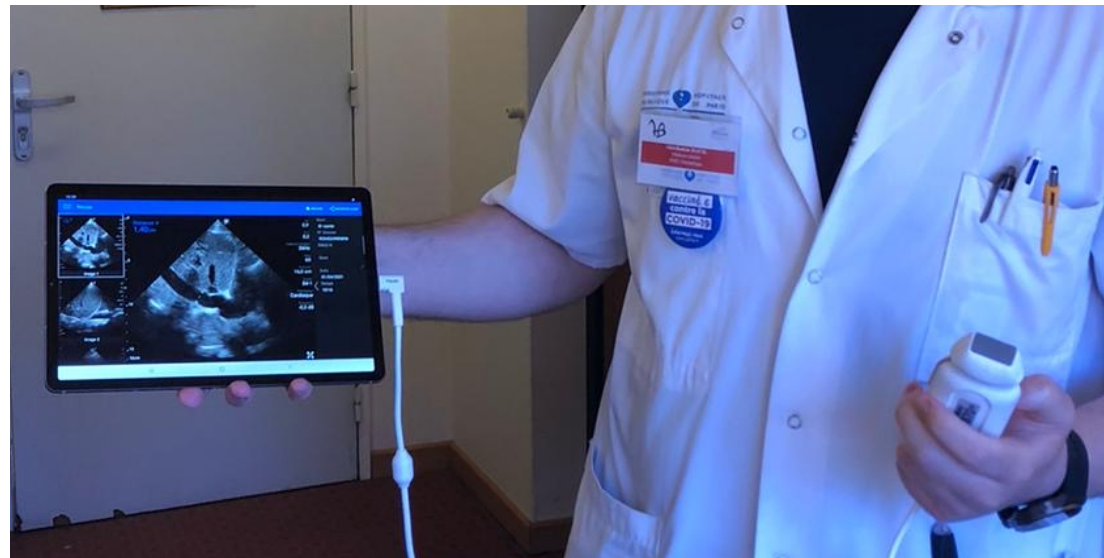


L'échographie thoracique en gériatrie



A. HACIL (Paris)



Aucun conflit d'intérêt



- Notions sémiologiques
- Comment réaliser une échographie thoracique
- Particularité de la personne âgée



D. Lichtenstein
G. Mezière

A lung ultrasound sign allowing bedside distinction between pulmonary edema and COPD: the comet-tail artifact

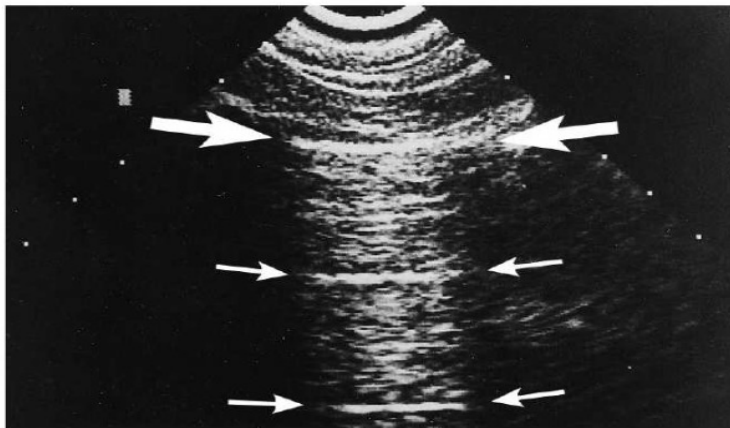


Fig. 1 Pleural line (*large arrows*) visible between two ribs. Roughly horizontal parallel reverberation lines (*small arrows*). The distance between two horizontal lines is equal to the distance between the skin and the lung surface. This patient had exacerbation of COPD, but the same pattern was observed in normal subjects

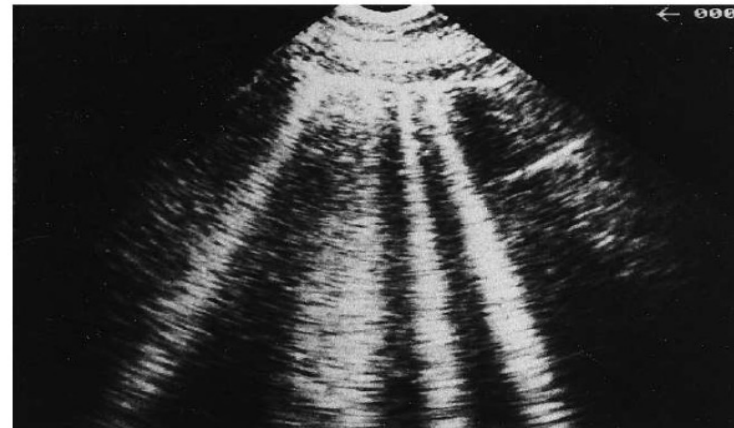


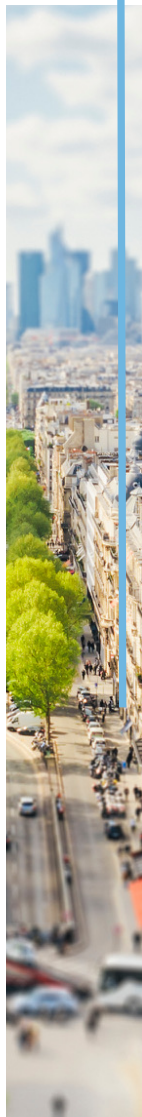
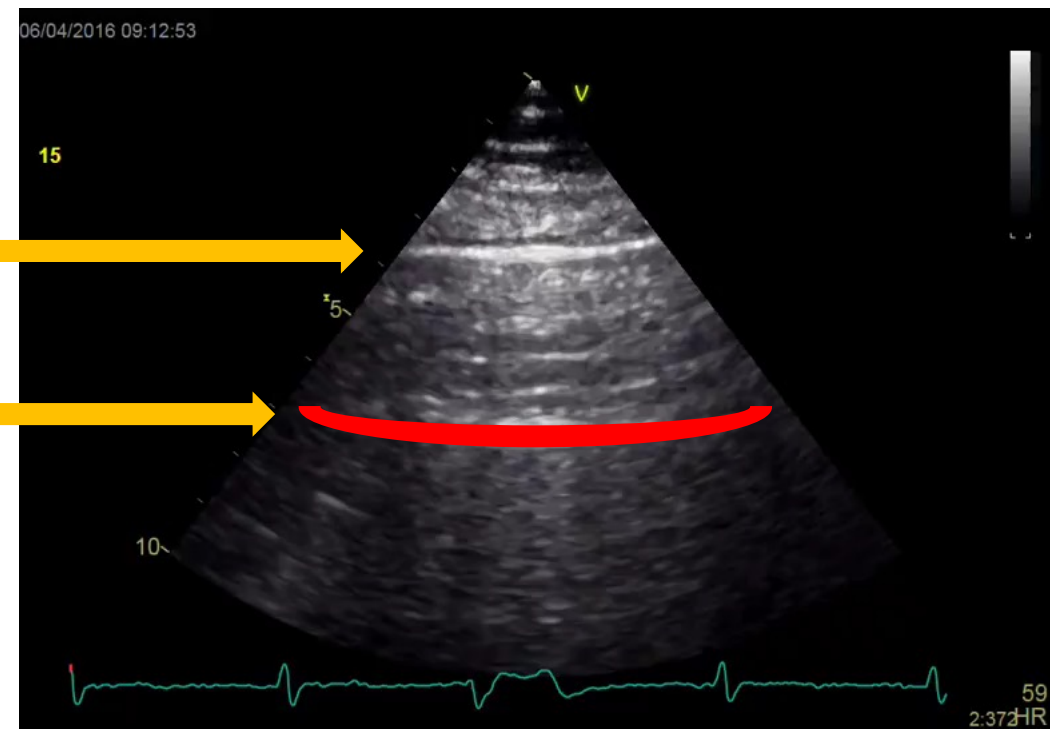
Fig. 2 Multiple comet-tail artifacts arising from the pleural line and distant from each other by a distance of 7 mm or less. As the pattern is suggestive of a rocket at lift-off, one may use a short and suggestive label: “lung rockets”. This patient had pulmonary edema

