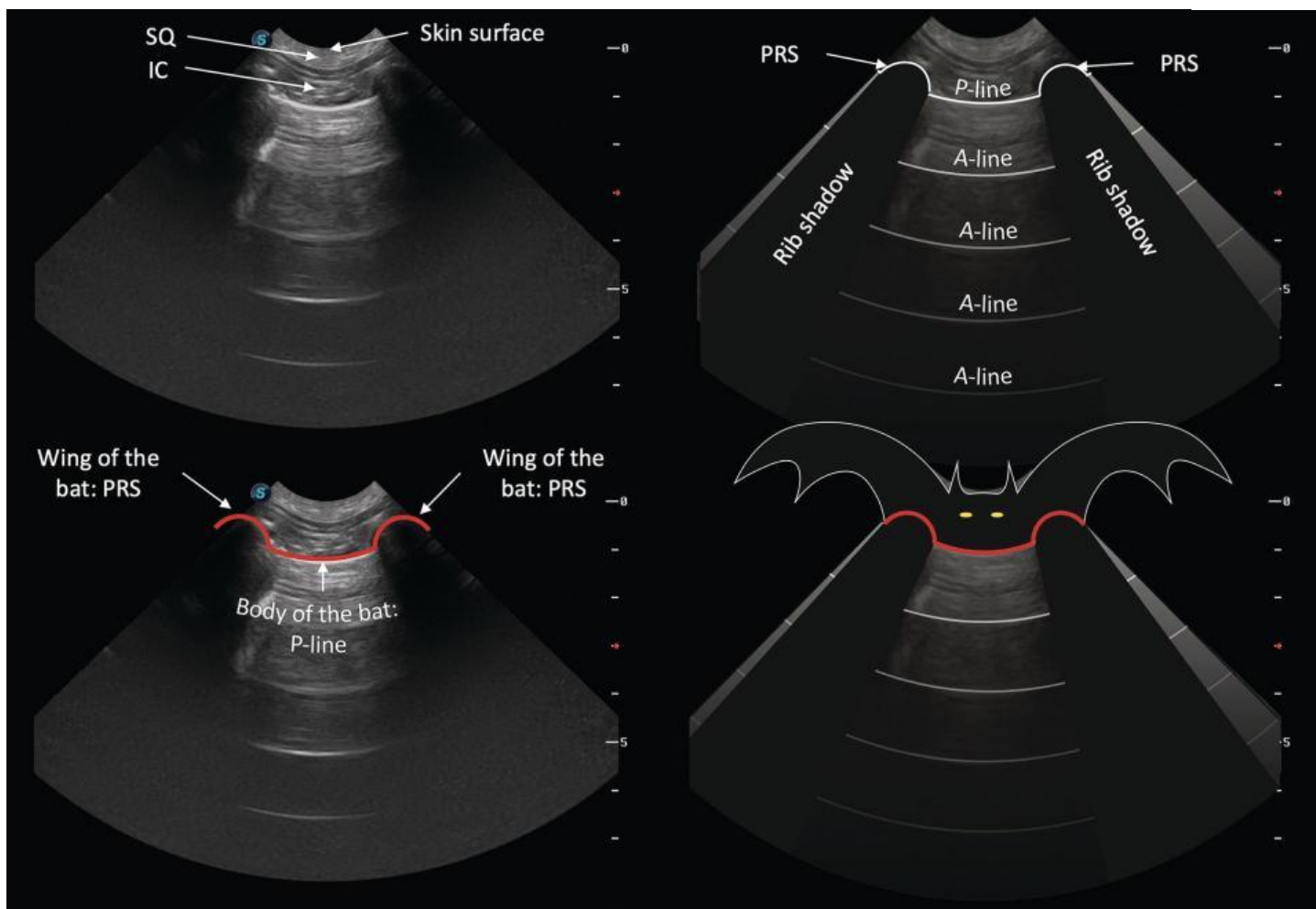


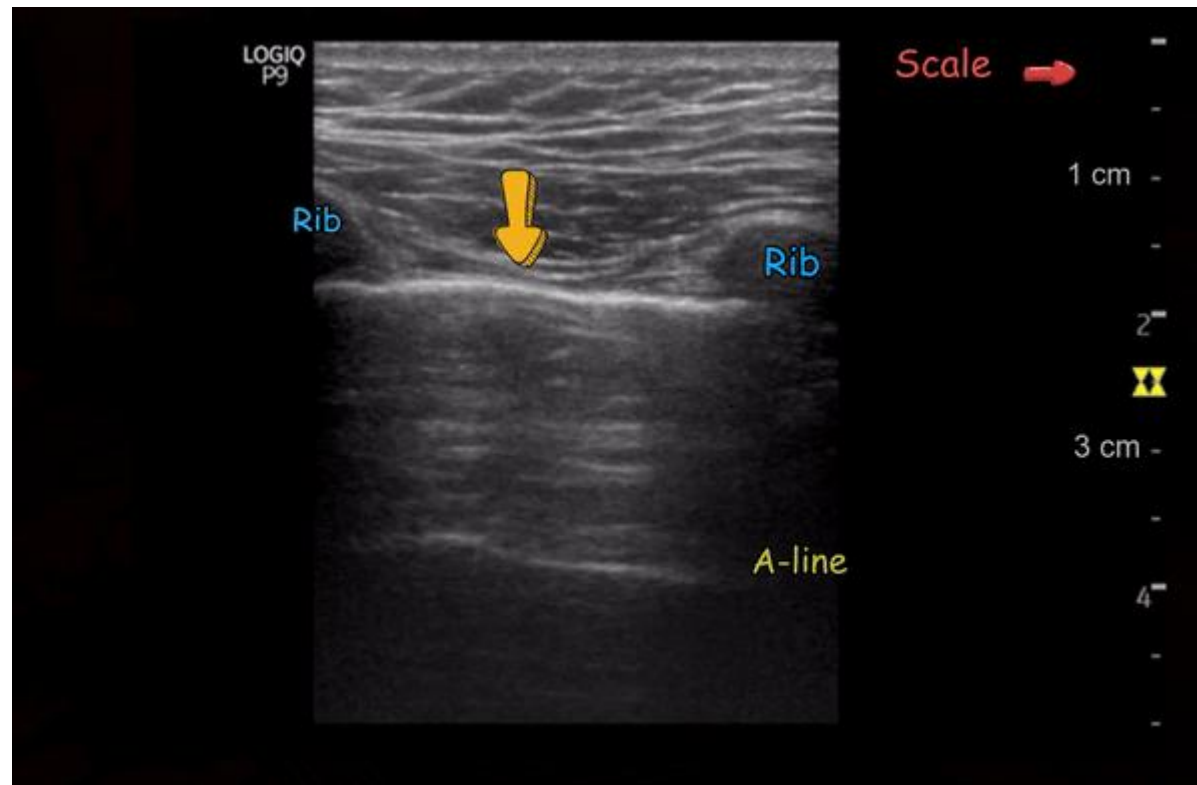
