

**CARDIO
RUN
2023**

**15^{ème} CONGRÈS
DE PATHOLOGIE
CARDIO-VASCULAIRE**

27-28-29 SEPTEMBRE 2023

Hôtel Saint Alexis
ILE DE LA RÉUNION
France

CARDIORUN.ORG

Prise en charge de la douleur thoracique aux urgences

Dr Tomislav PETROVIC

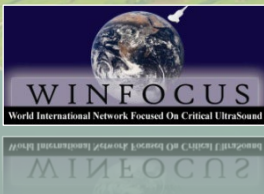
SAMU 93 - Hôpital AVICENNE – BOBIGNY

Dr Philippe PÈS

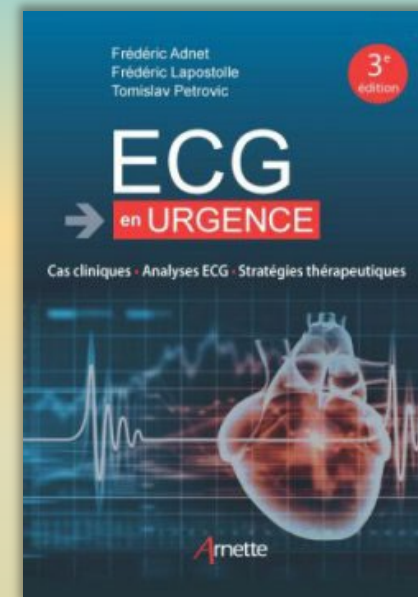
SAMU 44 – NANTES

Pr Frédéric LAPOSTOLLE

SAMU 93- Hôpital Avicenne

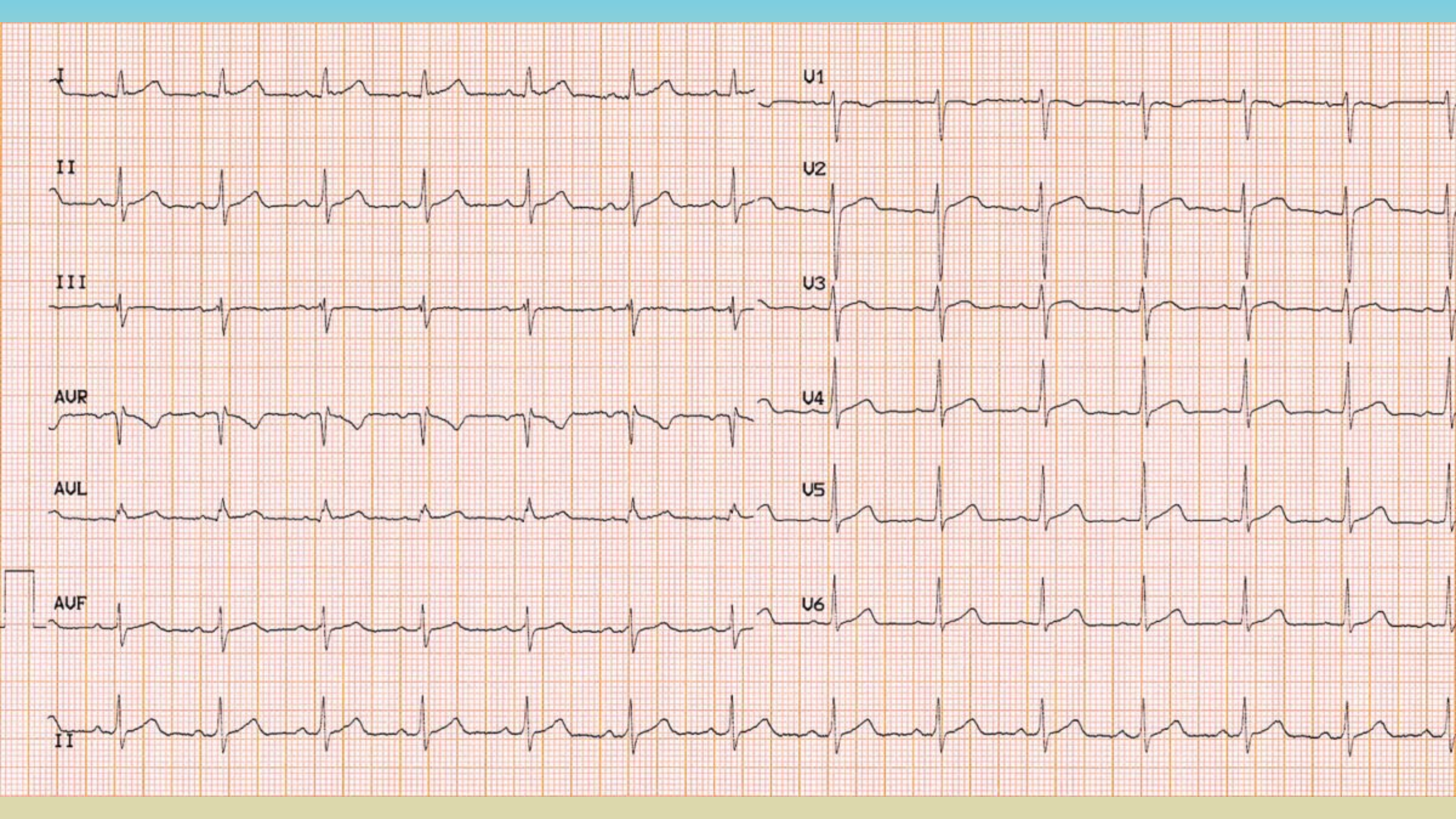


Relations d'intérêt





- Thorax & mollet = RAS
- PA = 156/87 mm Hg
- FC = 80/min
- SpO2 = 96%
- FR = 20/min au repos



- Motif fréquent de demande de soins d'urgence.
- Prise en charge difficile :
 - ✓ Difficulté d'analyse du symptôme
 - ✓ Absence de parallélisme entre intensité de la douleur et gravité de la pathologie
 - ✓ Extrême variété des étiologies intra et extrathoraciques.

	Cas où le problème est cité (en %)
Accident	58,7
Douleur	42,9
Gêne	15,3
Fièvre	8,6
Malaise	9,2
Saignements	7,9
Vomissements / diarrhées	4,8
Angoisse	4,7
Agression	2,5
Autre motif	2,1
Sang dans les selles ou les urines	1,3
Ne sait pas	0,1

Pathologies pleuropulmonaires

Trachéobronchites
Pneumothorax
Pleurésie
Pneumonie
Embolie pulmonaire

Pathologies musculosquelettiques

Douleur chondro-costale
Zona
Syndrome du défilé cervico-thoracique
Fracture ou lyse costale
Syndrome de Pancoast-Tobias
Néoplasie

Pathologies cardiovasculaires

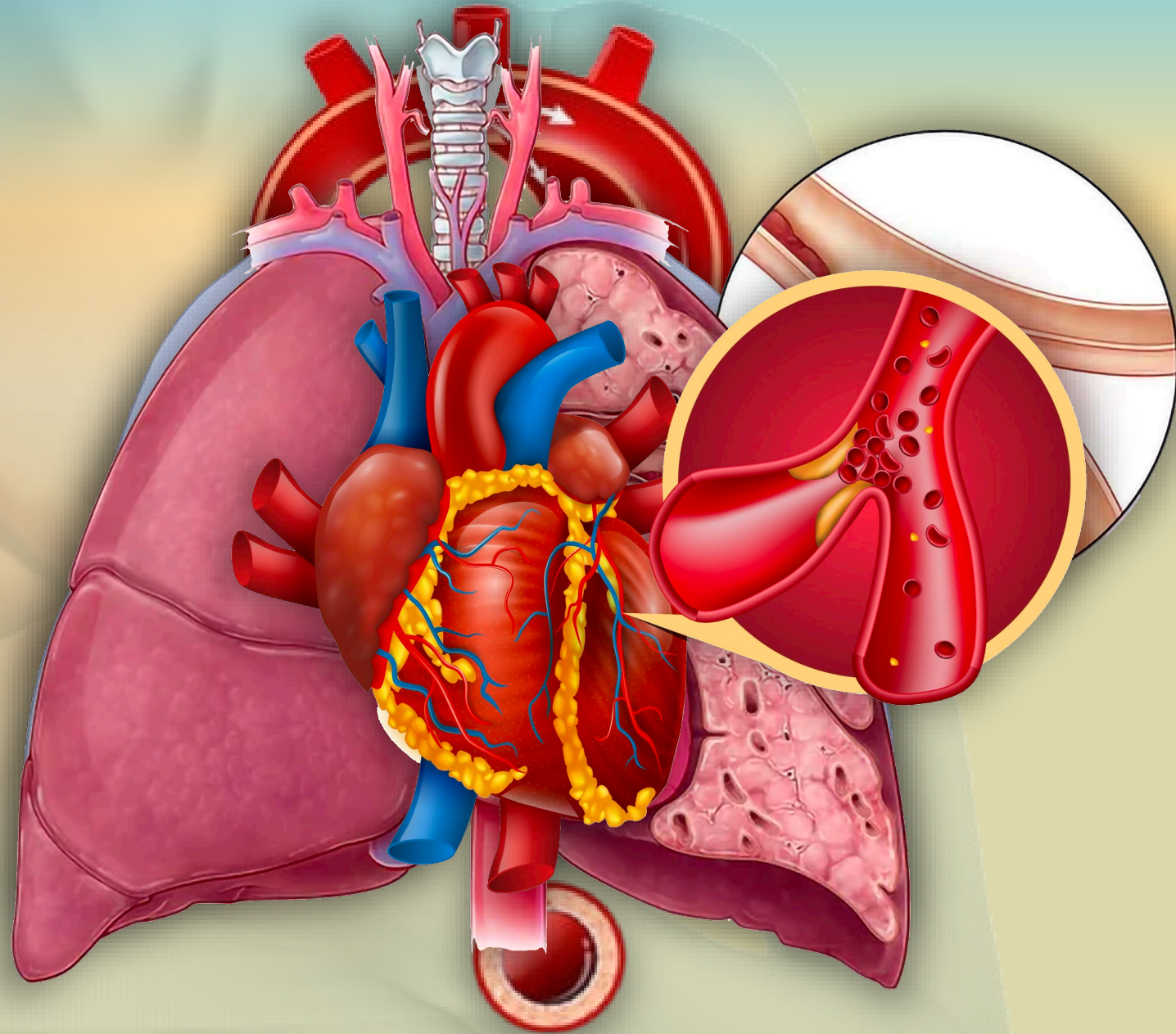
Angor
Infarctus
HTAP
Dissection aortique
Péricardite
Valvulopathie aortique
Prolapsus mitral
Cardiomyopathie hypertrophique