Image normale: Glissement pleurale et ligne A

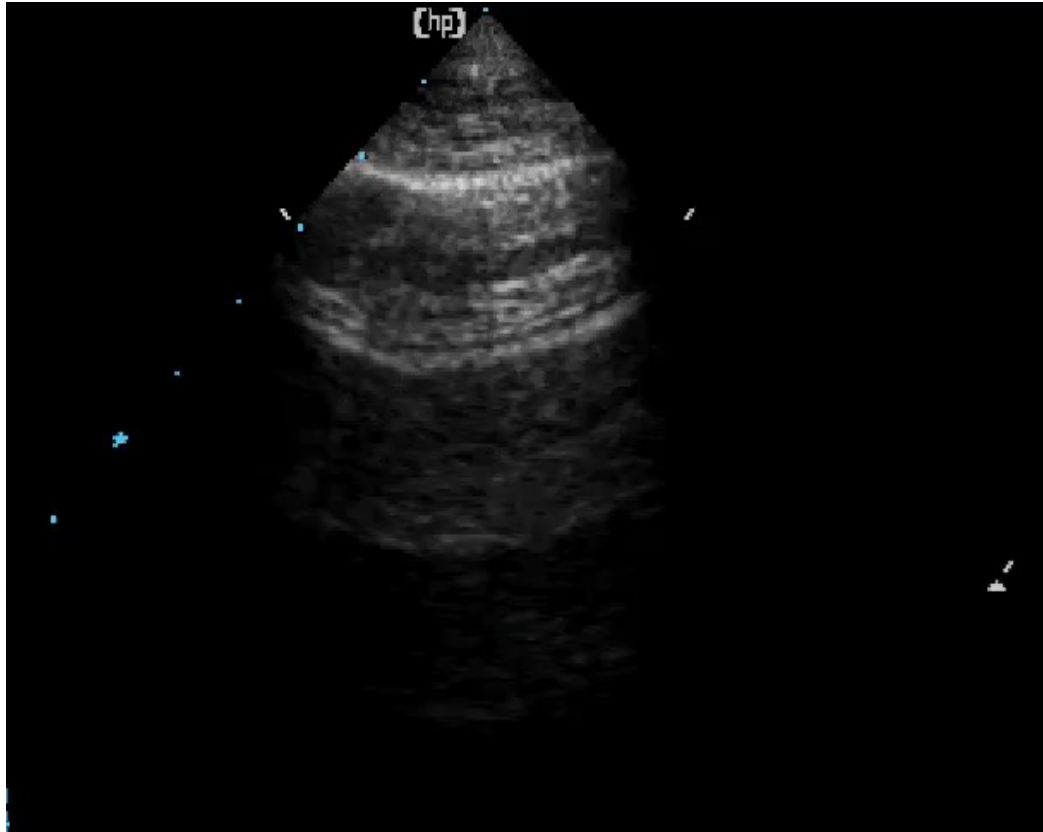
Glissement pleural



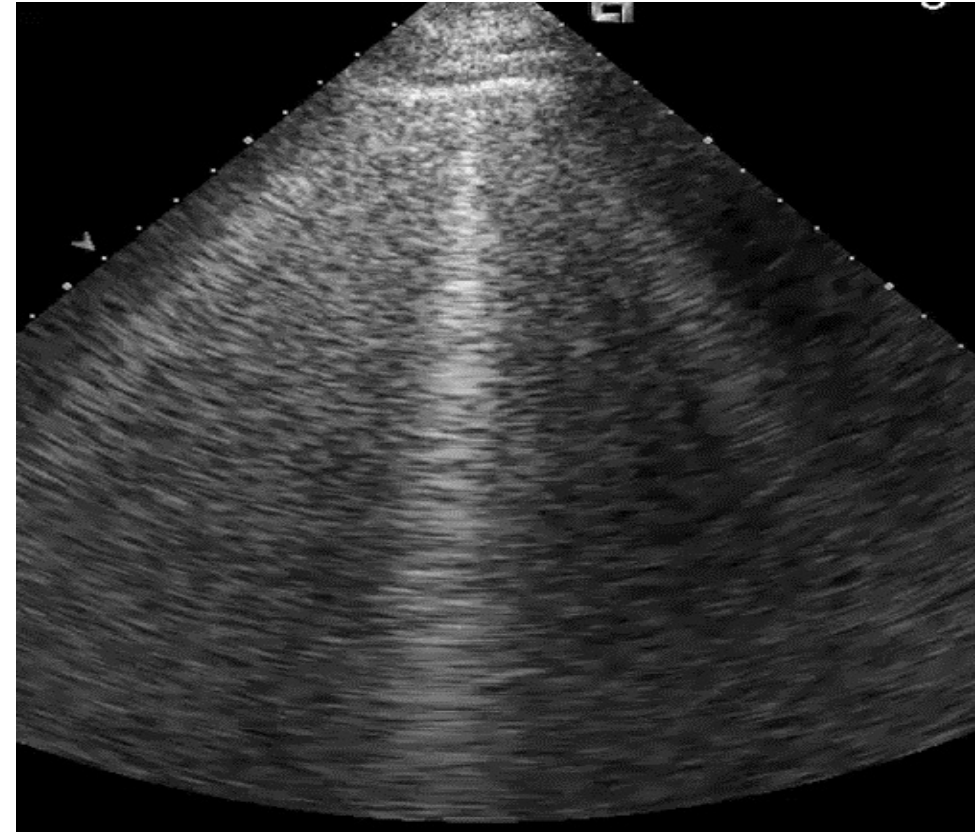
Ligne A

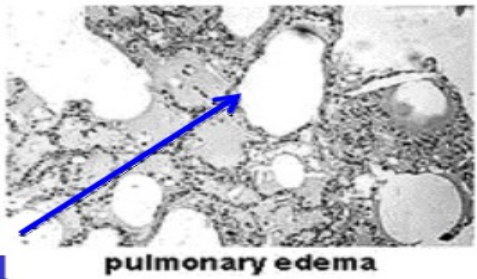
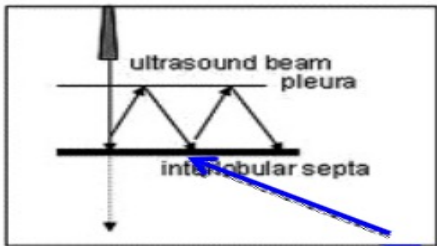
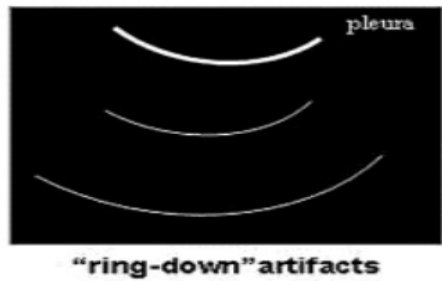
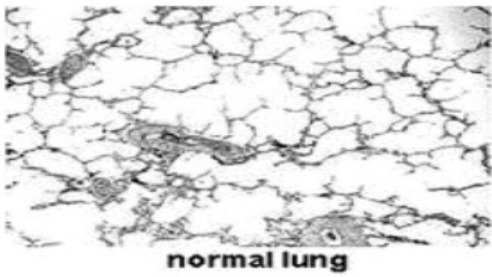
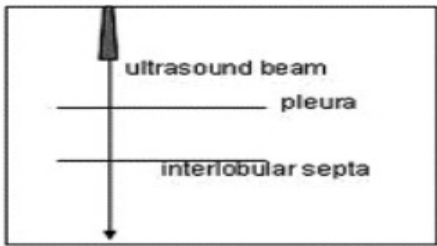
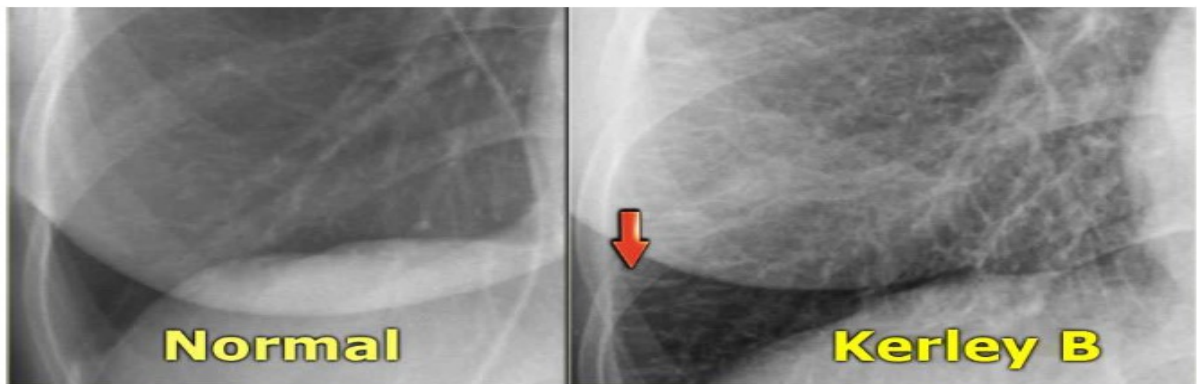


Lignes A



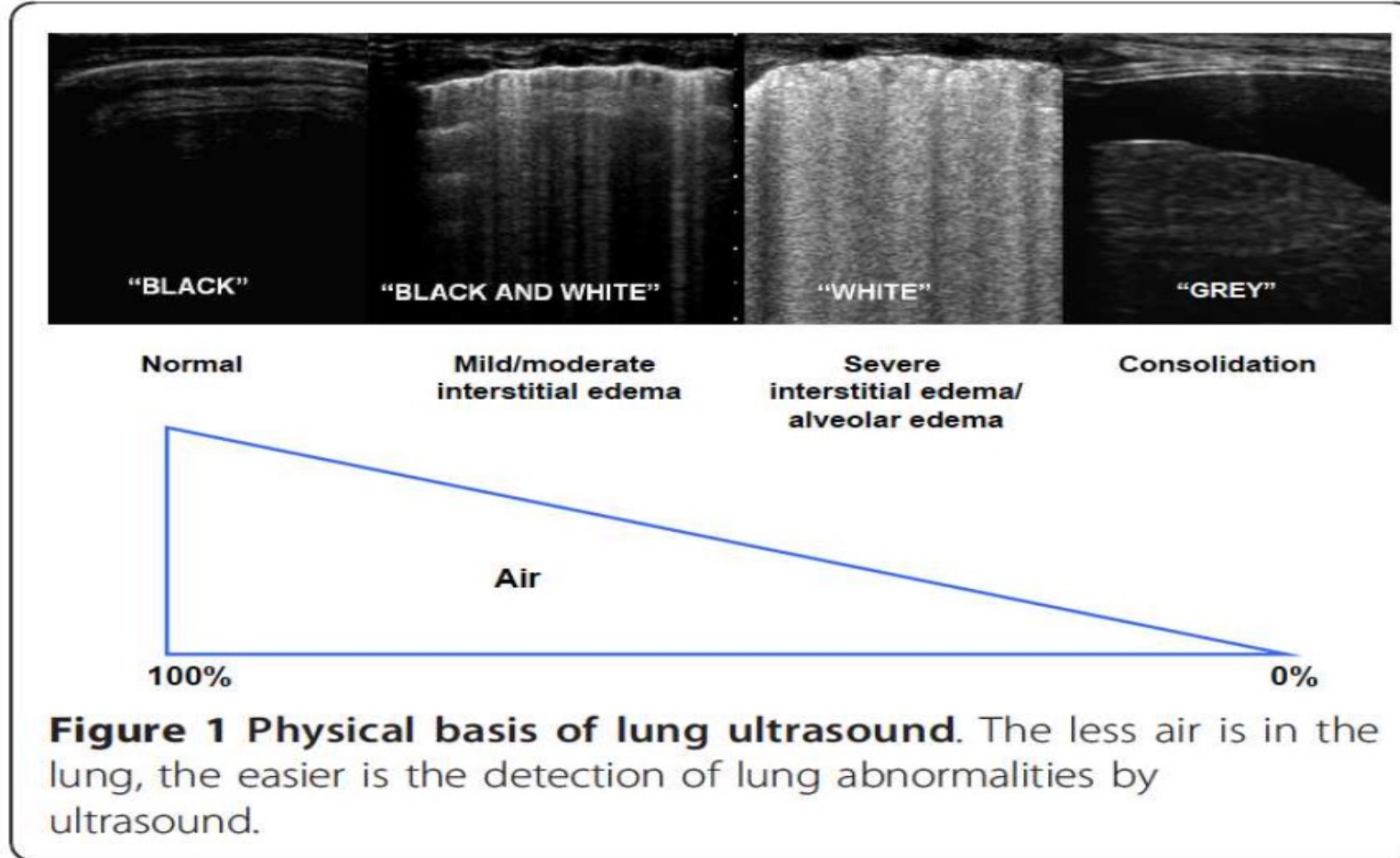
Lignes B





Eau

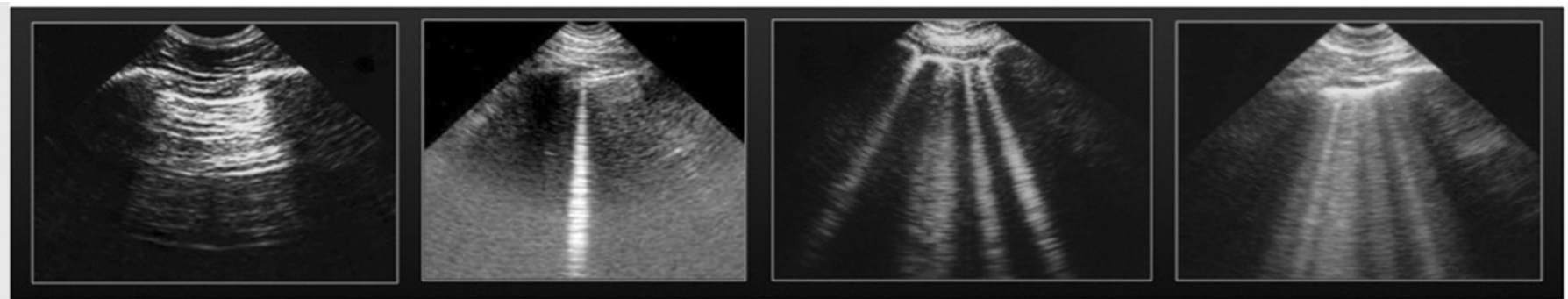
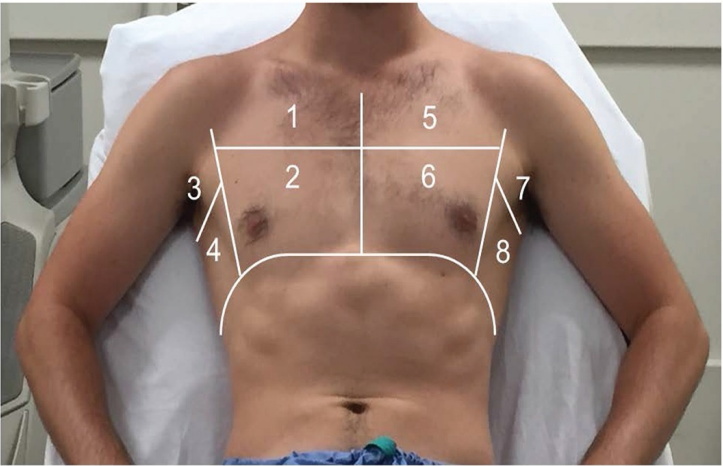