Phased Array



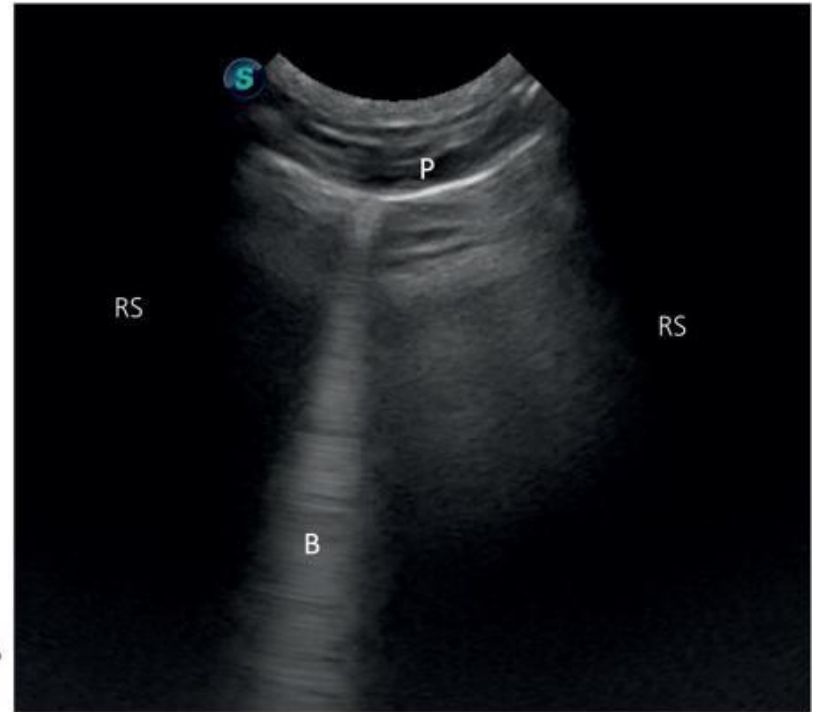
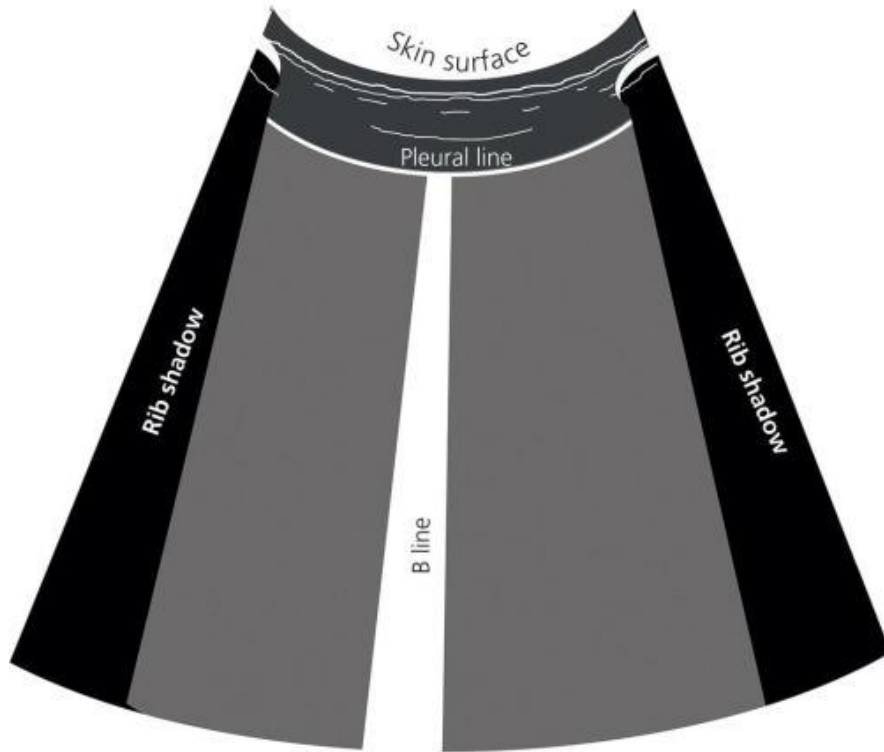