Pathologies digestives

RGO
Spasme œsophagien
UGD
Cholécystite
Pancréatite

Douleurs psychogènes

**Eliminer une origine
cardiaque (ischémie) et
toute autre pathologie
pouvant mettre en jeu
le pronostic vital
des patient.e.s**



Circulation

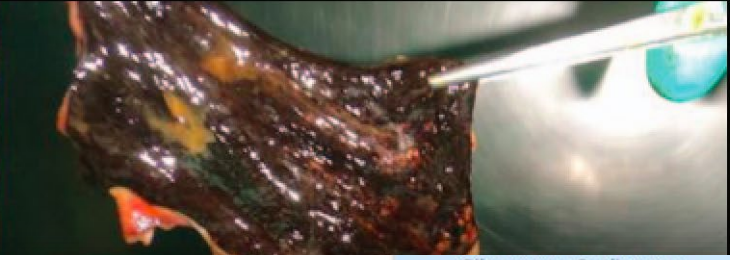
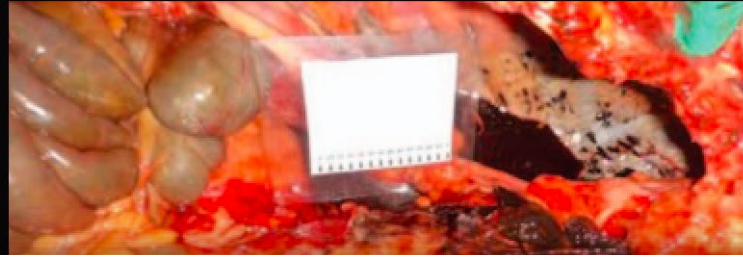
AHA/ACC

2021 AHA/ACC

Table 1 Causes of esophageal perforation

References (year)
Sung et al. [63] (2002)
Port et al. [53] (2003)
Brinster et al. [4] (2004) ^a
Gupta et Kaman [50] (2004)
Braghetto et al. [52] (2005)
Vogel et al. [34] (2006)
Erdogan et al. [48] (2007)
Eroglu et al. [32] (2009)
Griffiths et al. [23] (2009)
Linden et al. [56] (2009)
Abbas et al. [31] (2009)
Vallbohmer et al. [46] (2009)
Overall (mean (SD))

Circulation. 2021

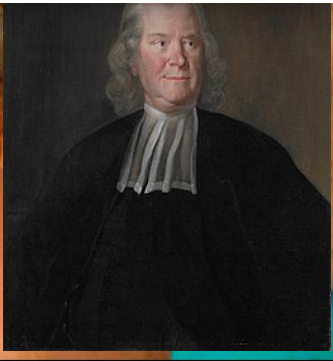


European Journal
of Case Reports in
Internal Medicine

Cliquez sur Outils pour convertir les fichiers au format PDF.

Abrupt Severe Chest Pain and Vomiting: Remember to Think of a Ruptured Oesophagus (Boerhaave Syndrome)

Deeba Ali¹, Arnaud Detroz¹, Yilmaz Gorur², Lionel Bosquée³, Benoît Cardoso⁴, Carla Cobanoui⁵, Noel Lorenzo Villalba⁶



Clinical Syndrome	Findings
Emergency	
ACS	Diaphoresis, tachypnea, tachycardia, hypotension, rales, S3, MR murmur. ² ; examination normal in uncomplicated cases
	Cardia + dyspnea—>90% of patients; pain on inspiration ⁷
	Connective tissue disorders (eg, Marfan syndrome); extremity pulse differential (30% of type A>B) ⁸
	Chest pain, abrupt onset + pulse differential + mediastinum on CXR >80% probability of dissection ⁹
	Frequency of syncope >10% ⁸ , AR 40%–75% ¹⁰
	subcutaneous emphysema, pneumothorax (20% patients), unilateral decreased or absent breath sounds
	murmur, tardus or parvus
	Other (%)
5	Crackles
15	Increased left ventricular pressure
2	Distended jugular venous pressure
1	Increased in supine position
6	Increased in supine position
6	Crackles
—	Crackles, S3
—	Crackles
—	Crackles, Murphy sign
—	Crackles
7	Crackles, may be pleuritic, regional dullness to percussion
6 (±4)	Crackles, unilateral absent breath sounds
	Crackles, mass of costochondral joints
Herpes zoster	Pain in dermatomal distribution, triggered by touch; characteristic rash (unilateral and dermatomal distribution)

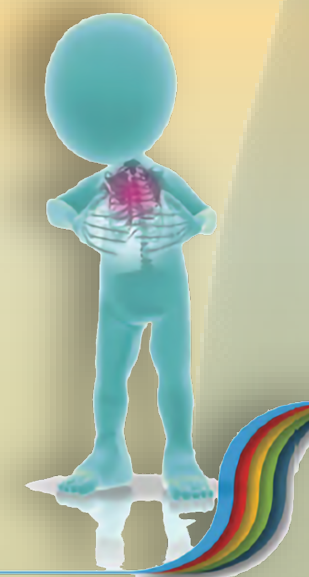
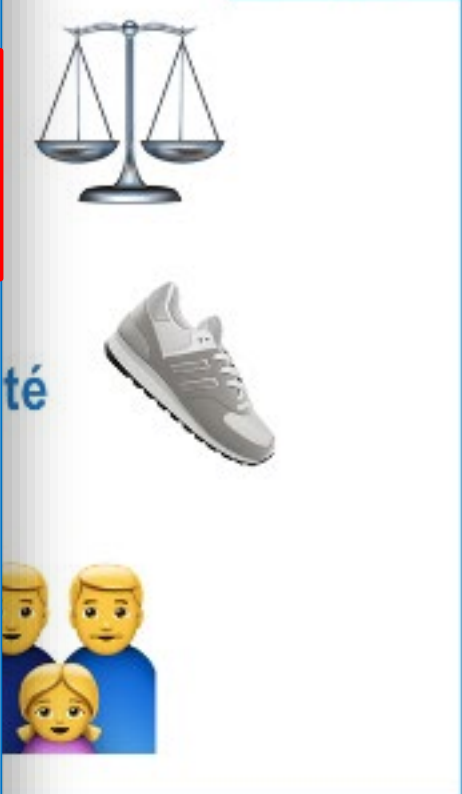
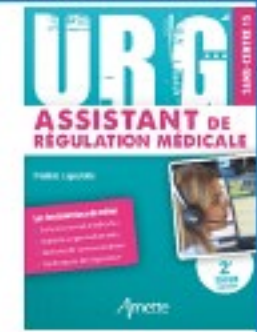
Management of chest pain in the French emergency healthcare system: the prospective observational EPIDOULTHO study

Charpentier, Sandrine; Beaune, Sebastien; Joly, Luc Marie; Khoury, Abdo; Duchateau, François-Xavier; Briot, Raphael; Renaud, Bertrand; Ageron, François-Xavier Less

European Journal of Emergency Medicine. 25(6):404-410, December 2018.