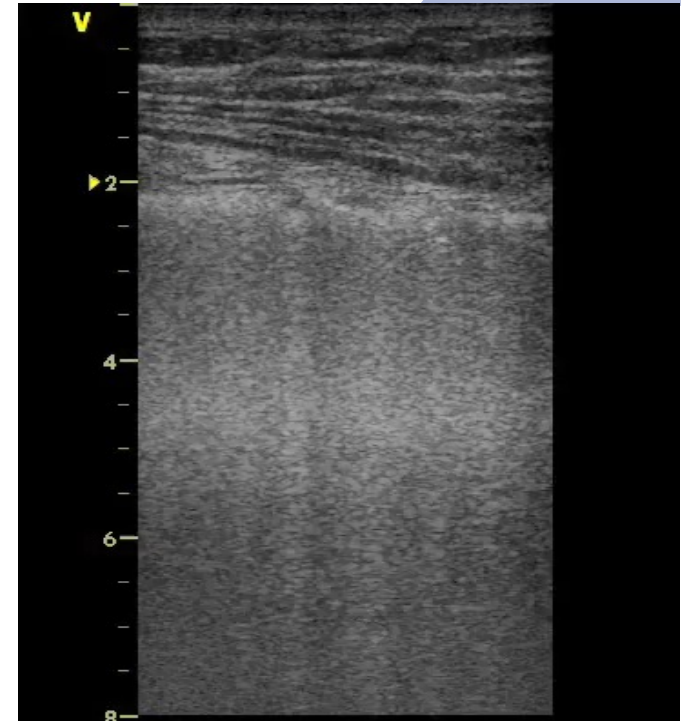
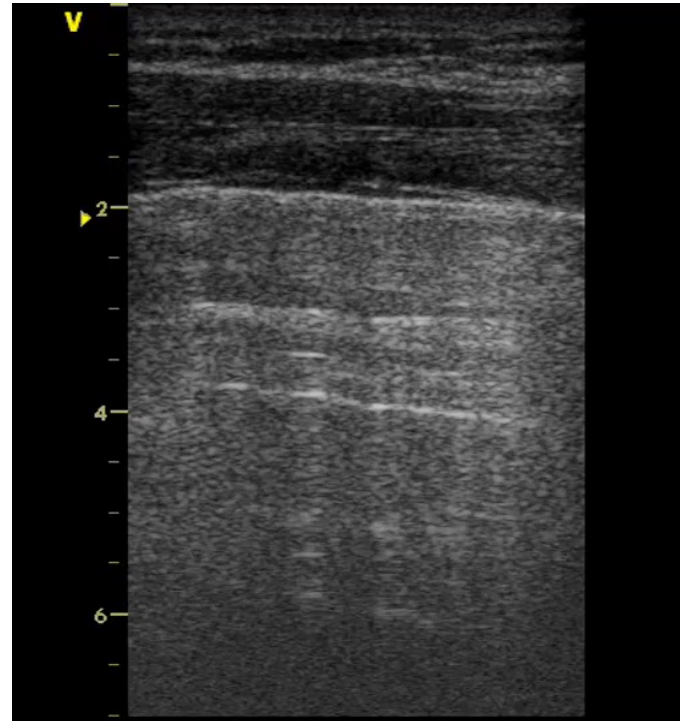
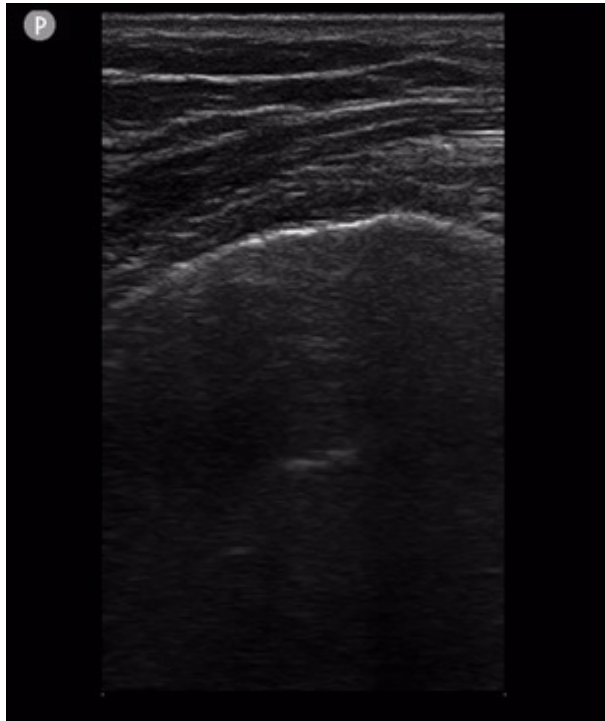
Gargani L. Cardiovasc Ultrasound. 2011 : 10.1186/1476-7120-9-6.

Comment ça se passe!

A **8 zone method**



Glissement pleural

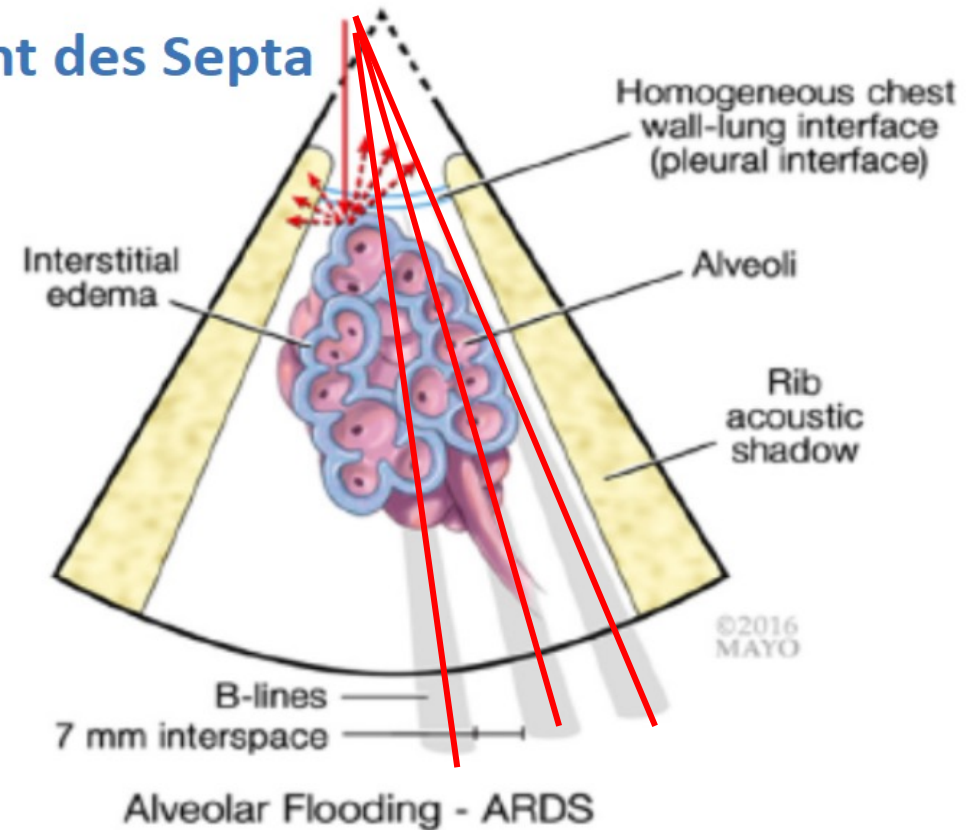


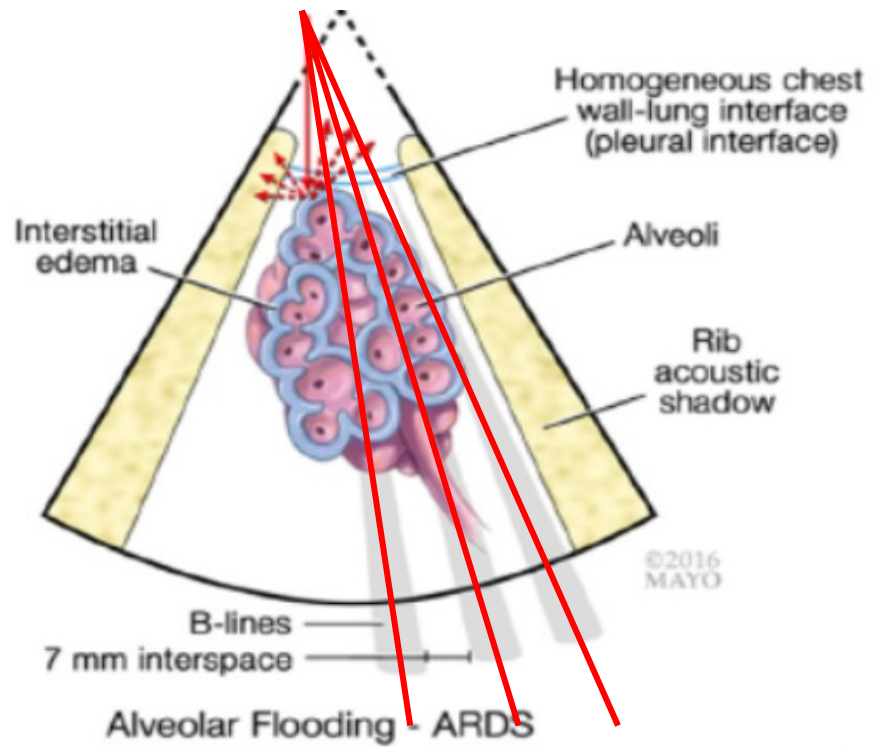
Syndrome interstitiel et lignes B

Syndrome interstitiel = Epaississement des Septa

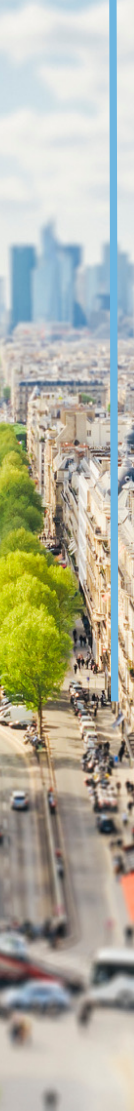
Lignes B : Lignes verticales, hyperéchoïques, effaçant les lignes A
-> jusqu'au bas de l'écran

Lignes B espacées

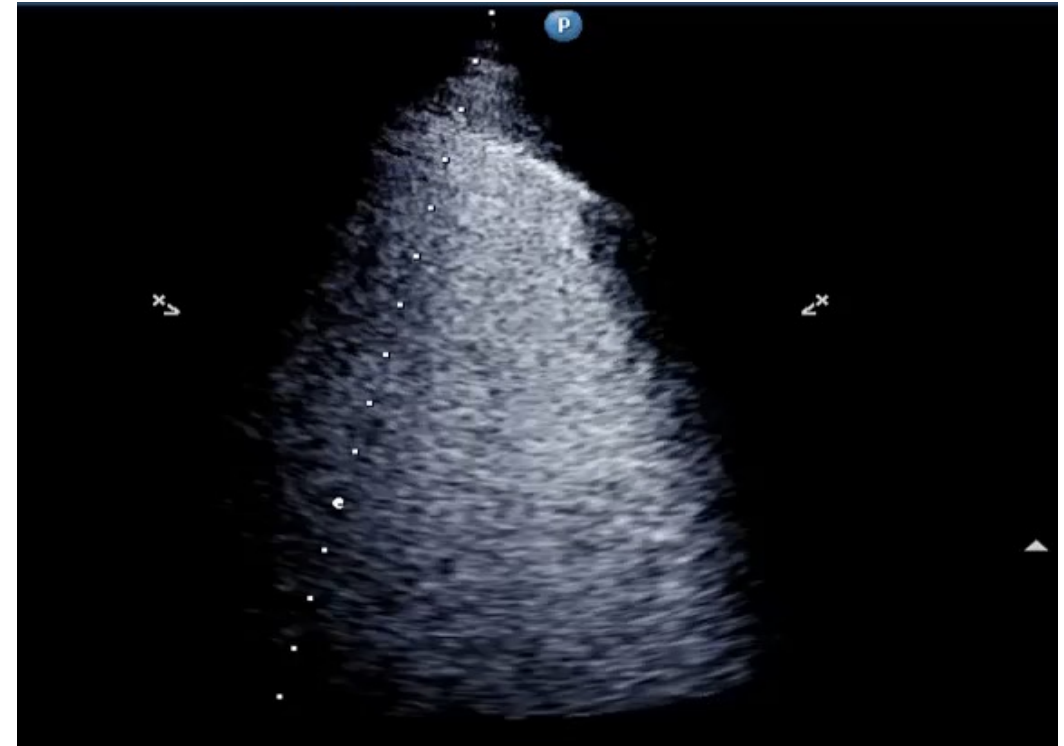
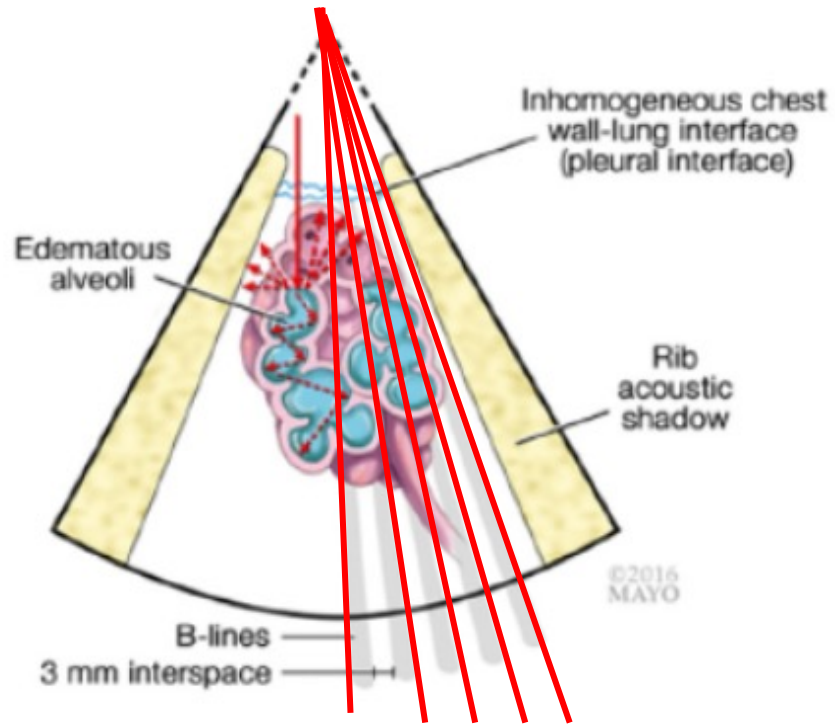