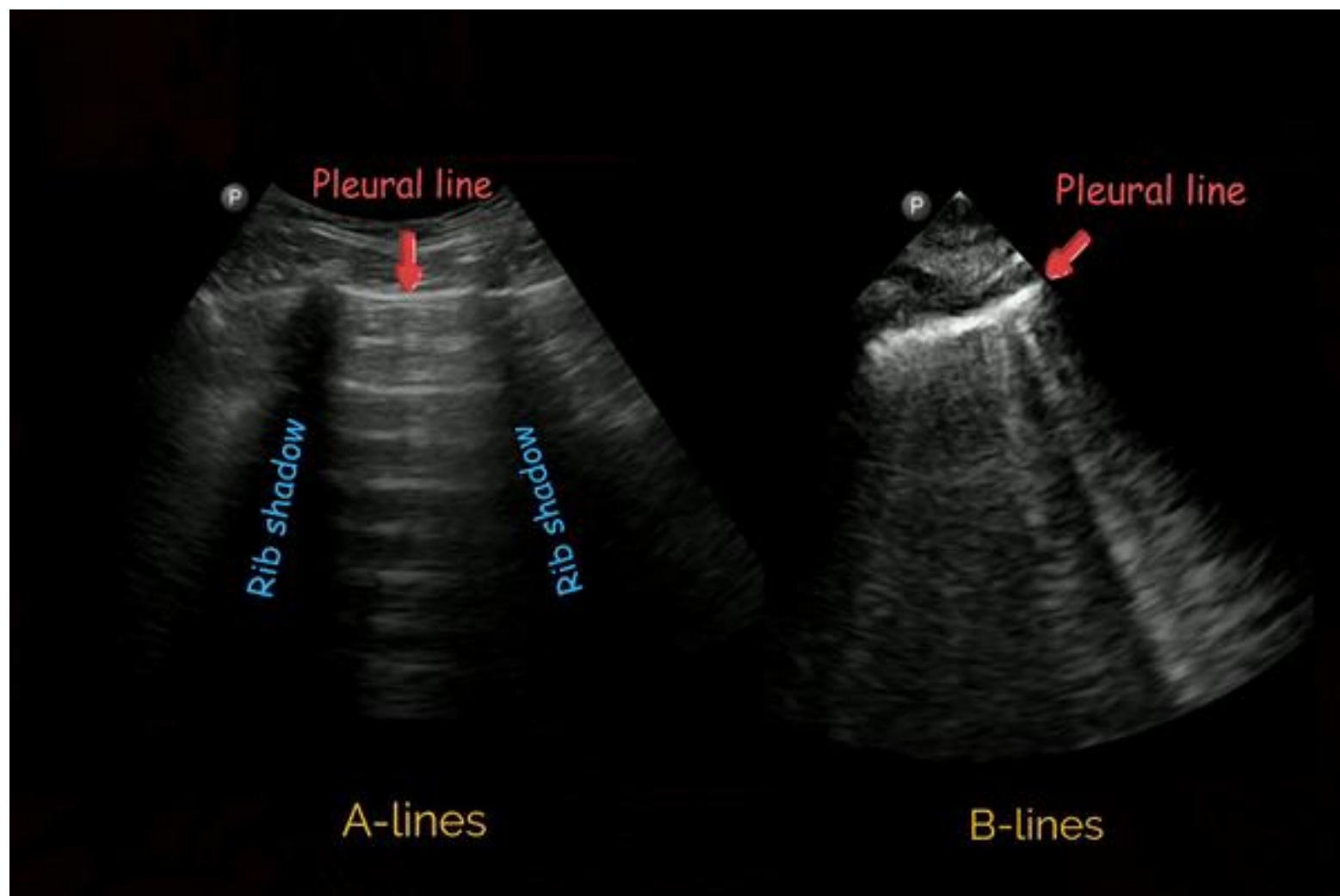
THE BAT SIGN



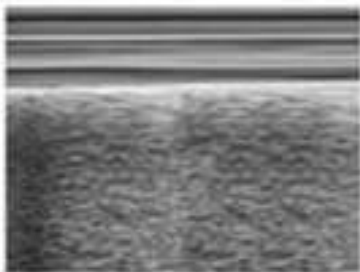
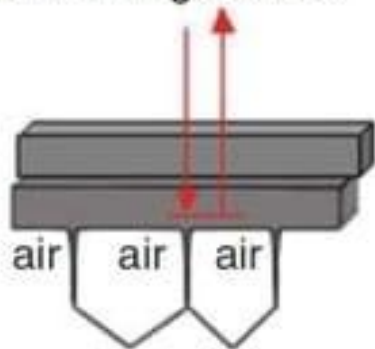