Table 3 Final hospital diagnoses

	SAMU patients (n = 537)	MICU patients (n = 187)	ED patients (n = 615)
Unknown	98 (19)	56 (30)	119 (19)
STEMI	85 (15)	18 (9)	15 (2)
NSTEMI			
Aortic dissection	20%	35%	15%
Myocarditis or/and pericarditis			
Pulmonary embolism	17 (3)	17 (9)	15 (2)
Pneumonia	27 (5)	–	34 (5.5)
Pneumothorax	–	–	8 (1)
Pleurisy	–	22 (12)	5 (1)
Anxiety	57 (11)	22 (12)	90 (15)
Musculoskeletal	81 (16)	3 (2)	160 (27)
Neuropathic	5 (1)	5 (3)	18 (3)
Gastritis	12 (2)	1 (0.5)	20 (3)
Pancreatitis	2 (0.5)	5 (3)	1 (0.2)
Stable angina	12 (2)	4 (2)	11 (2)
Heart failure	7 (1)	6 (3)	8 (1)
Gastrointestinal	13 (2)	–	10 (2)
Other infectious disease	1 (0.2)	–	2 (0.3)
Other	–	–	3(0.5)
Missing data	–	–	36 (6)
In-hospital mortality	5 (1)	3 (2)	0



Diabète

Hypertension

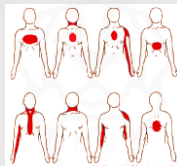
C



C H

Chest pain High-Sensitivity

Chest Pain Means More Than Pain in the Chest

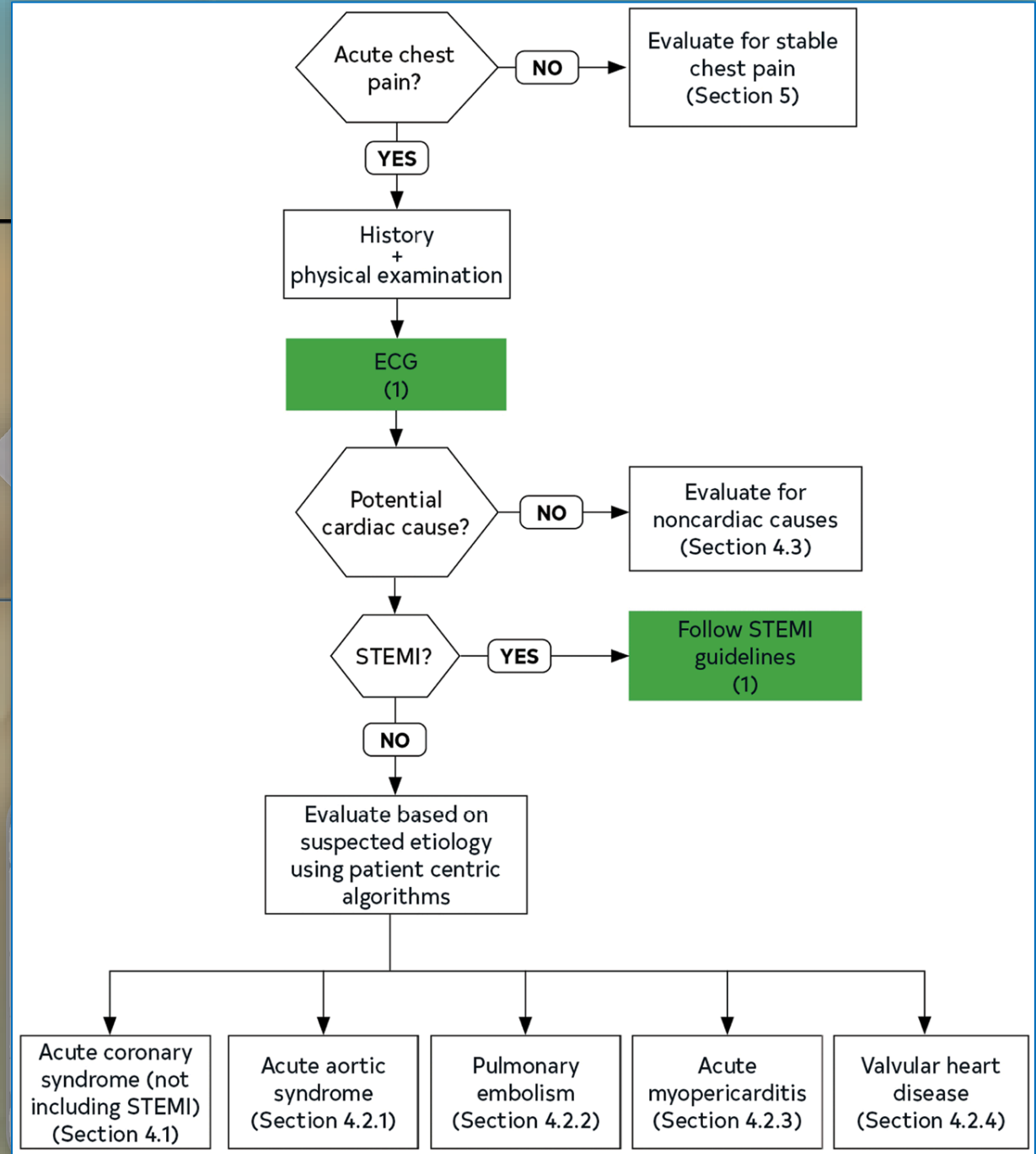


High-Sensitivity Troponins Preferred

4.1. Patients With Acute Chest Pain and Suspected ACS (Not Including STEMI)

Recommendations for Patients With Acute Chest Pain and Suspected ACS (Not Including STEMI) Addressed in this Report are summarized as follows:

Class	Level of Evidence	Recommendation
1	B	In patients presenting with acute chest pain and suspected ACS, when decision pathways (DTPs) cannot distinguish among the three clinical categories, use high-sensitivity troponin (HST) for rapid diagnosis and subsequent therapeutic evaluation. ¹
1	B	In the evaluation of patients presenting with acute chest pain and suspected ACS for whom HSTs are indicated to exclude acute coronary syndrome (ACS), use HSTs for rapid diagnosis and subsequent therapeutic evaluation. ²
1	C	To expedite the diagnosis and subsequent management of patients presenting with acute chest pain and suspected ACS, use HSTs for rapid diagnosis and subsequent therapeutic evaluation. ³





P
Pathway



chest pain



dyspnea



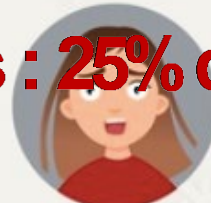
weakness



nausea, vomiting



dizziness



feeling of fear
panic attacks



pallor of the skin



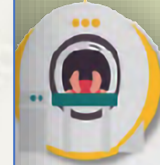
excessive sweating

Use Clinic
Decision
Pathway

	HEART Pathway ¹
Target population	Suspected ACS
Target outcome	1 ED discharge without symptoms resolved 30-d by MACE
Patients with primary outcome in study population, %	6-22
Troponin	cTn, hs-cTn
Variables used	History ECG Age Risk factors Response to 1st

Le cœur des femmes : 25% des SCA ST+

I
Identify



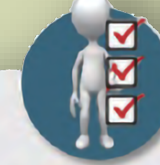
Identify Patients
Most Likely to
Benefit from
Further Testing

N
Noncardiac



Noncardiac Is In.
Atypical Is Out.

S
Structured



Structured Risk
Assessment
Should Be Used

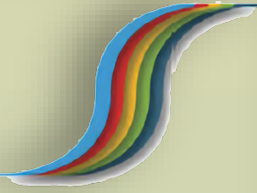
Circulation

ARRIVE CLINICAL PRACTICE GUIDELINE

2021 ACC/AHA/ASCC/AHA/ASE/CPSC/SCAI/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Walter R. Gattuso, Patrick D. Casey, Christopher M. DeWitt, Ryan A. Hargrett-Anderson, Daniel J. Bhatt, Lisa K. Heitman, Scott Brumwell, Peter B. Berger, Robert J. Devereux, Frederick A. Olyott, Frederick R. Herzog, Timothy J. Minneris, Peter P. Kishore, Paul P. Hsu, Shihua M. Hwang, James A. Januzzi, Fred A. Heitman, David A. Cox, David A. Morrow, Robert P. O'Connell, Michael A. Rock and Leifur J. Sney

Circulation. 2021;144:e388-e414.



Risk thresholds:						
Low risk	HEART score <3 Neg 0, 3-h cTn Neg 0, 2-h hs-cTn	EDACS score <16 Neg 0, 2 h hs-cTn No ischemic ECG Δ	TIMI score 0 (or <1 for mADAPT) Neg 0, 2-h cTn or hs-cTn No ischemic ECG Δ	Age <50 y <3 risk factors Previous AMI or CAD Neg cTn or hs-cTn (0, 2 h)	Initial hs-cTn is "very low" and Sx onset >3 h ago Or Initial hs-cTn "low" and 1- or 2-h hs-cTn Δ is "low"	Chest pain free, GRACE <140 Sx <6 h - hs-cTn <ULN (0, 3 h) Sx >6 h - hs-cTn <ULN (arrival)
Intermediate risk	HEART score 4-6	NA	TIMI score 2-4	NA	Initial hs-cTn is between "low" and "high" And/Or 1- or 2-h hs-cTn Δ is between low and high thresholds	T0 hs-cTn = 12-52 ng/L or 1-h Δ = 3-5 ng/L
High risk	HEART score 7-10 ^{48,49}	NA	TIMI score 5-7 ⁴⁹	NA	Initial hs-cTn is "high" Or 1- or 2-h hs-cTn Δ is high	T0 hs-cTn >52 ng/L Or Δ 1 h >5 ng/L
Performance	↑ ED discharges by 21% (40% versus 18%) ↓ 30-d objective testing by 12% (69% versus 57%) ↓ length of stay by 12 h (9.9 versus 21.9 h)	More patients identified as low risk versus ADAPT (42% versus 31%)	ADAPT: More discharged ≤6 h (19% versus 11%)	30-d MACE sensitivity =100% 28% eligible for ED discharge	AMI sensitivity >99% 62% Ruled out (0.2% 30-d MACE) 25% Observe 13% Rule in	AMI sensitivity >99% 30-d MACE not studied
AMI sensitivity, %	100	100	100	100	>99	96.7
cTn accuracy: 30-d MACE sensitivity, %	100	100	100	100	NA	NA
hs-cTn accuracy: 30-d MACE sensitivity, %	95	92	93	99	99	--
ED discharge, %	40	49	19 (ADAPT) 39 (mADAPT)	28	--	--

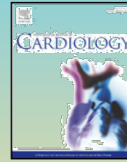
Circulation

ARRIVE CLINICAL PRACTICE GUIDELINE

2011 ACCF/AHA/ASCC/AFIP/ASNC/SCCT/SCMR Guidelines for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Michael J. Blevins, Peter D. Jones, Christopher M. O'Neil, Scott A. Tompkins, Daniel J. Bhatt, Lisa K. Broderick, Scott Brumback, Peter B. Berger, James A. DeLacorte, Timothy J. Devlin, Frederick D. Flaherty, Thomas H. Geisler, Timothy J. Hall, Paul R. Heiser, Michael M. Hirschman, James A. Jones, Fred Kessler, David A. Loffler, David A. Morrow, Robert P. O'Donoghue, Michael A. Rock and Leifur J. Sney

Circulation. 2011;124:e338-414.