Journal of Cardiothoracic and Vascular Anesthesia 31 (2017) 610–625



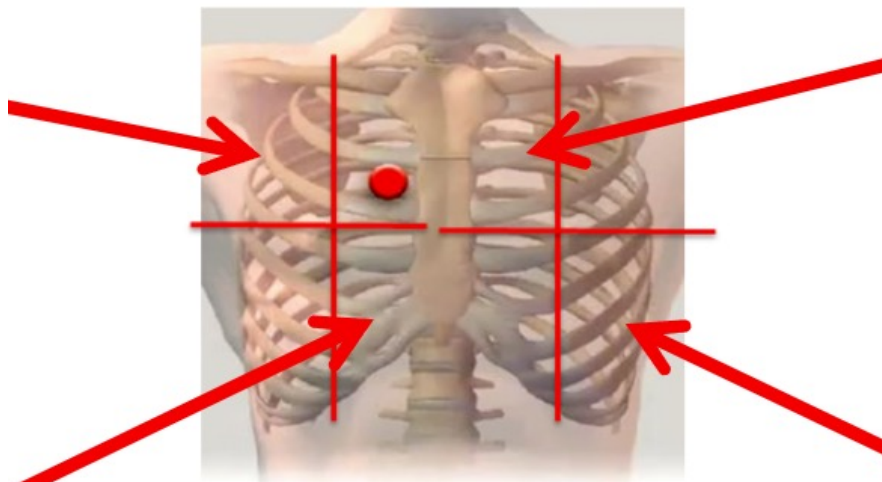
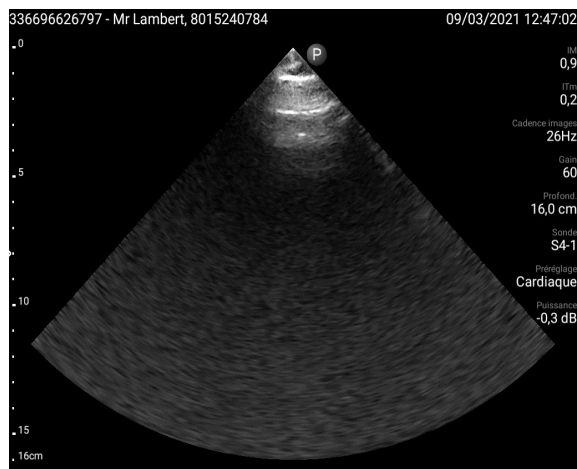
Syndrome alveolo-intersticiel = inondation des alvéoles



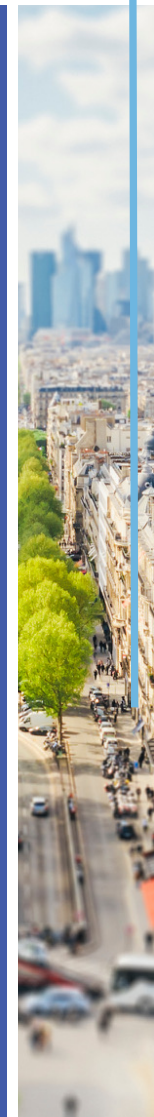
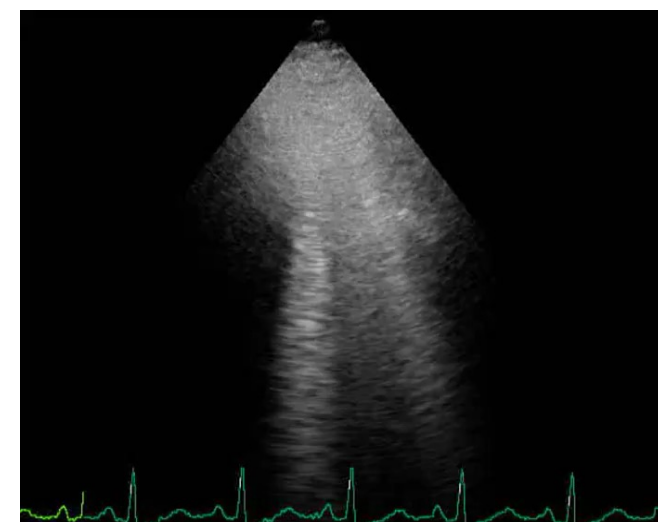
Journal of Cardiothoracic and Vascular Anesthesia 31 (2017) 610–625



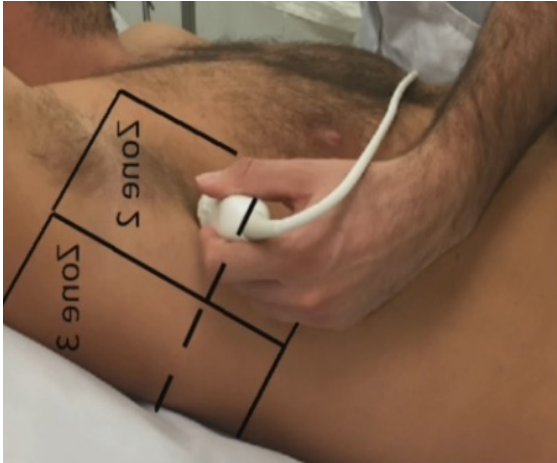
Diagnostic échographique de la décompensation cardiaque



**>3 comètes / zone,
2 zones + bilaterales
= IC aigue!**



Epanchement pleural



Libre, déclive, entre le diaphragme et la plèvre viscérale .

« Transonore » conduction des US et visualisations des structures profondes

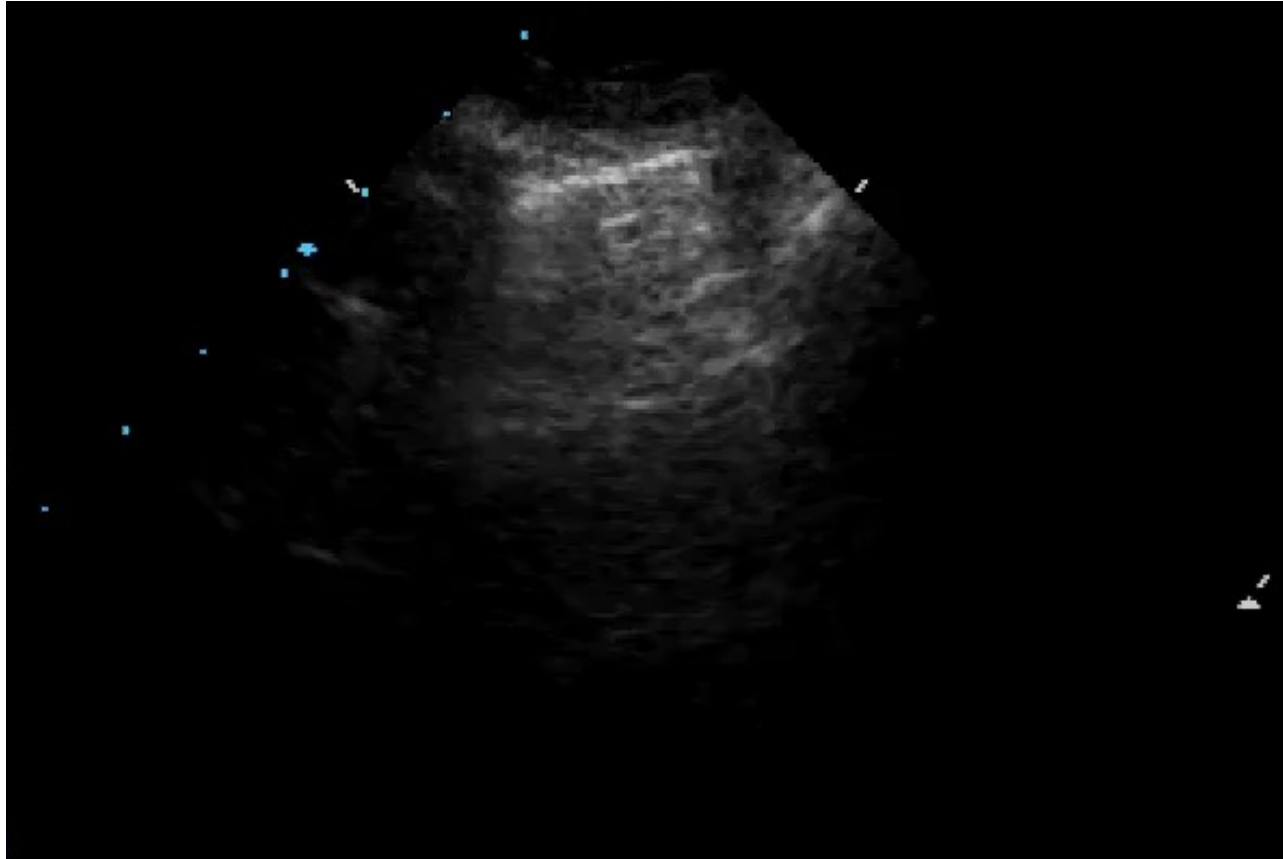
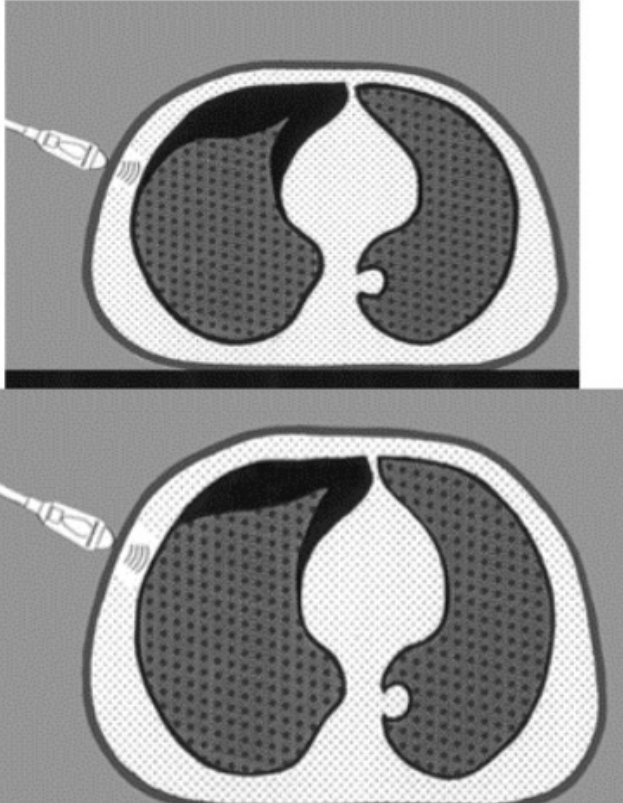


Pneumothorax

- Disparition glissement pleural
- Disparition lignes B
- Disparition pouls pulmonaire



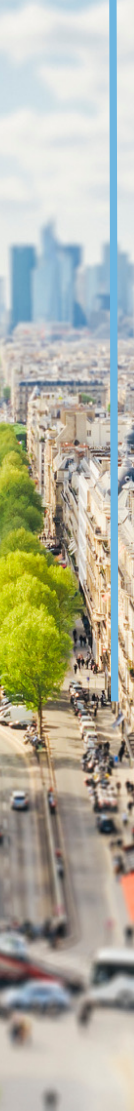
«Lung point» : signe spécifique pneumothorax