B-line

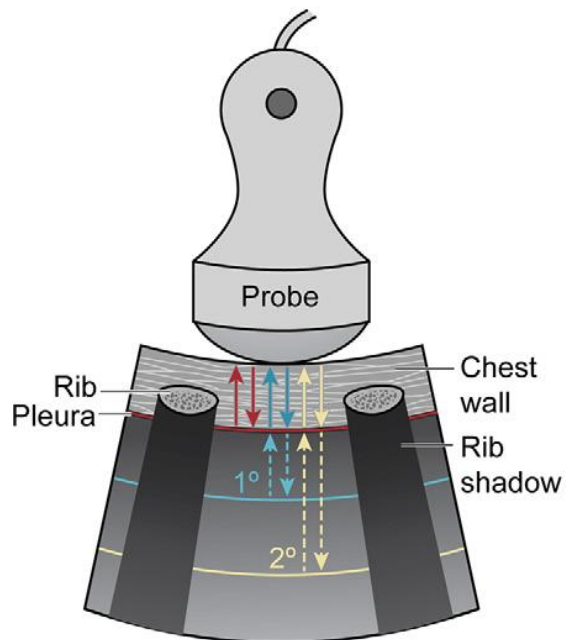




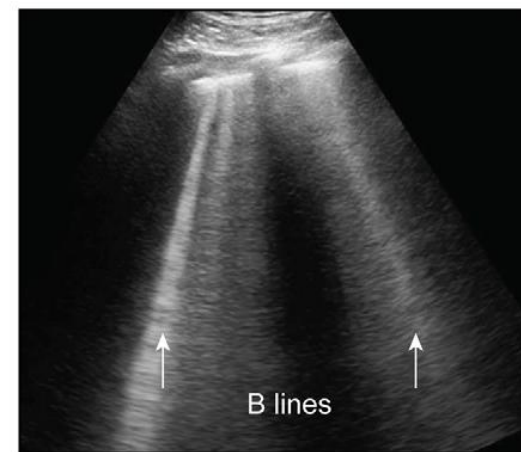
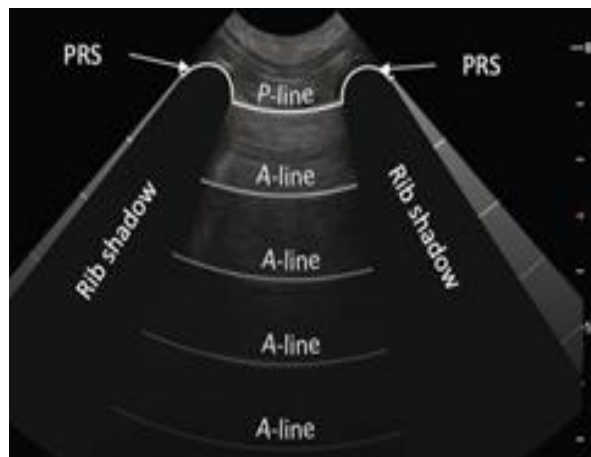
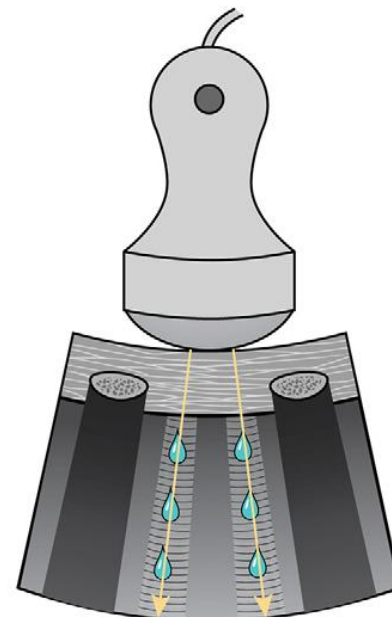
Normal lung surface



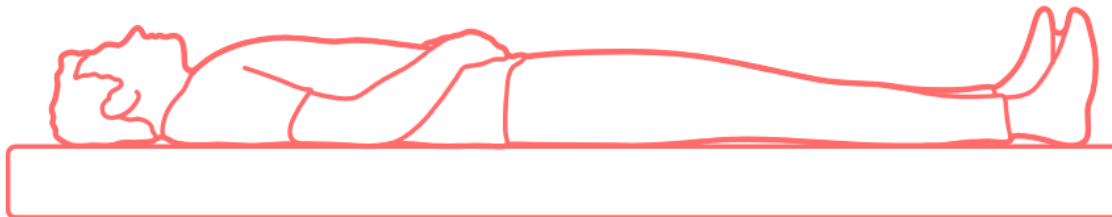
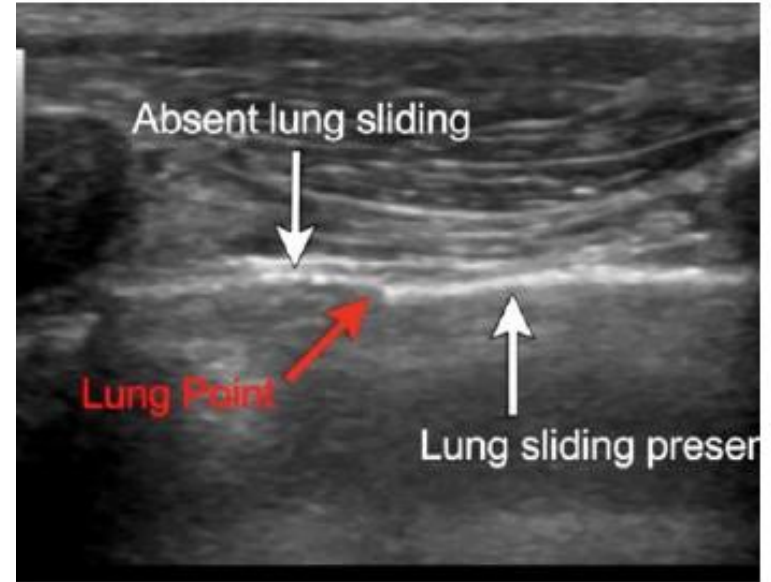
A Lines