March 3, 2021

Derivation and Validation of a 4-Level Clinical Pretest Probability Score for Suspected Pulmonary Embolism to Safely Decrease Imaging Testing

Pierre-Marie Roy, MD, PhD¹; Emilie Friou, MD²; Boris Germeau, MD³; [et al](#)
[> Author Affiliations](#) | [Article Information](#)

JAMA Cardiol. 2021;6(6):669-677. doi:10.1001/jamacardio.2021.0064

A prospective validation of the HEART score for chest pain patients at the emergency department [☆]

B.E. Backus ^{a,b,*}, A.J. Six ^c, J.C. Kelder ^d, M.A.R. Bosschaert ^d, E.G. Mast ^e, A. Mosterd ^f, R.F. Veldkamp ^g, A.J. Wardeh ^h, R. Tio ⁱ, R. Braam ^j, S.H.J. Monnick ^k, R. van Tooren ^e, T.P. Mast ^l, F. van den Akker ^l, M.J.M. Cramer ^a, J.M. Poldervaart ^m, A.W. Hoes ^m, P.A. Doevendans ^a

Score HEART

Histoire

Très suspecte	2
Modérément suspecte	1
Légèrement suspecte	0

ECG

Sous-décalage ST	2
Troubles non spécifiques de la repolarisation	1
Normal	0

Âge

> 65 ans	1
Entre 45 et 65 ans	1
< 45 ans	0

Facteurs de risque

≥ 3 facteurs de risque ou artériosclérose documentée	2
1-2 facteurs de risque	1
Pas de facteurs de risque	0

Troponine

> 2× la limite supérieure de la normale	2
1 à 2× la limite supérieure de la normale	1
< la limite supérieure de la normale	0

≤ 3 pas de SCA

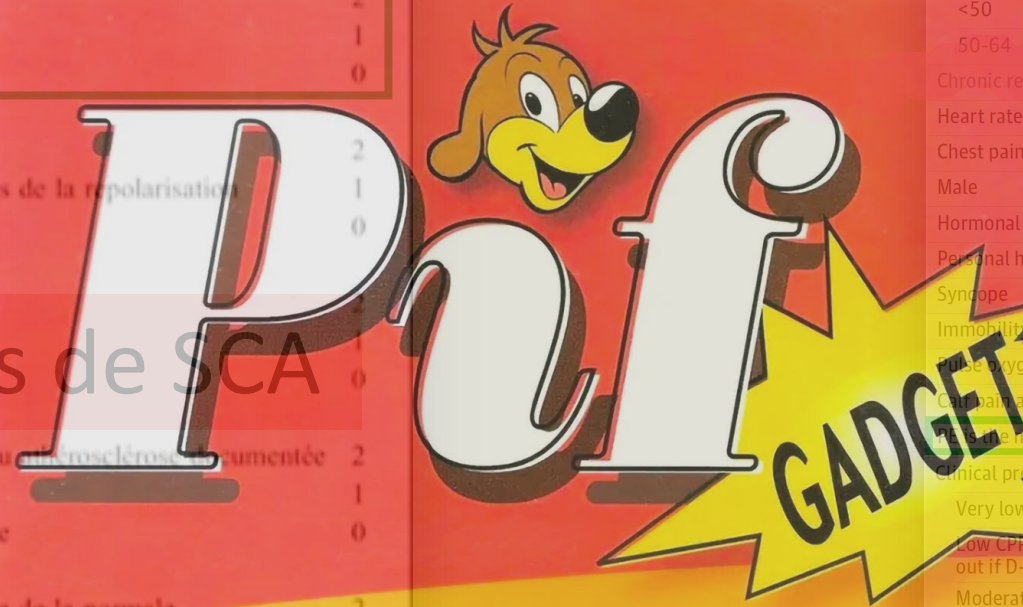


Table 3. 4-Level Pulmonary Embolism Clinical Probability Score (4PEPS)

Variable	Regression coefficient	Points
Age, y		
<50	-0.993	-2
50-64	-0.656	-1
Chronic respiratory disease	-0.570	-1
Heart rate <80 beats per minute	-0.406	-1
Chest pain and acute dyspnea	0.297	1
Male	0.472	2
Hormonal estrogenic treatment	0.608	2
Personal history of VTE	0.711	2
Syncope	0.504	2
Immobility within the last 1 wk ^a	0.509	2
Pulse oxygen saturation <95%	0.832	3
Calf pain and/or unilateral lower limb edema	1.009	3
PE the most likely diagnosis	1.860	5
Clinical probability, total		
Very low CPP (<2%): PE can be ruled out	<0	
Low CPP (2%-20%): PE can be ruled out if D-dimer level <1.0 µg/mL	0-5	
Moderate CPP (20%-65%): PE can be ruled out if D-dimer level <0.5 µg/mL or <(age × 0.01) µg/mL	6-12	
High CPP (>65%): PE cannot be ruled out without imaging testing	≥13	

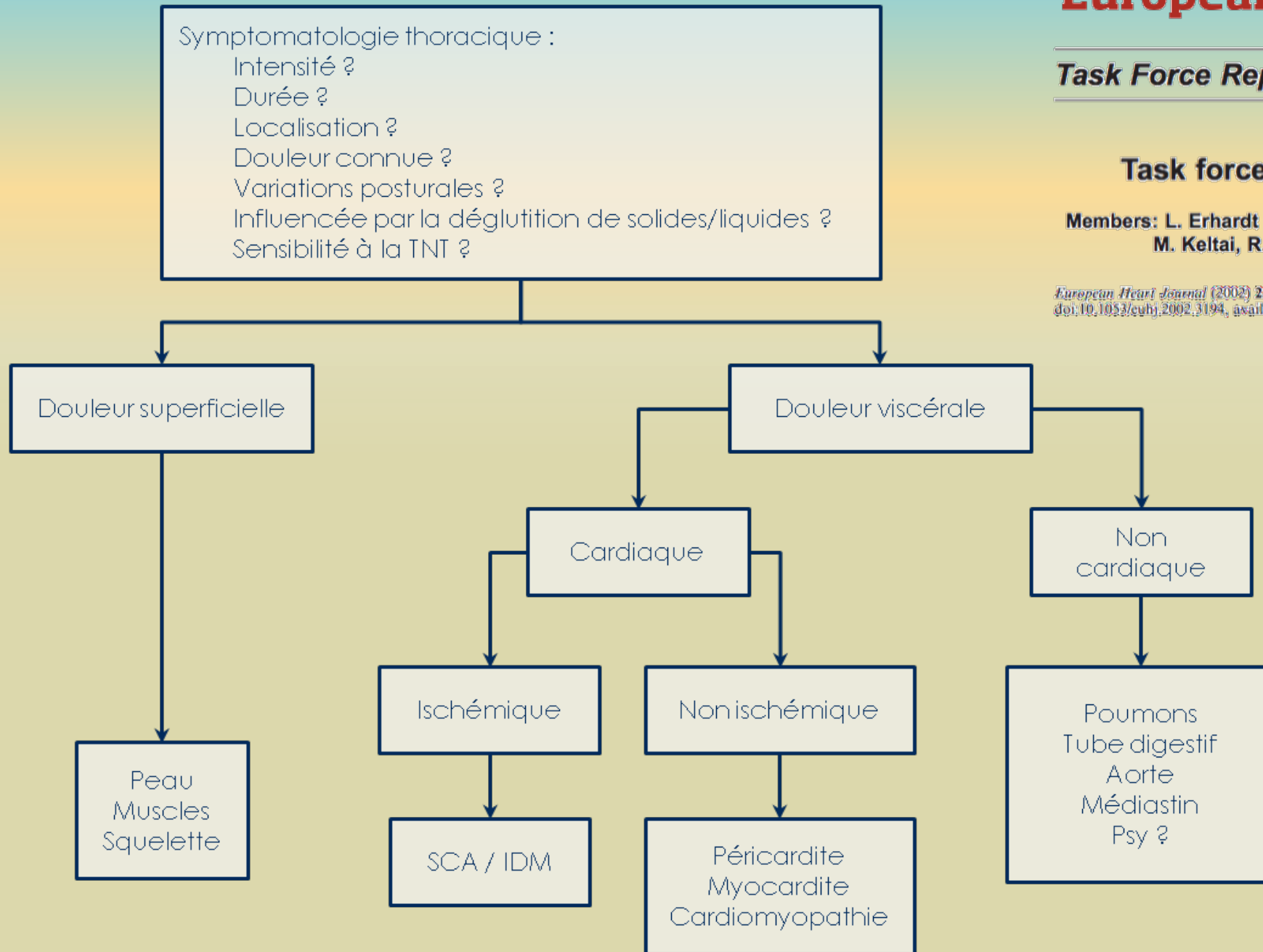
Task Force Report

Task force on the management of chest pain

Members: L. Erhardt (Chairman), J. Herlitz (Secretary), L. Bossaert, M. Halinen, M. Keltai, R. Koster, C. Marcassa, T. Quinn and H. van Weert