D Lichtenstein Critical Care Medicine 33 : 1231 , 2006



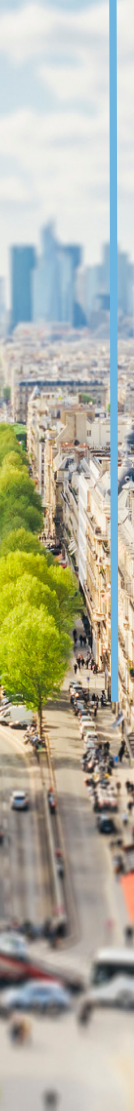
Veine cave inferieure



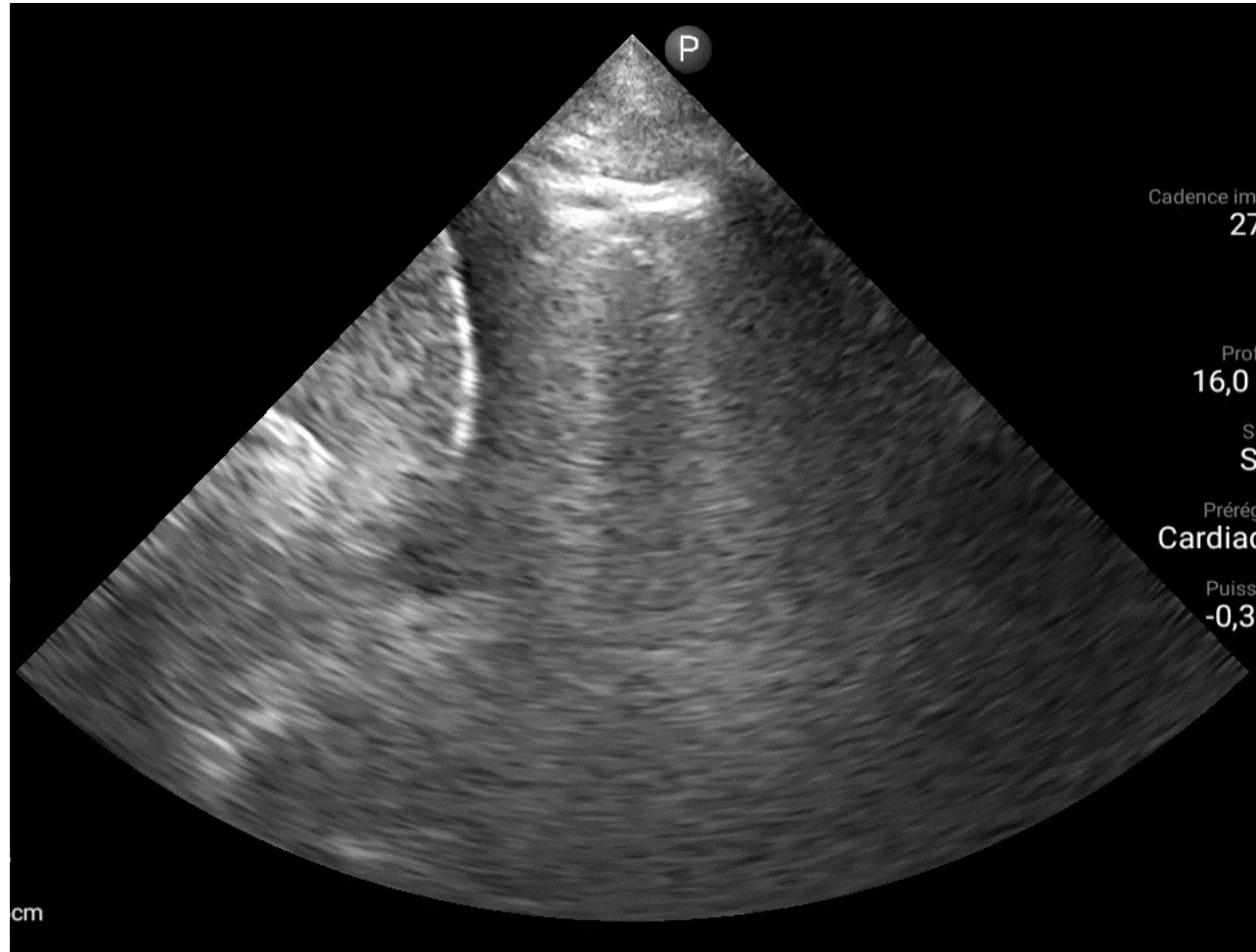
Exemples de boucles



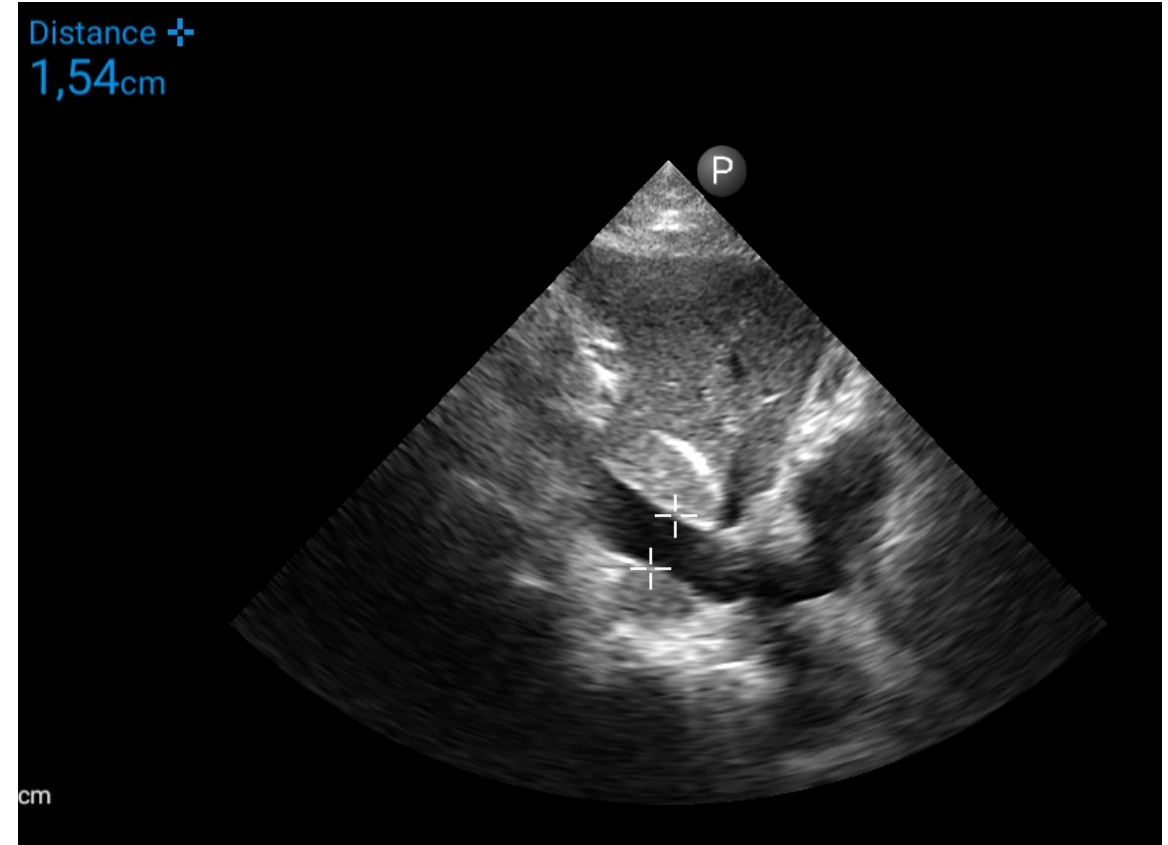
Exemples de boucles



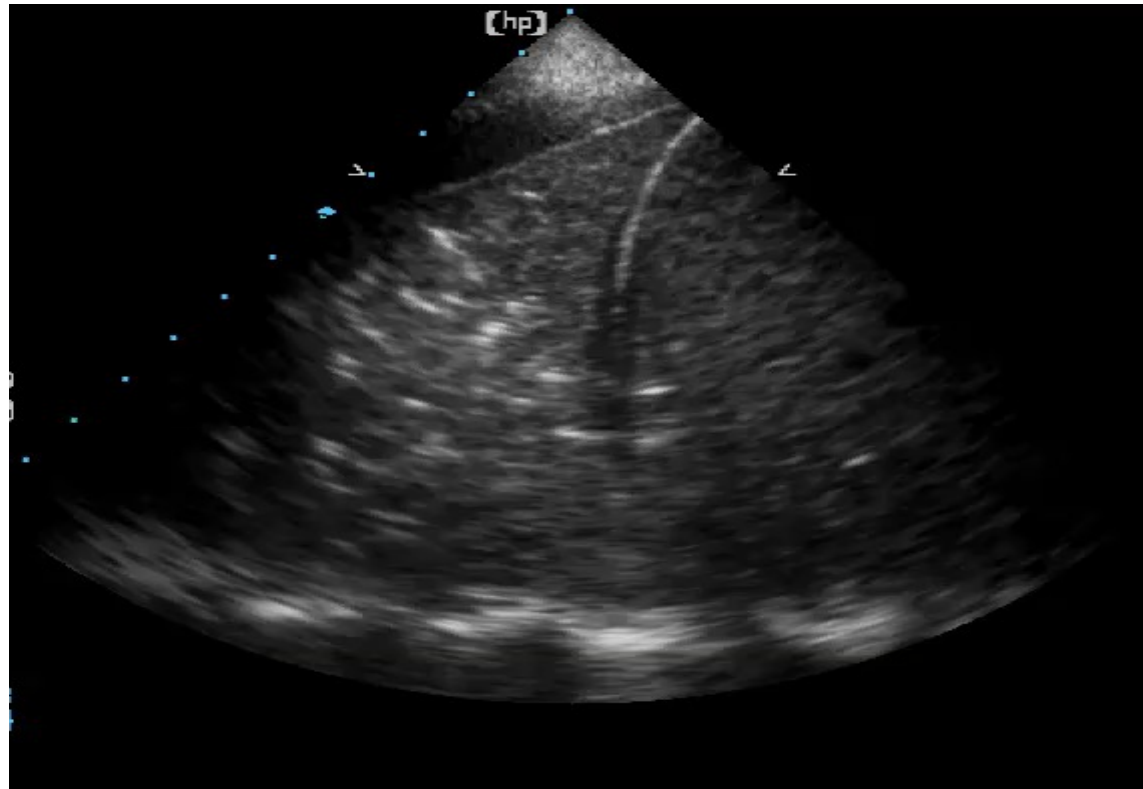
Exemples de boucles



Exemples de boucles



Exemples de boucles



Exemples de boucles



TABLEAU V. SYMPTÔMES ET SIGNES D'INSUFFISANCE CARDIAQUE

Symptômes typiques	Symptômes atypiques
Dyspnée	Syndrome confusionnel
Orthopnée	Anorexie
Dyspnée paroxystique nocturne	Dépression
Asthénie	Troubles du sommeil
Moindre tolérance à l'effort	Dyspnée asthmatiforme Dyspnée posturale (<i>en se penchant en avant</i>)
Signes spécifiques	Signes aspécifiques
Hépatalgie	Tachycardie
Reflux hépato-jugulaire	Râles crépitants bilatéraux labiles d'un jour à l'autre
Turgescence jugulaire	Epanchement pleural volontiers bilatéral
Œdèmes des membres inférieurs	Ascite, anasarque
Bruit de galop	Oligurie ou nycturie
	Cachexie au stade très avancé de la maladie

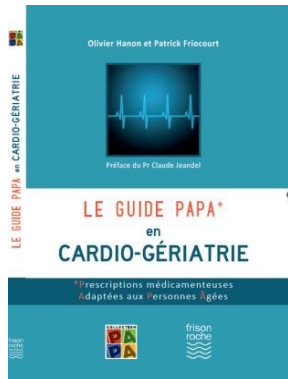
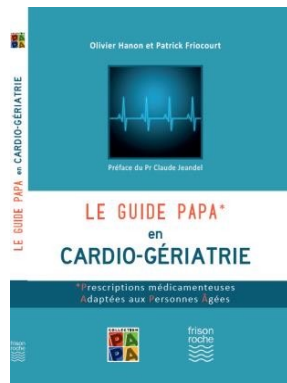


TABLEAU VI : ATYPIE DES SIGNES CLINIQUES D'INSUFFISANCE CARDIAQUE CHEZ LE SUJET ÂGÉ

Dyspnée d'effort	Souvent absente chez les patients âgés peu mobiles.
Dyspnée	Peut être provoquée par une pathologie respiratoire ou une inadaptation à l'effort.
Râles « Sibilants »	Peuvent être retrouvés en cas d'insuffisance cardiaque. Leur présence peut orienter à tort vers une origine pulmonaire.
Râles « crépitants »	Peuvent être retrouvés en dehors de toute pathologie cardiovasculaire (fibrose pulmonaire, pneumopathie).
Œdèmes des membres inférieurs	Peuvent être secondaires à des pathologies extracardiacques (insuffisance veineuse, hypo-albuminémie, insuffisance rénale, lymphœdème). Leur présence peut orienter à tort vers un diagnostic d'insuffisance cardiaque.
Tachycardie	Souvent absente (désensibilisation des barorécepteurs avec l'âge).
Oligurie	Difficile à mettre en évidence chez les malades incontinents.
Signes généraux (non spécifiques) pouvant parfois être la seule manifestation d'une IC	- Confusion, troubles du comportement, désorientation temporo-spatiale. - asthénie - Dénutrition - Troubles du sommeil - Chutes - Perte d'autonomie



Pourquoi la gériatrie ?

Fréquence +++(décompensation cardiaque 1 er motif d'hospitalisation)

Examen clinique difficile +++

Troubles neurocognitifs +++

Confusion +++



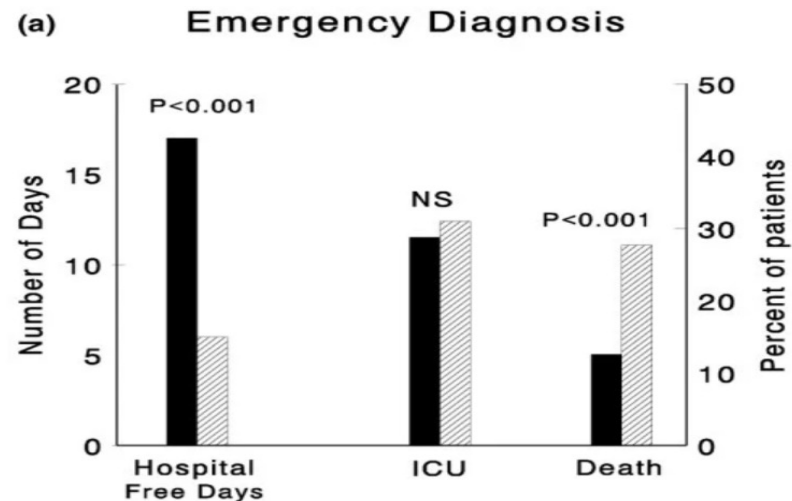
Pourquoi en gériatrie ?