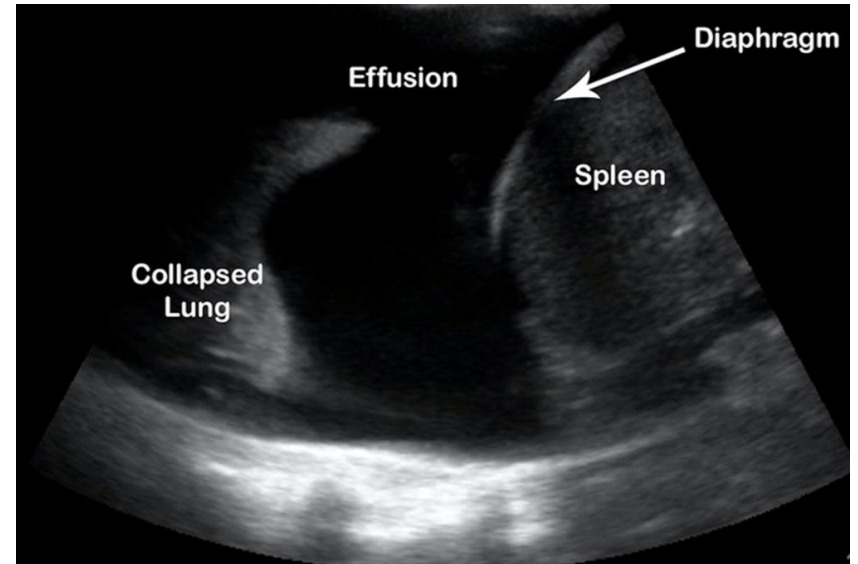
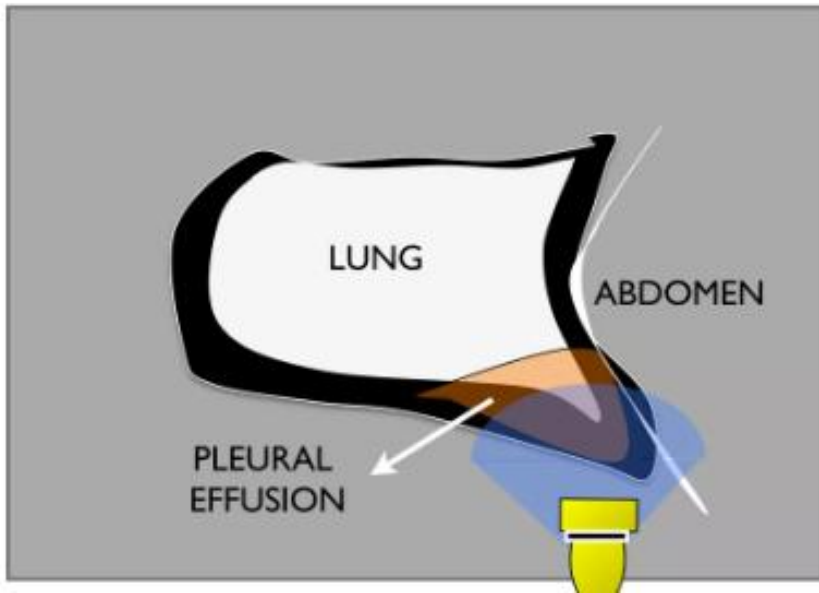
B Lines