European Heart Journal (2002) **23**, 1153–1176

doi:10.1053/euhj.2002.3194, available online at <http://www.idealibrary.com> on IDEAL[®]



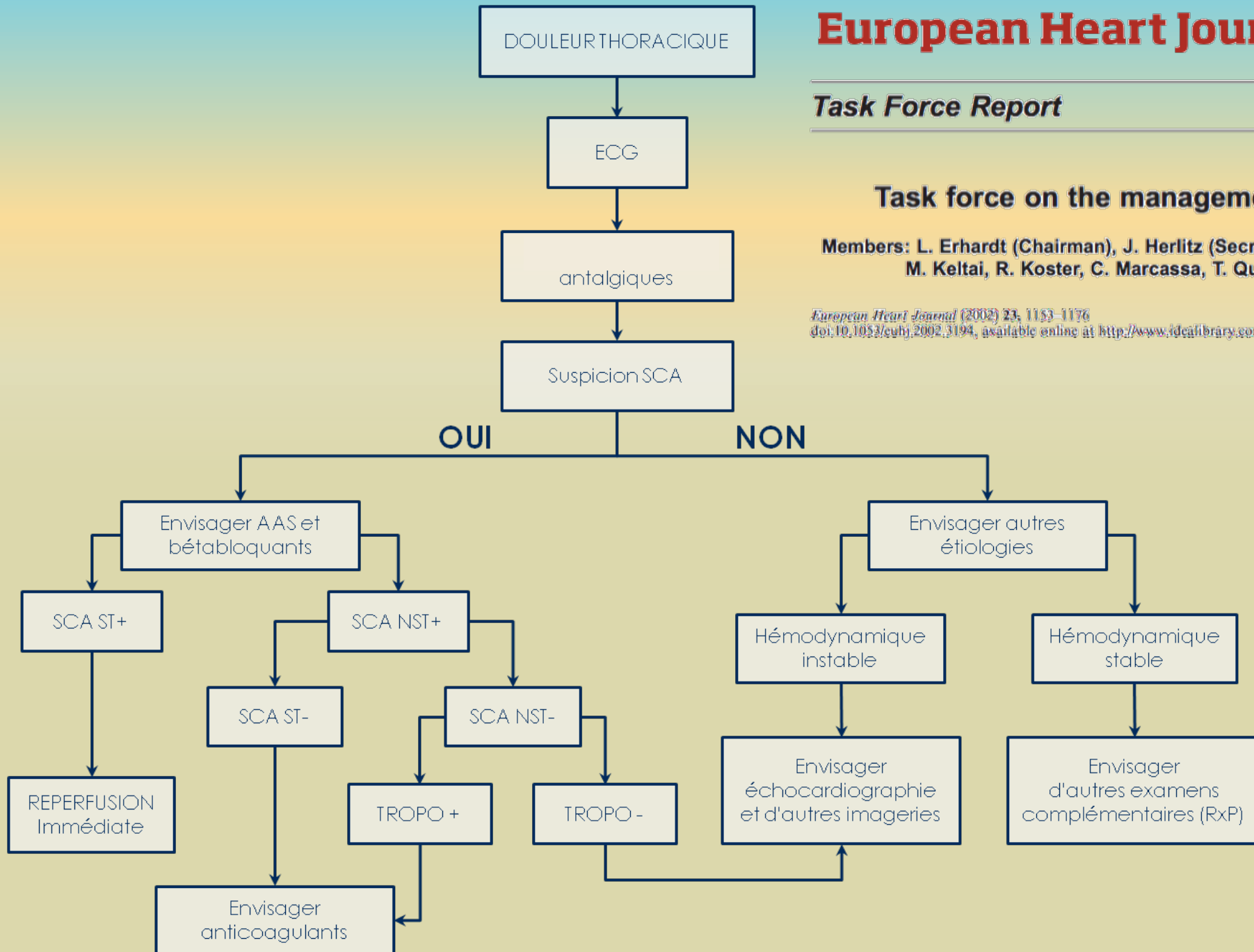
Task Force Report

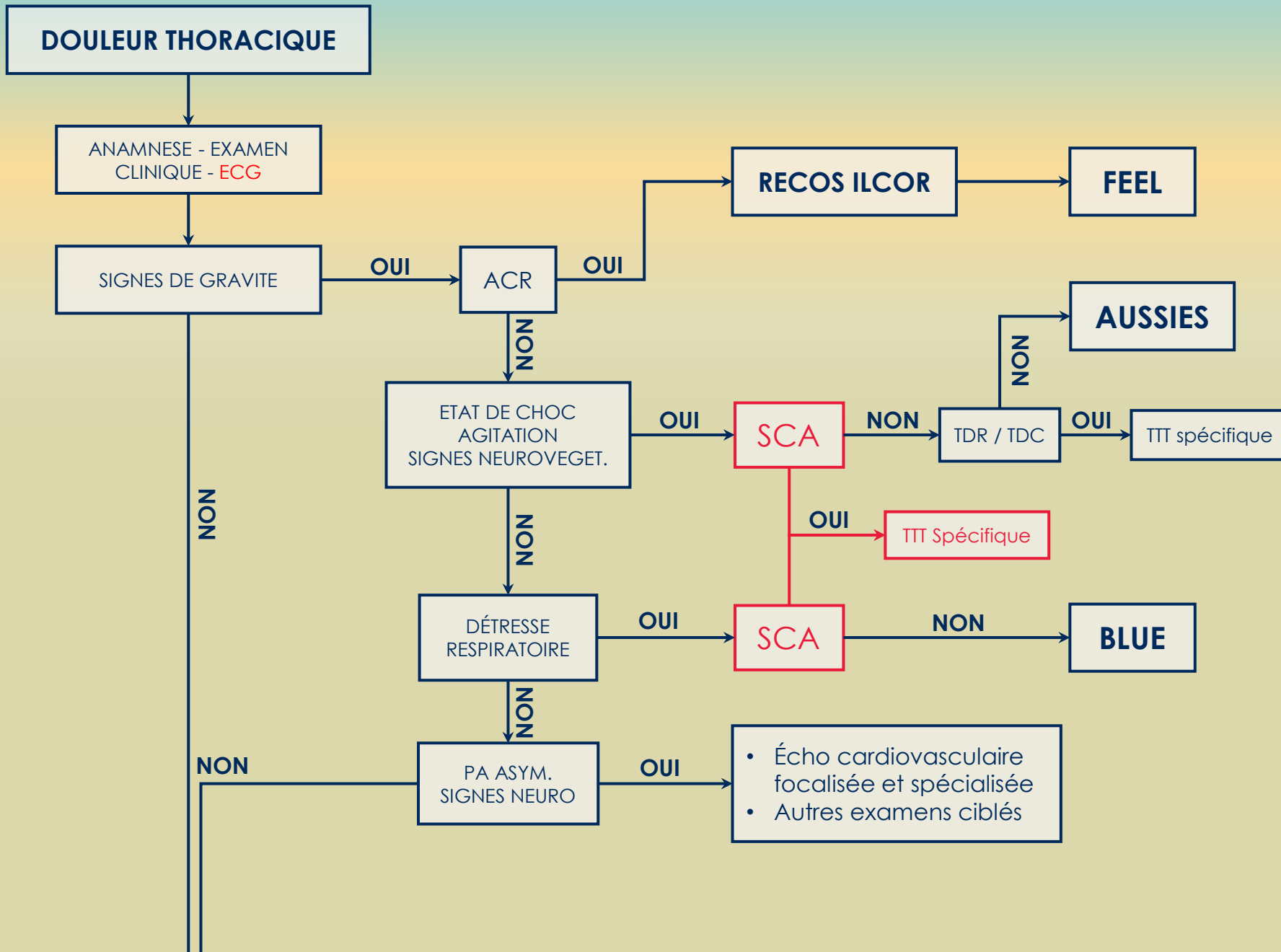
Task force on the management of chest pain