On a déjà les peptide natriurétique !

A quel seuil des NT pro-BNP ? Patient âgé, FA, IRC, obésité, HVG...

Mais avec l'examen clinique, RP et les NT proBNP on est performant ?

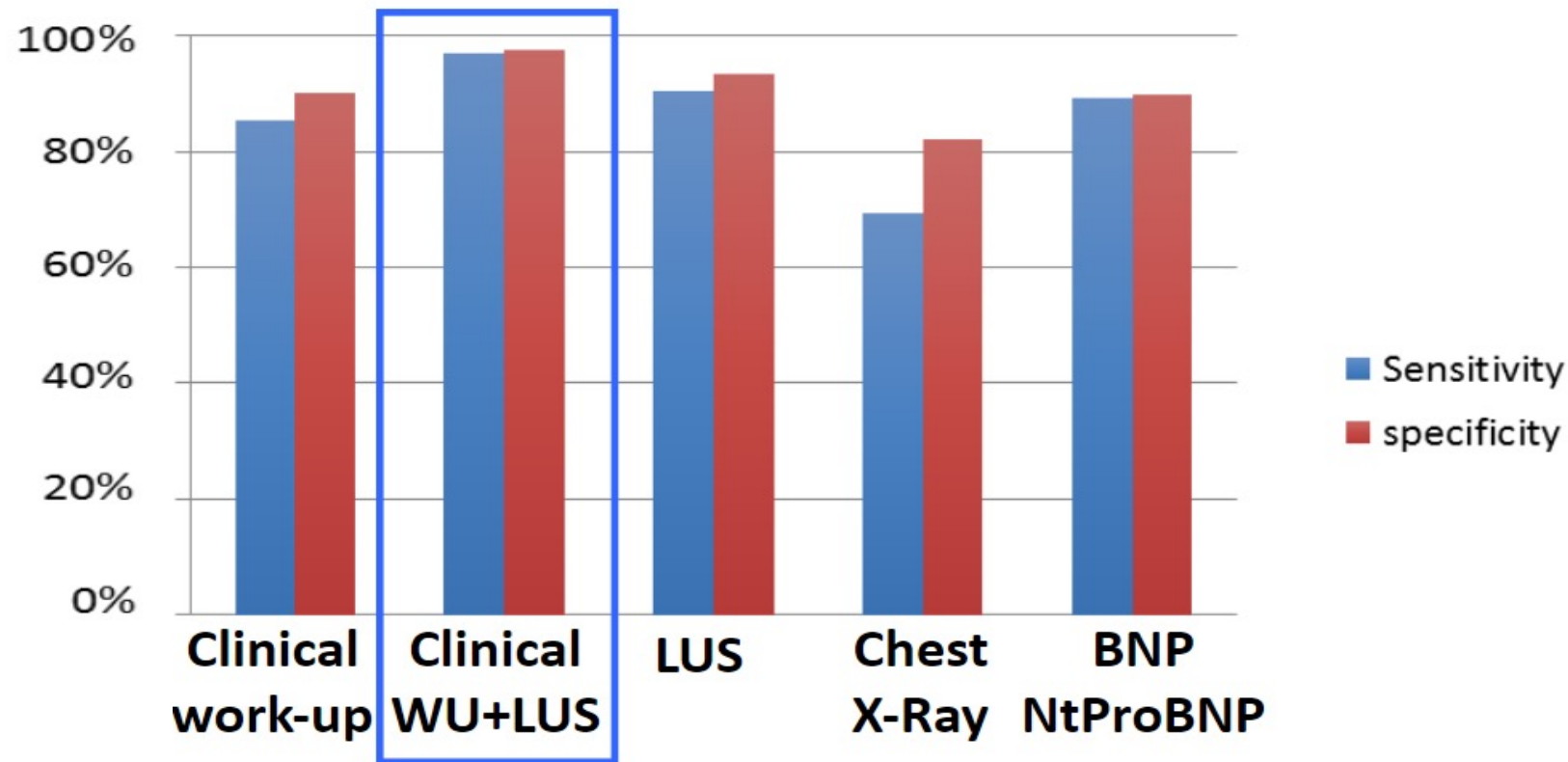
- Age moyen 80 ans , admis aux SAU pour dyspnée aigues
- Performance diagnostique était de l'ordre de 75%
- ICA manquée chez 56/219 patients
- Le Dg le plus fréquemment erroné était l'insuffisance cardiaque !



**OR ajusté (décès) = 2,83 (1,48-5,41)
Si traitement inapproprié aux urgences**

Performance diagnostique de l'échographie pulmonaire

Cohorte multicentrique, 7 urgences, 1005 Patients l'age moyen 78 ans



AUROC :

BNP 0,73

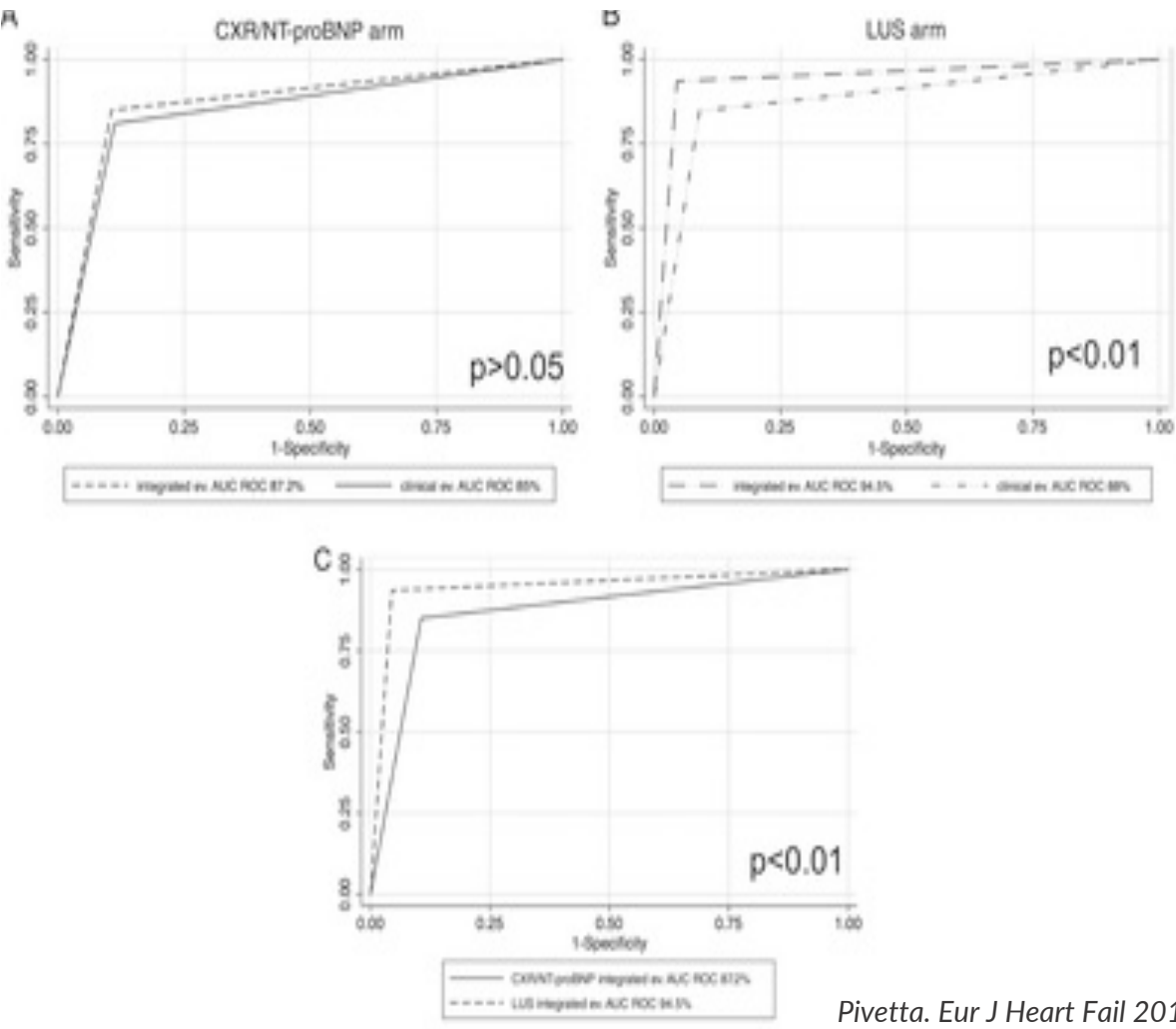
Chest X Ray 0,76

Clinical WU 0,88

LUS 0,92

LUS + Clinical WU 0,98

Pivetta, Chest , 2015



Pivetta. Eur J Heart Fail 2019

	Auscultation, %	Chest Radiography, %	Lung Ultrasonography, %
Pleural effusion			
Sensitivity	42	39	92
Specificity	90	85	93
Diagnostic accuracy	61	47	93
Alveolar consolidation			
Sensitivity	8	68	93
Specificity	100	95	100
Diagnostic accuracy	36	75	97
Alveolar-interstitial syndrome			
Sensitivity	34	60	98
Specificity	90	100	88
Diagnostic accuracy	55	72	95

ARDS = acute respiratory distress syndrome.

Rxt/NT proBNP : 104,5 mn
LUS : 5 mn Gain : 95%

Lichtenstain 2004

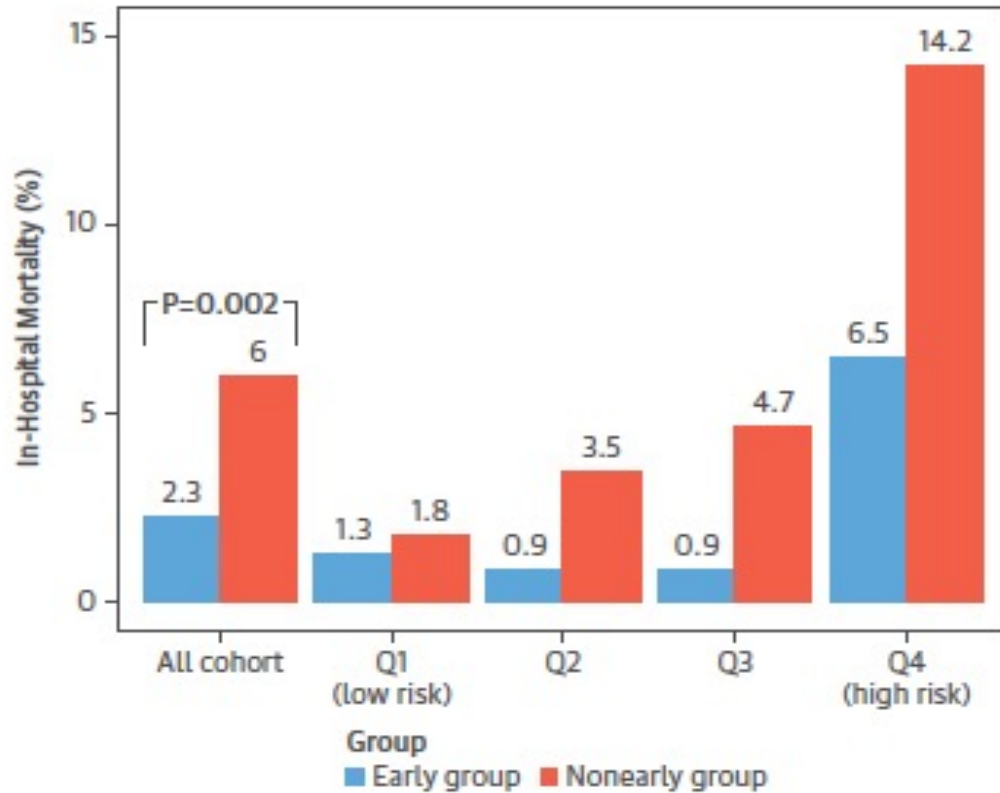
Echo VS Radio VS auscultation

		Echo	Radio thorax	auscultation
PNT (n:6)	Se	83	50	50
	Spe	100	100	100
Pleurésie (n:32)	Se	100	81	59
	Spe	97	92	99
Sd alvéolaire (n:54)	Se	89	76	56
	Spe	100	96	96