ΠΝΕΥΜΟΘΩΡΑΚΑΣ

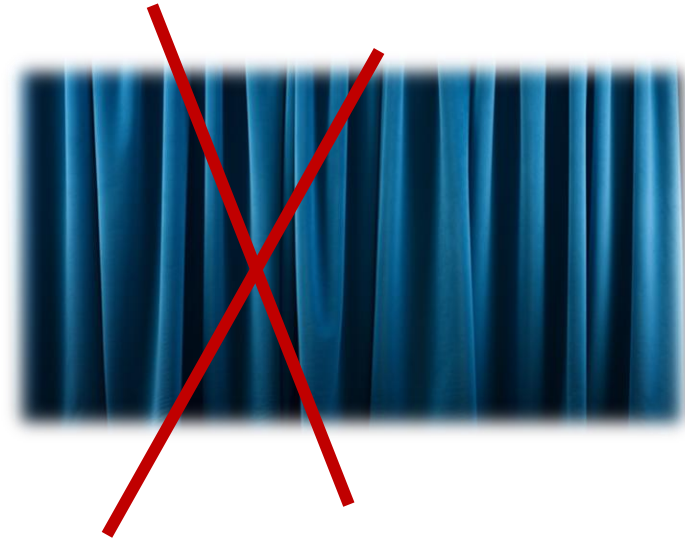


ΥΠΕΖΩΚΟΤΙΚΗ ΣΥΛΛΟΓΗ



US ΣΗΜΕΙΑ ΑΝΑΓΝΩΡΙΣΗΣ ΣΥΛΛΟΓΗΣ

- Curtain sign



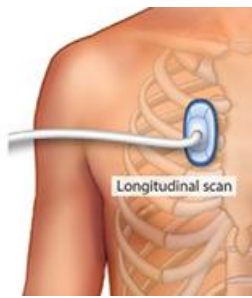
- Spine sign



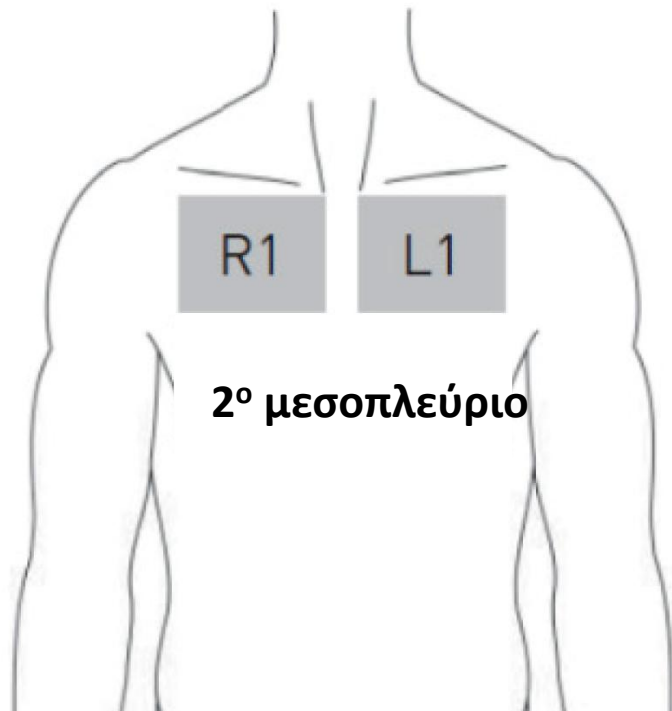
ΔΙΑΜΕΣΟ ΣΥΝΔΡΟΜΟ

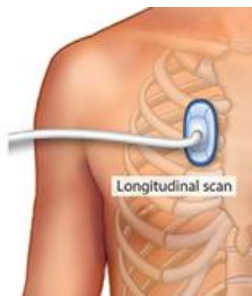
	Acute cardiogenic pulmonary edema	Chronic heart failure	ALI/ARDS	Pulmonary fibrosis
Clinical setting	acute	chronic	acute	chronic
B-lines number	++++	+ / + / +	++++	+ / + / +
B-lines distribution	multiple, diffuse, bilateral (white lung)	multiple, diffuse, bilateral, following decubitant regions (black and white lung)	non-homogeneous distribution, presence of spared areas	more frequently posterior at lung basis
Other LUS signs	pleural effusion	pleural effusion	pleural effusion, pleural alterations, parenchymal consolidations of various size	pleural thickening
Echocardiogram	abnormal	abnormal	likely normal	likely normal

ALI = acute lung injury; ARDS = acute respiratory distress syndrome; LUS = lung ultrasound.