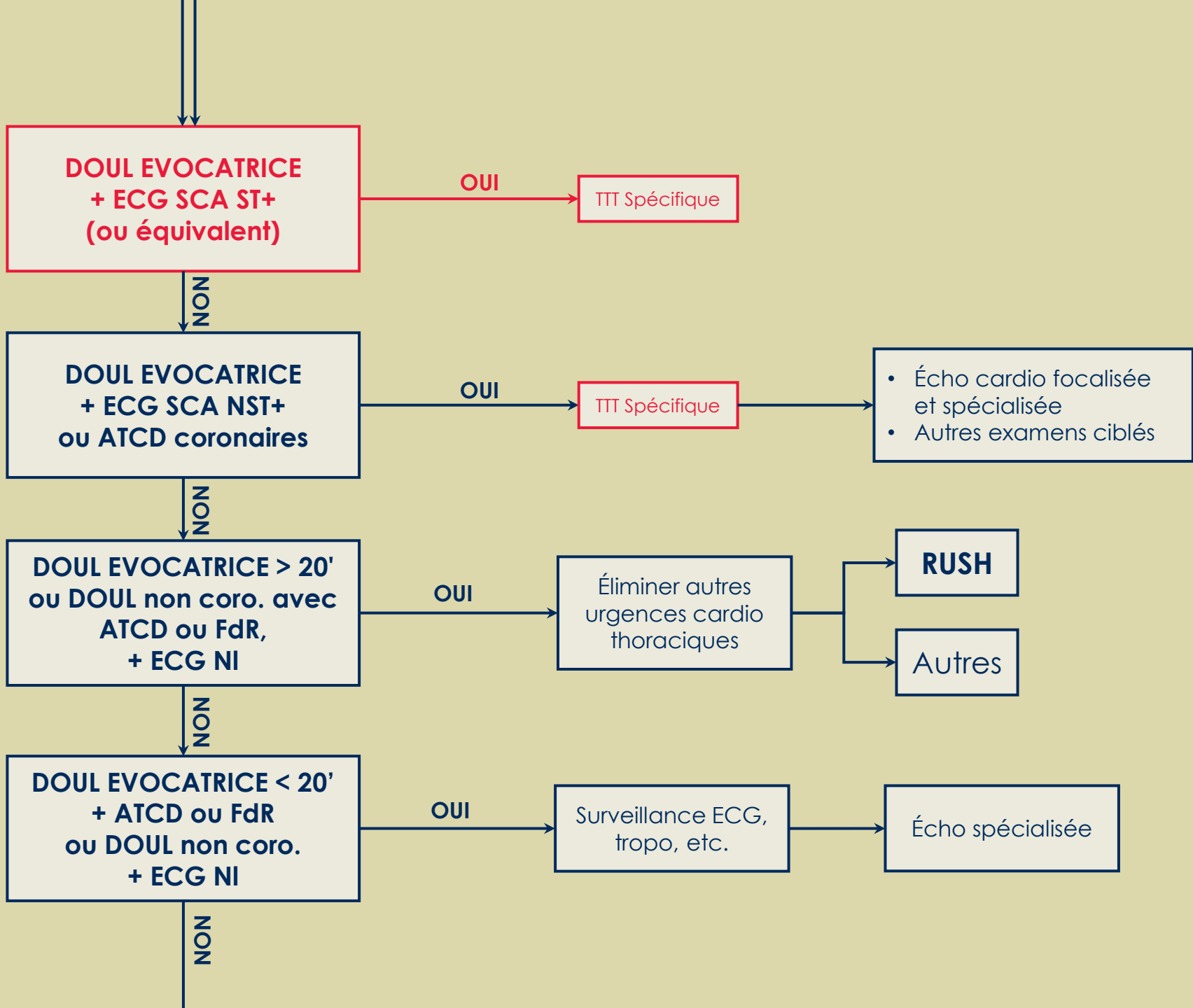
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European Heart Journal (2002) 23, 1153–1176

doi:10.1053/euhj.2002.3194, available online at <http://www.idealibrary.com> on IDEAL[®]







Doul non coronarienne persistante + ECG NI

OUI

Éliminer autres urgences thoraciques

RUSH

Autres

NON

Sortie Bilan ambulatoire

Radiologic Procedure	Rating*	RRL**
X-ray chest	9	☒
CT Acoronary arteries with contrast	7	☒☒☒☒☒
CT Acoronary arteries with contrast with advanced low dose techniques	7	☒☒☒☒
CT Achest (noncoronary) with contrast	7	☒☒☒☒
US echocardiography transthoracic resting	7	○
SPECT MPI*** rest and stress	6	☒☒☒☒☒
Tc-99m V/Q scan lung	5	☒☒☒☒
MRA aorta without and with contrast	5	○
X-ray rib views	5	☒☒☒☒
MRA chest (noncoronary) without and with contrast	5	○
MRA aorta without contrast	4	○
MRA chest (noncoronary) without contrast	4	○
X-ray barium swallow and upper GI series	4	☒☒☒☒
X-ray thoracic spine	4	☒☒☒☒
US abdomen	4	○
MRI heart with or without stress without and with contrast	3	○
MRA pulmonary arteries without and with contrast	3	○
MRA coronary arteries without contrast	3	○
MRA coronary arteries without and with contrast	3	○
US echocardiography transthoracic stress	3	○
US echocardiography transesophageal	2	○
MRI heart with or without stress without contrast	2	○
MRA pulmonary arteries without contrast	2	○
Coronary angiography with or without ventriculography	1	☒☒☒☒

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
○	0 mSv	0 mSv
☒	<0.1 mSv	<0.03 mSv
☒☒	0.1-1 mSv	0.03-0.3 mSv
☒☒☒	1-10 mSv	0.3-3 mSv
☒☒☒☒	10-30 mSv	3-10 mSv
☒☒☒☒☒	30-100 mSv	10-30 mSv

*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as NS (not specified).

*Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate
 **Relative Radiation Level
 ***single photon emission computed tomography myocardial perfusion imaging

Hoffman U, Venkatesh V, White RD, Woodard PK, Carr JJ, Dorbala S, Earls JP, Jacobs JE, Mammen L, Martin ET III, Ryan T, White CS, Expert Panel on Cardiac Imaging. ACR Appropriateness Criteria® acute nonspecific chest pain - low probability of coronary artery disease. [online publication]. Reston (VA): American College of Radiology (ACR); 2011. 6 p.

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27-28-29 SEPTEMBRE 2023

Hôtel Saint Alexis

ILE DE LA RÉUNION

France

CARDIORUN.ORG

N'oubliez pas l'échographie clinique d'urgence !

An aerial photograph of a coastal town, likely Saint-Denis on Réunion Island, showing a dense urban area with a grid pattern of buildings, surrounded by green hills and mountains. The sea is visible at the bottom of the frame. The image is overlaid with a semi-transparent blue gradient.

FEEL (Focused Echo Evaluation in Life support)

L'ACR

FEER exam:
Focussed
Echocardiographic
Evaluation in
Resuscitation

Objectifs :
Identification et
traitement des
causes d'ACR

FEER exam

- Demand for structured process in CPR
- Myocardial wall motion can be evaluated with a subcostal view during brief pauses of CPR
- has to be trained
- has an impact to differentiate PEA.

It is a good extension to our standard care interventions in CPR.

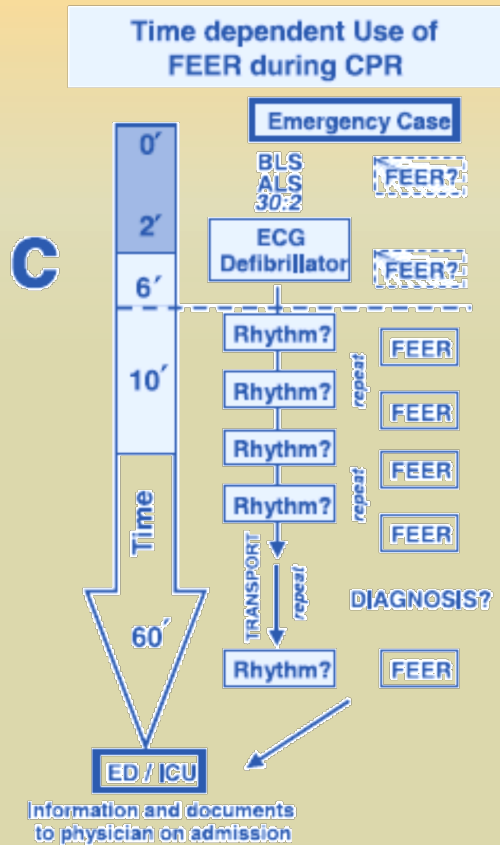
Educational training for FEER is essential. FEER can be learned in an 8-hrs course and be applied in a time sensitive manner by previous untrained physicians.

www.uni-frankfurt.de

© Raoul Breitreutz

FEEL (Focused Echo Evaluation in Life support)