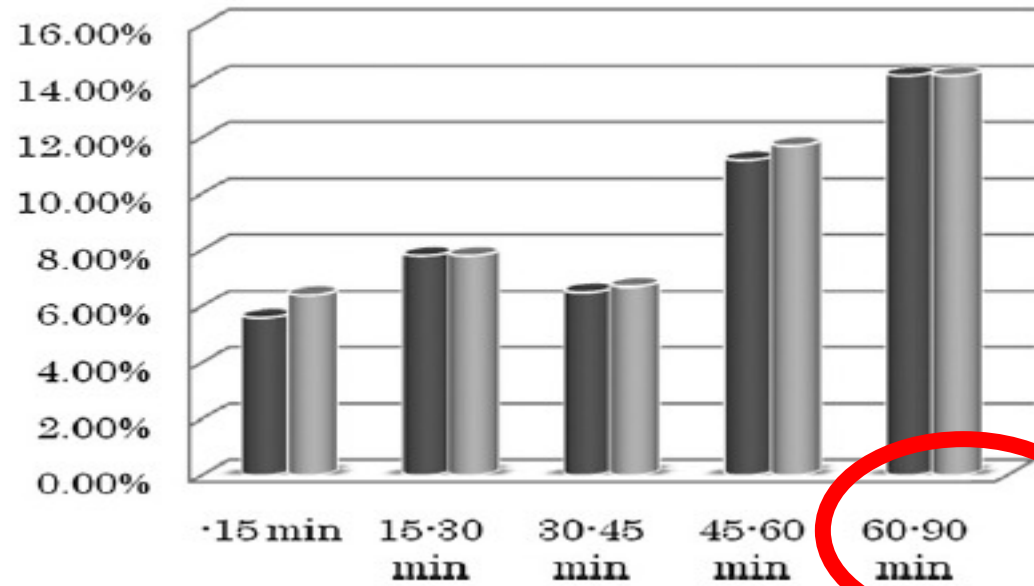
Tasci J Clin Ultra sound 2016



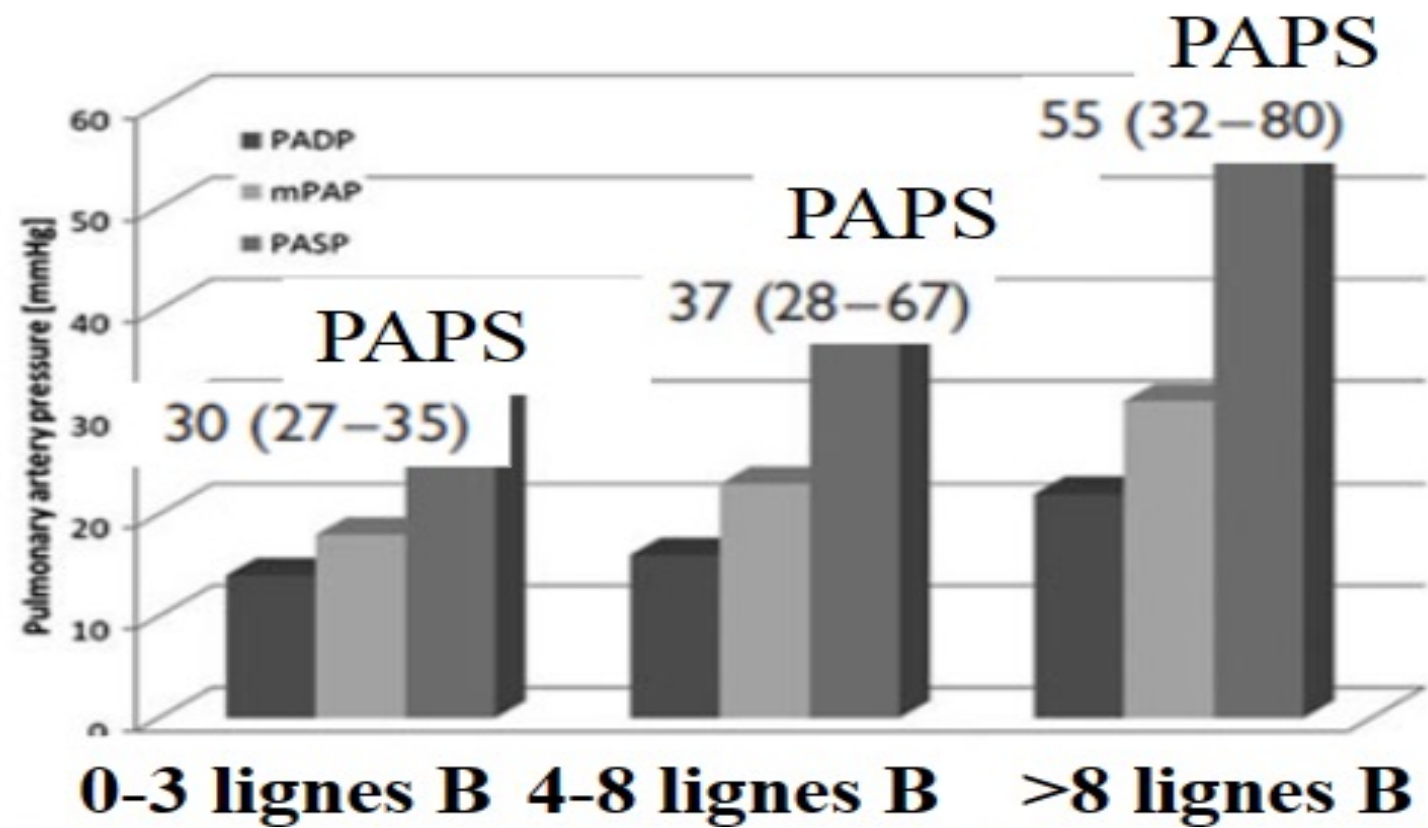
Pourquoi faut-il traiter vite !



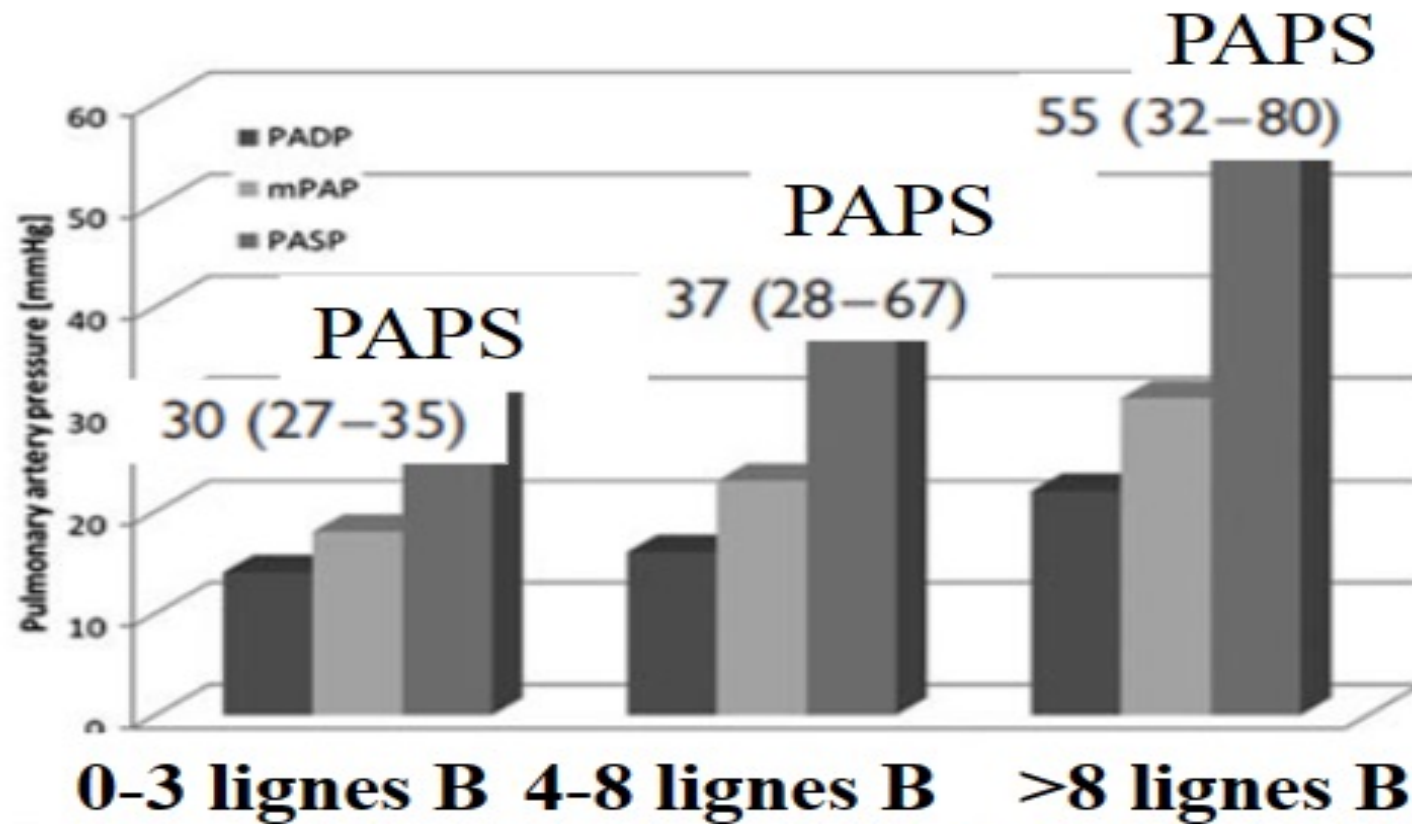
B Transportation time



Pourquoi l'échographie pulmonaire ?



Pourquoi l'échographie pulmonaire ?



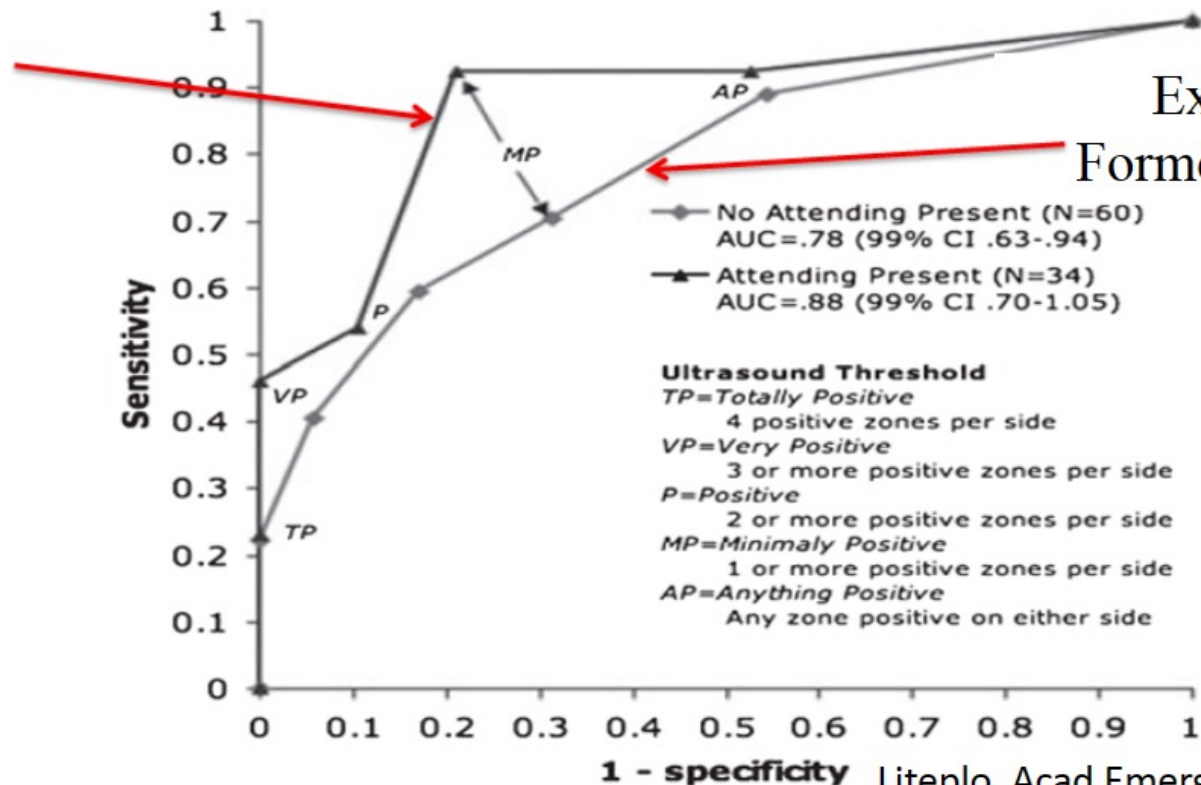
Faisabilité de l'échographie Pulmonaire ?