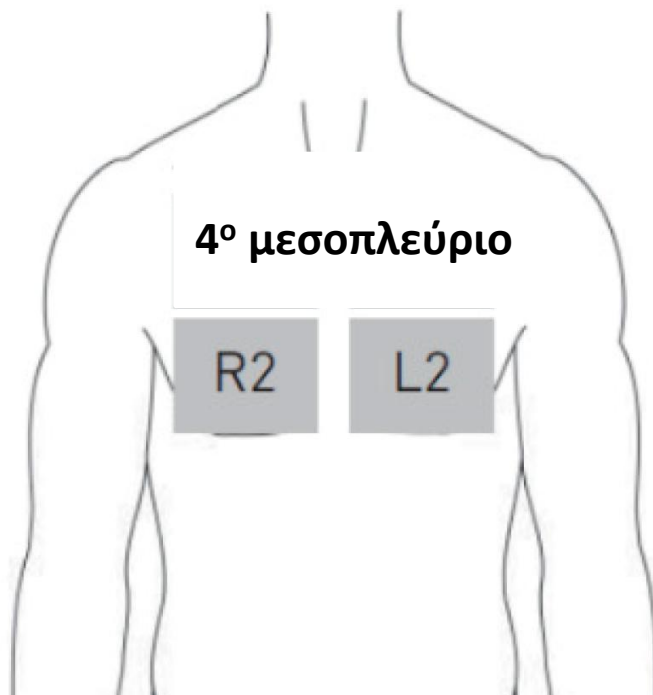


ΠΡΩΤΟΚΟΛΛΟ FLUS

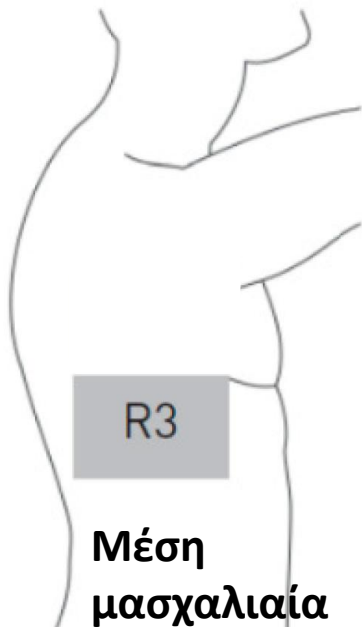




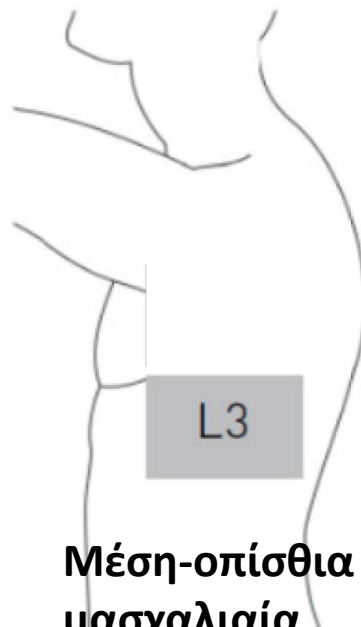
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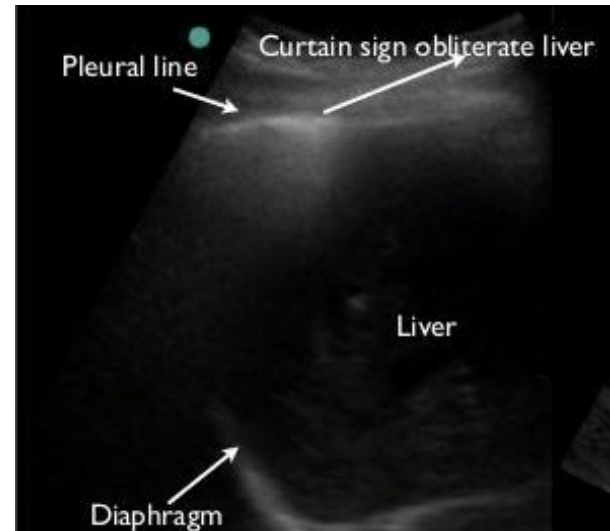
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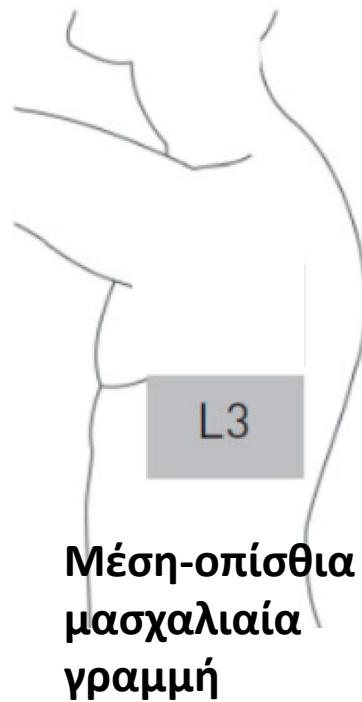
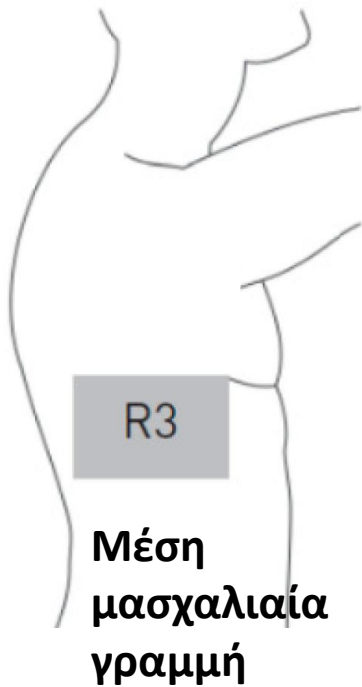
Μέση
μασχαλιαία
γραμμή