L'ACR

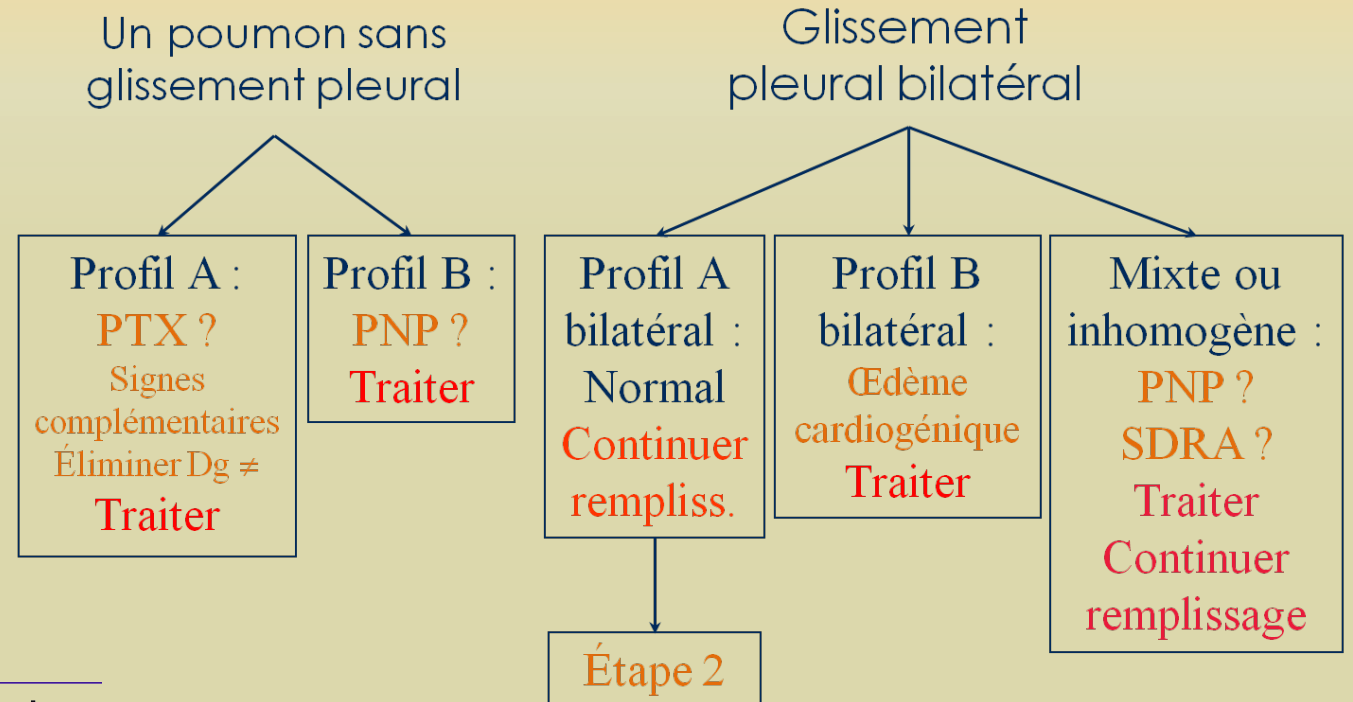
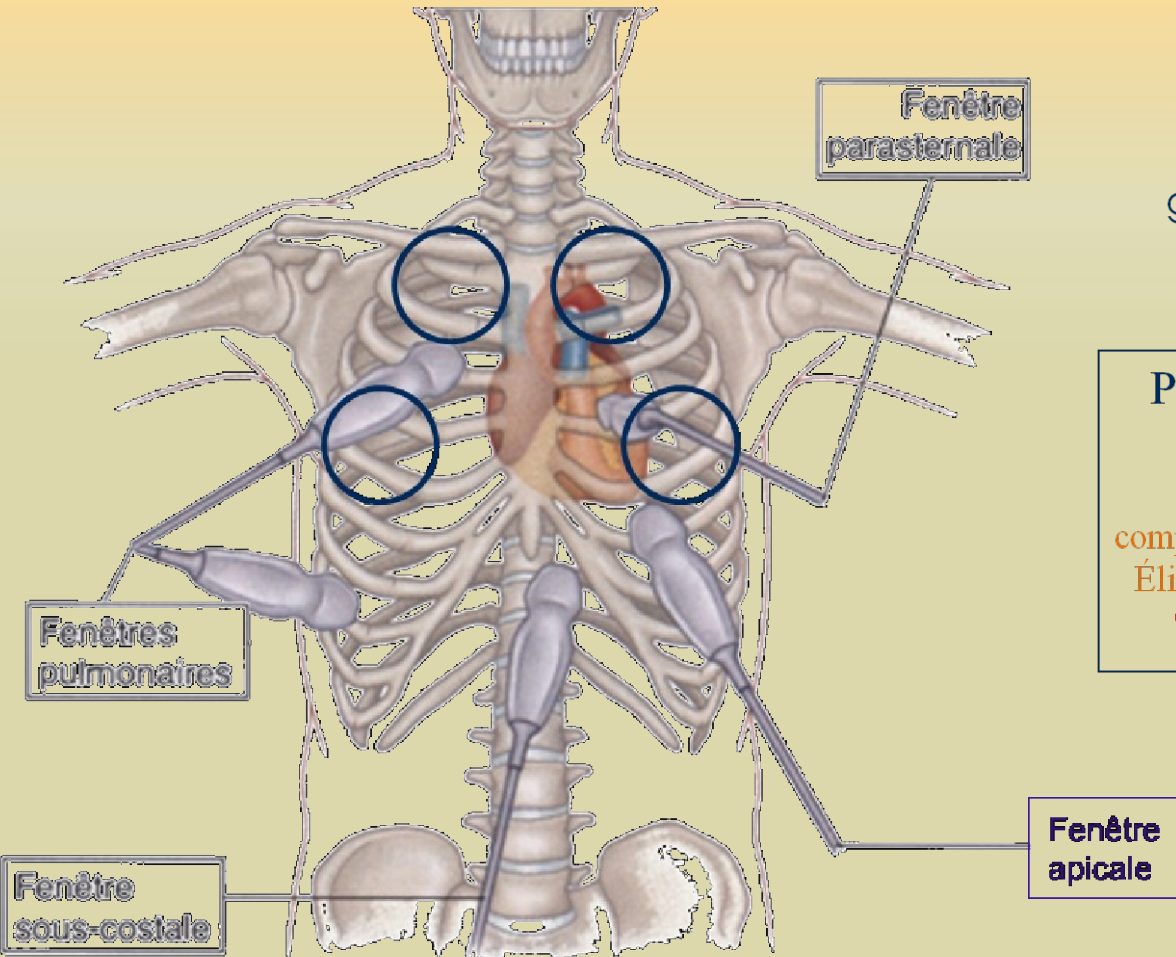


Phase	Etape FEEL
RCP de qualité maximale, préparation, information de l'équipe	1. Pratiquer sans retard une RCP de base et médicalisée selon les recommandations internationales (AHA guidelines), pendant au moins 5 cycles de compression/ventilation
	2. Prévenir l'équipe de RCP : "Je vais réaliser une échographie cardiaque."
	3. Préparer (ou faire préparer) l'appareil d'échographie et le tester.
	4. Adapter l'environnement (position du patient et du médecin, retirer les vêtements, etc.), se préparer à débiter l'examen
Exécution, réalisation de l'échographie	5. Demander à l'équipe de RCP de compter 10 secondes (commencer par 0) et d'effectuer simultanément
	6. Ordonner : "Ar
	7. Poser la sonde pendant les dernières compressions
	8. Effectuer une échographie le plus rapidement possible. Si vous ne pouvez pas reprendre la RCP, arrêter l'échographie par une incidence para
	9. A la 9 ^{ème} seconde, arrêter la réalisation.
Reprise de la RCP, interprétation et conséquences	10. Communiquer (seulement après la reprise des compressions thoraciques) les résultats de l'examen à l'équipe (par exemple, "il existe un mouvement de paroi, le cœur se contracte," "le cœur est immobile", "il existe un épanchement péricardique (massif)", "pas d'information concluante", "suspicion d'embolie pulmonaire", "hypovolémie") et en expliquer les conséquences ainsi que les procédures de prise en charge.