Emergency Thoracic Ultrasound in the Differentiation of the Etiology of Shortness of Breath (ETUDES): Sonographic B-lines and N-terminal Pro-brain-type Natriuretic Peptide in Diagnosing Congestive Heart Failure

Andrew S. Liteplo, MD, RDMS, Keith A. Marill, MD, Tomas Villen, MD, Robert M. Miller, MD, Alice F. Murray, MBChB, Peter E. Croft, BS, Roberta Capp, MD, and Vicki E. Noble, MD, RDMS

Médecin
expert

AUROC = 0.88

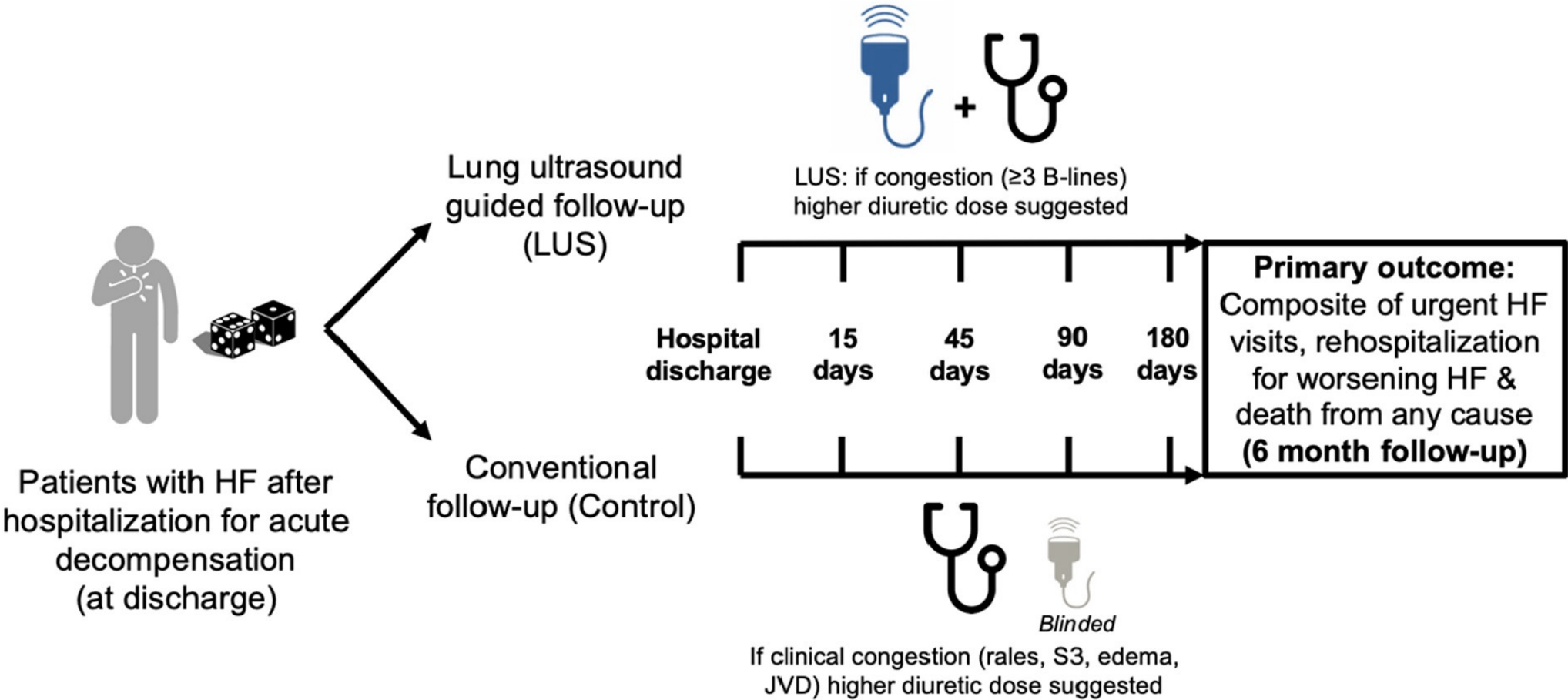


Externes
Formés 1 heure

Liteplo, Acad Emerg Med. 2009

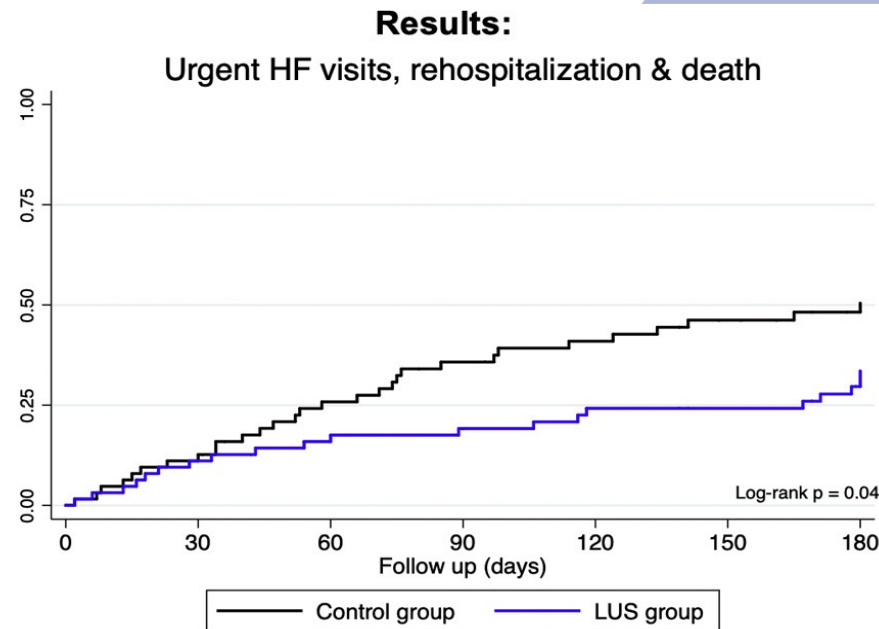
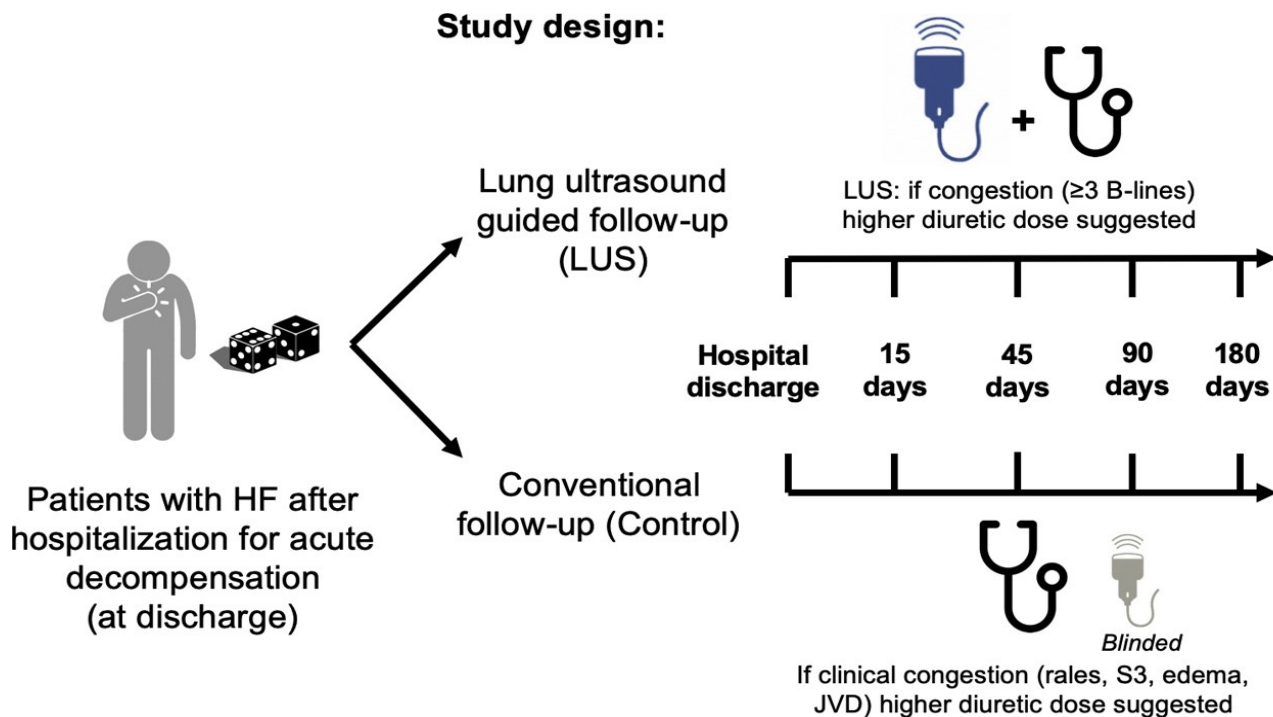
Lung ultrasound-guided therapy in heart failure

A randomized controlled trial



Lung ultrasound-guided therapy in heart failure

A randomized controlled trial



LUS guided treatment was associated with a 45% risk reduction in the primary endpoint
(HR 0.55, 95% CI 0.31 – 0.98, $P = 0.044$)

Andrée 86 ans Dyspnée

Vit à domicile avec aide

ATCD : HTA, FA, chute, TNC non explorés

TRT : Pradaxa 150 mg x 2 / jour.

Clinique : Eupneique, Sat 98% en AA, quelques crépitants aux bases, OMI

ECG : FA non rapide, pas de signes ischémiques.

Bio: GB 12000 G/L, **CRP** 20 mg/l, **créatinine** 120 μ mol/l

Protéine 59 g/l, **Hb** 9 g/dl, **Troponine** 20 ng/l,

Nt proBNP 4000 ng/l.

=> **Décompensation cardiaque ?**



Annie 91 ans Dyspnée

Vit en EHPAD

ATCD : Cardiopathie ischémique, HTA, chute, TNC mixte

TRT : Bisoprolol, Losartan, Kardégic, Lasilix, Tahor.

Clinique : Dyspnéique sous 3 L d'O₂, quelques crépitations bilatéraux, discret OMI.

ECG : RSR, pas de signes ischémiques, Pas de signes d'EP

Bio: **GB** 7000 G/L, **CRP** 36 mg/l, **créatinine** 112 μ mol/l

Hb 10,2 g/dl, **Protéine** 67 g/l, **Troponine** 45 ng /l,

Nt proBNP 3200 ng/l.

PCR Covid positive.

=> **Décompensation cardiaque ?**

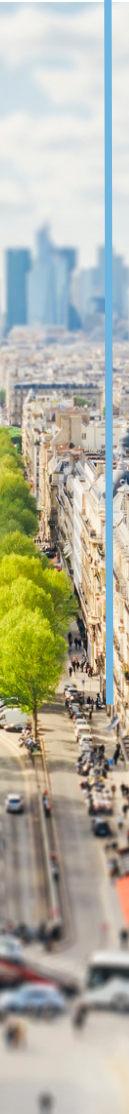


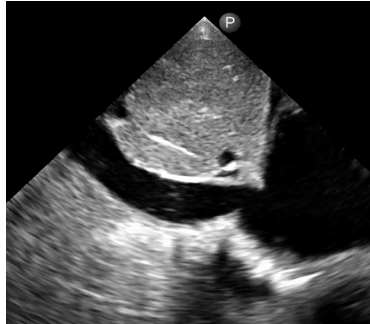
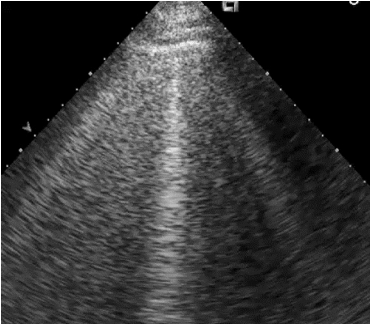


Déplétion ?

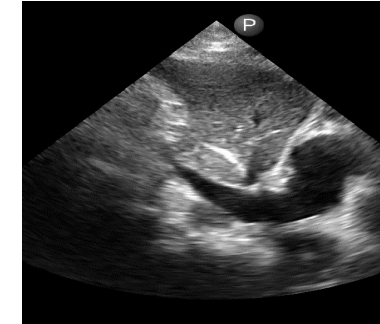
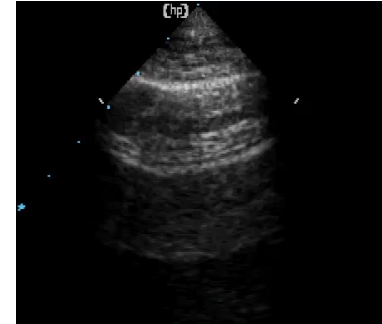


Hydratation?





Déplétion



Hydratation



Conclusion

- *L'échographie thoracique est **fiable** et **rapide***
- ***Raccourcir** le temps du diagnostic*
- ***Pas de retard** du traitement*
- *Au **chevet du patient** / pas de déplacement*
- *Pas de soin **d'examiner** ou **interroger** les patients*
- ***Pas d'irradiation***
- *Formation courte*



...Merci de votre attention