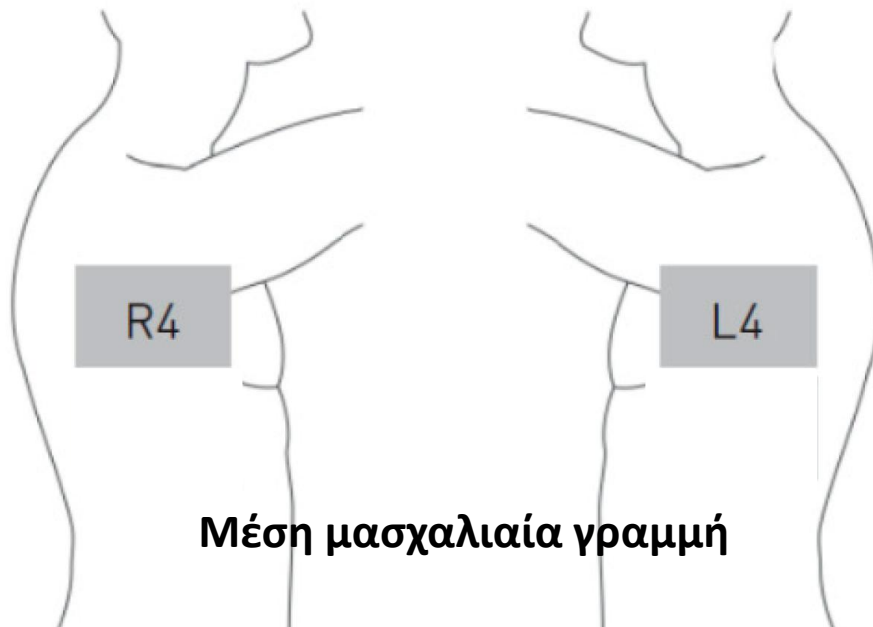
Μέση-οπίσθια
μασχαλιαία
γραμμή



ΠΡΩΤΟΚΟΛΛΟ FLUS

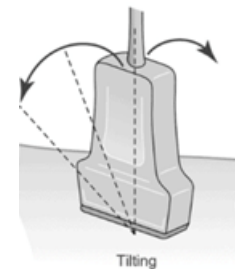


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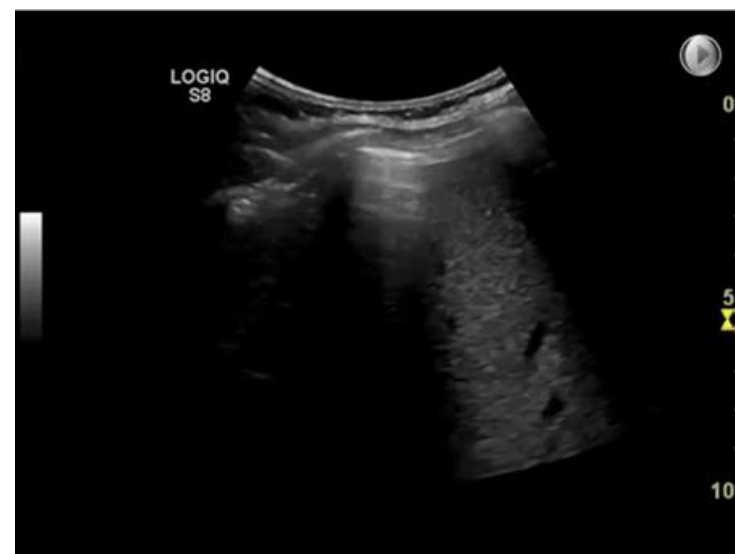
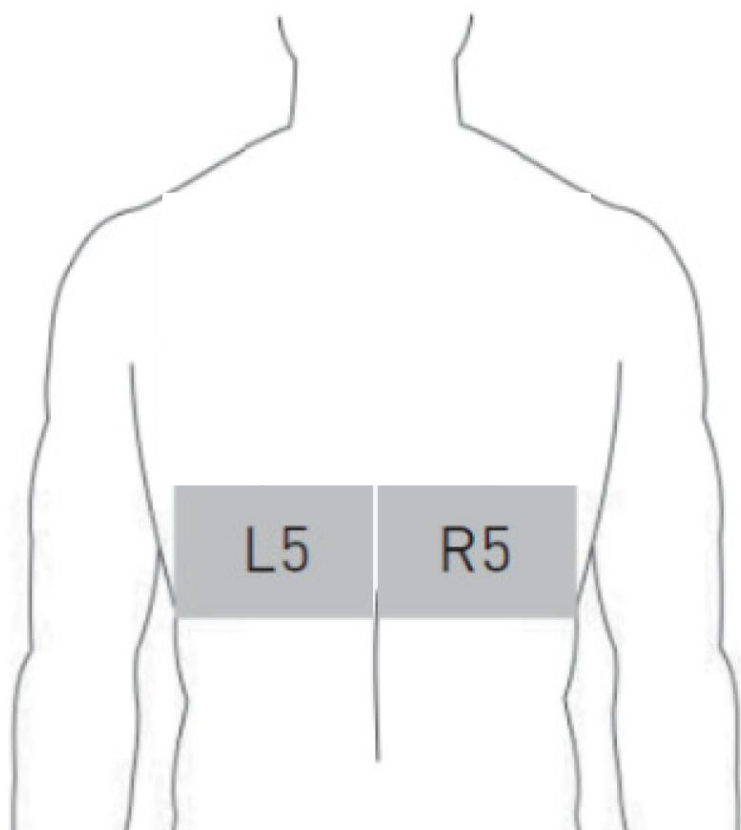


3^ο μεσοπλεύριο

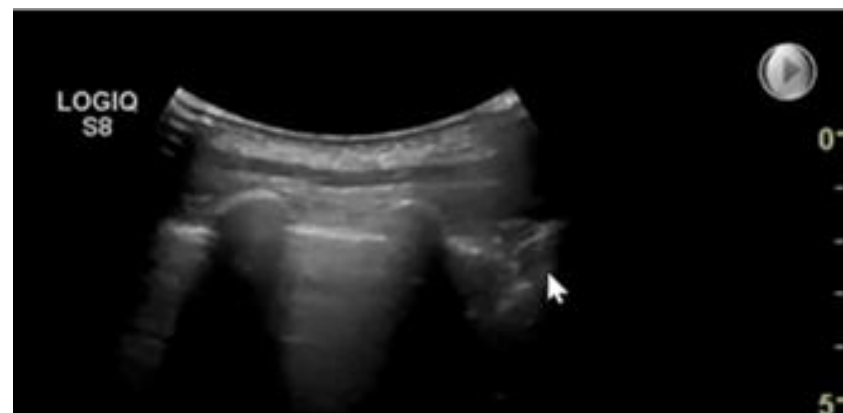
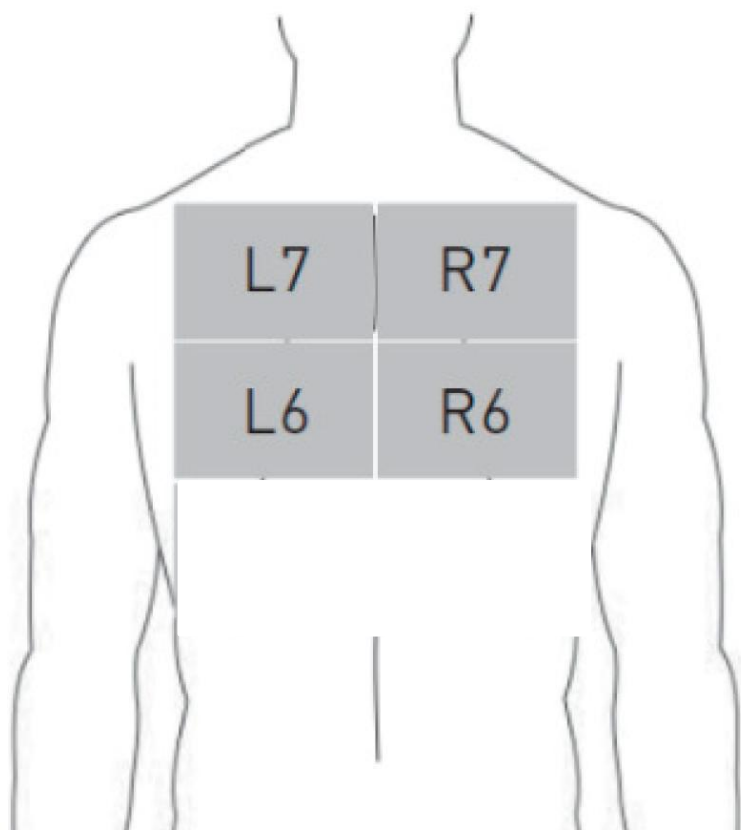
Μέση μασχαλιαία γραμμή



ΠΡΩΤΟΚΟΛΛΟ FLUS



ΠΡΩΤΟΚΟΛΛΟ FLUS



Ζώνη 7R