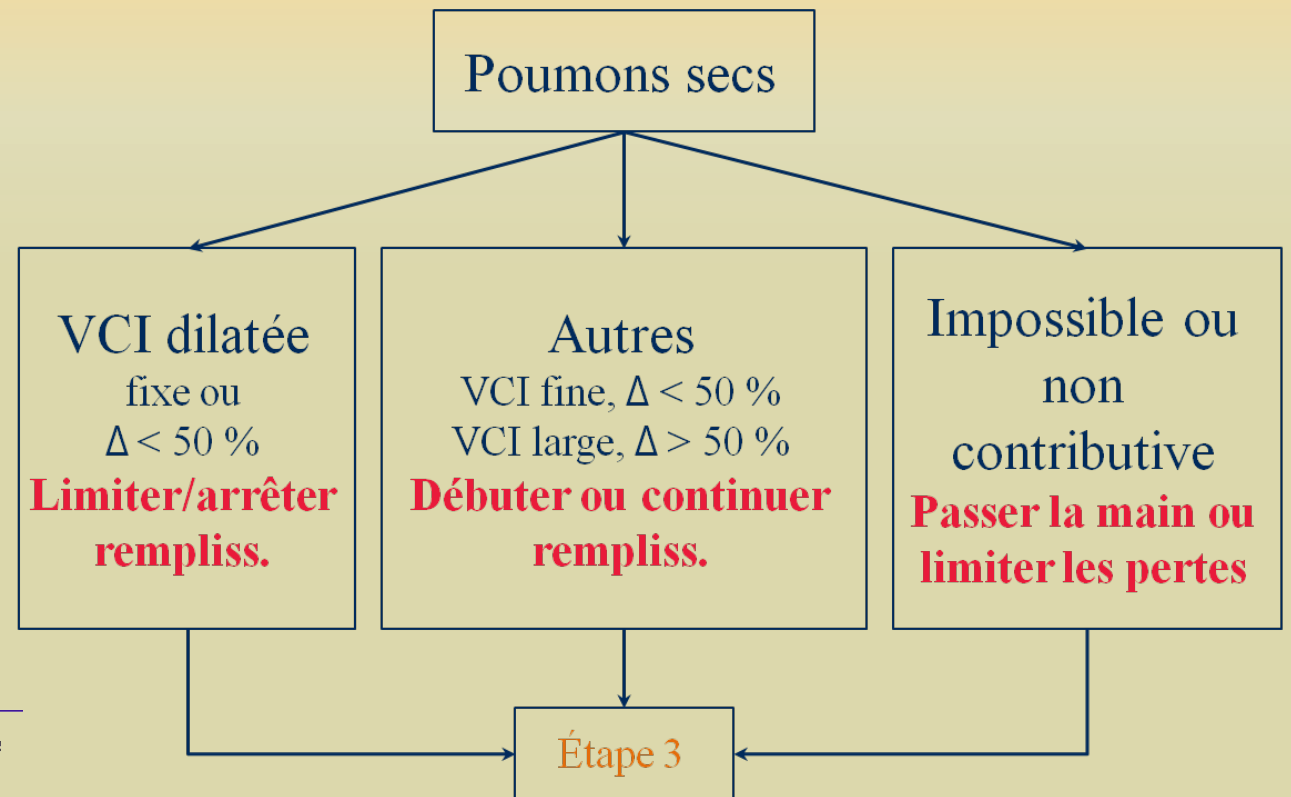
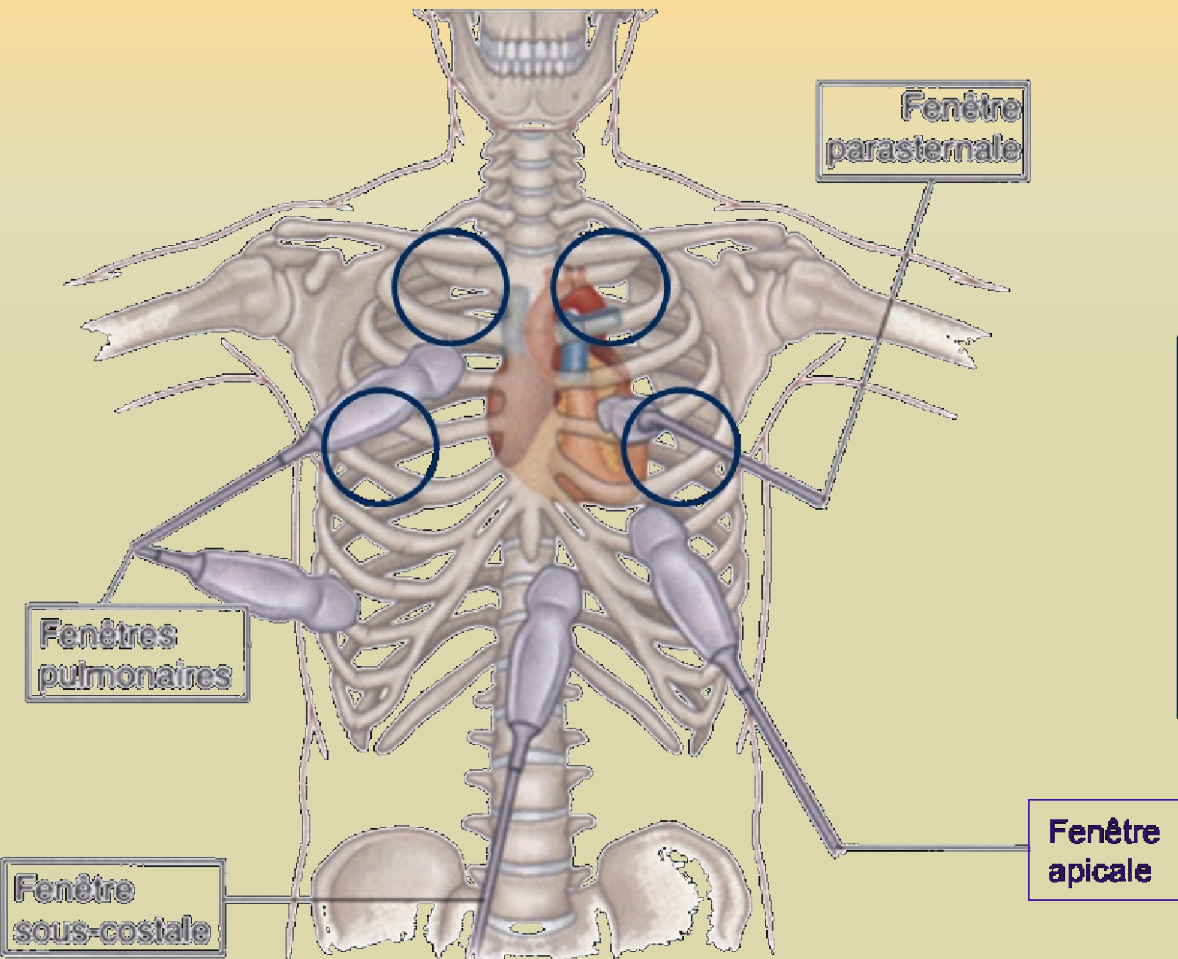
AUSSIES (Australian Ultrasonographic Simplified Screening In Evaluation of Shock)

Étape 1: échographie pulmonaire



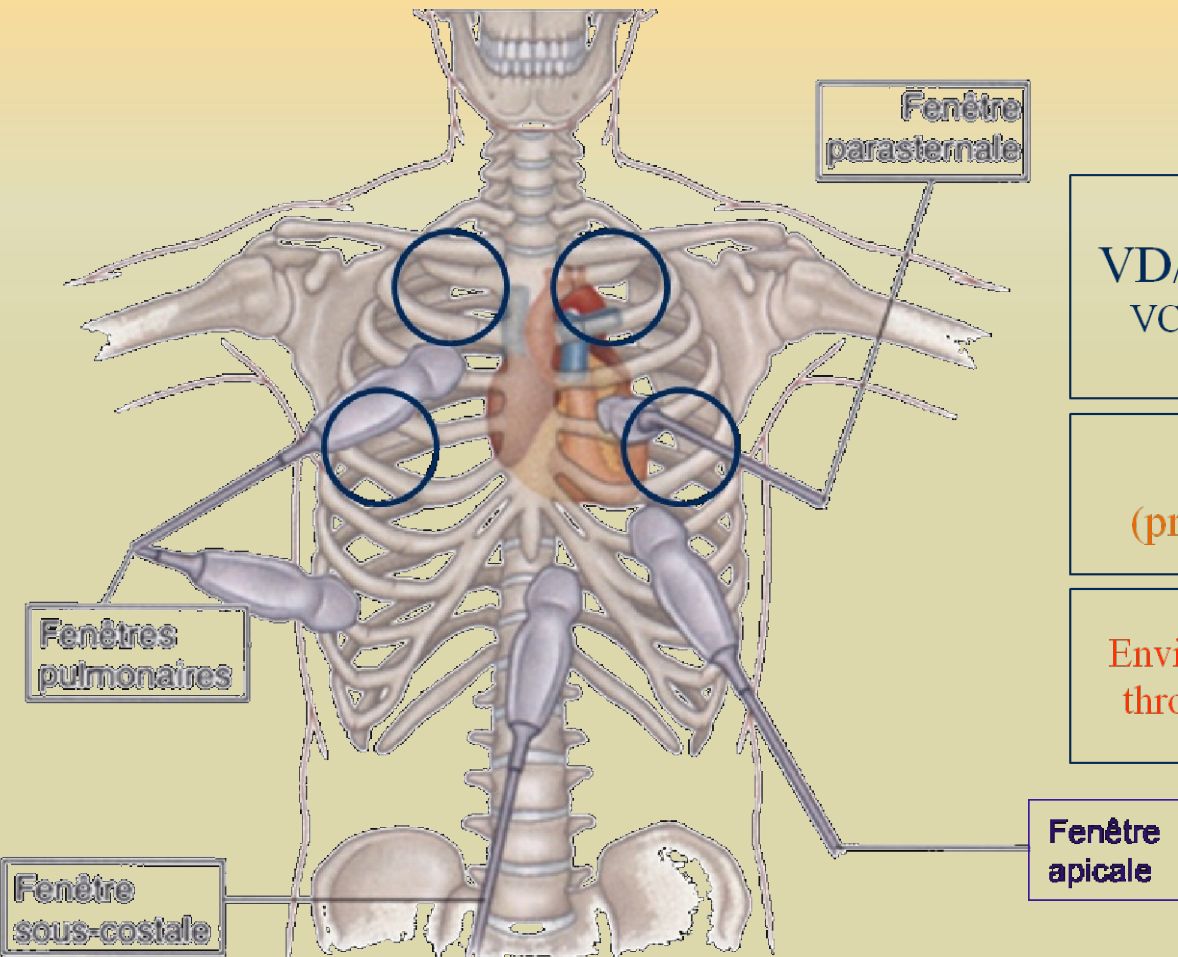
AUSSIES (Australian Ultrasonographic Simplified Screening In Evaluation of Shock)

Étape 2 : VCI



AUSSIES (Australian Ultrasonographic Simplified Screening In Evaluation of Shock)

Étape 3 : échographie cardiaque focalisée



VD/VG > 1 VCI dilatée	Epanchement péricardique VCI dilatée	Cavités de taille normale ou diminuée VCI collabée ou $\Delta > 50\%$	Impossible ou non contributive
EP (probable)	Tamponade (probable)	Hypovolémie / Sepsis	⚡💧!#&?!!
Envisager une thrombolyse	Drainage / chercher une dissection Ao	Remplissage Vérifier aorte / 3P	Autre fenêtre Changer de sonde Passer la main

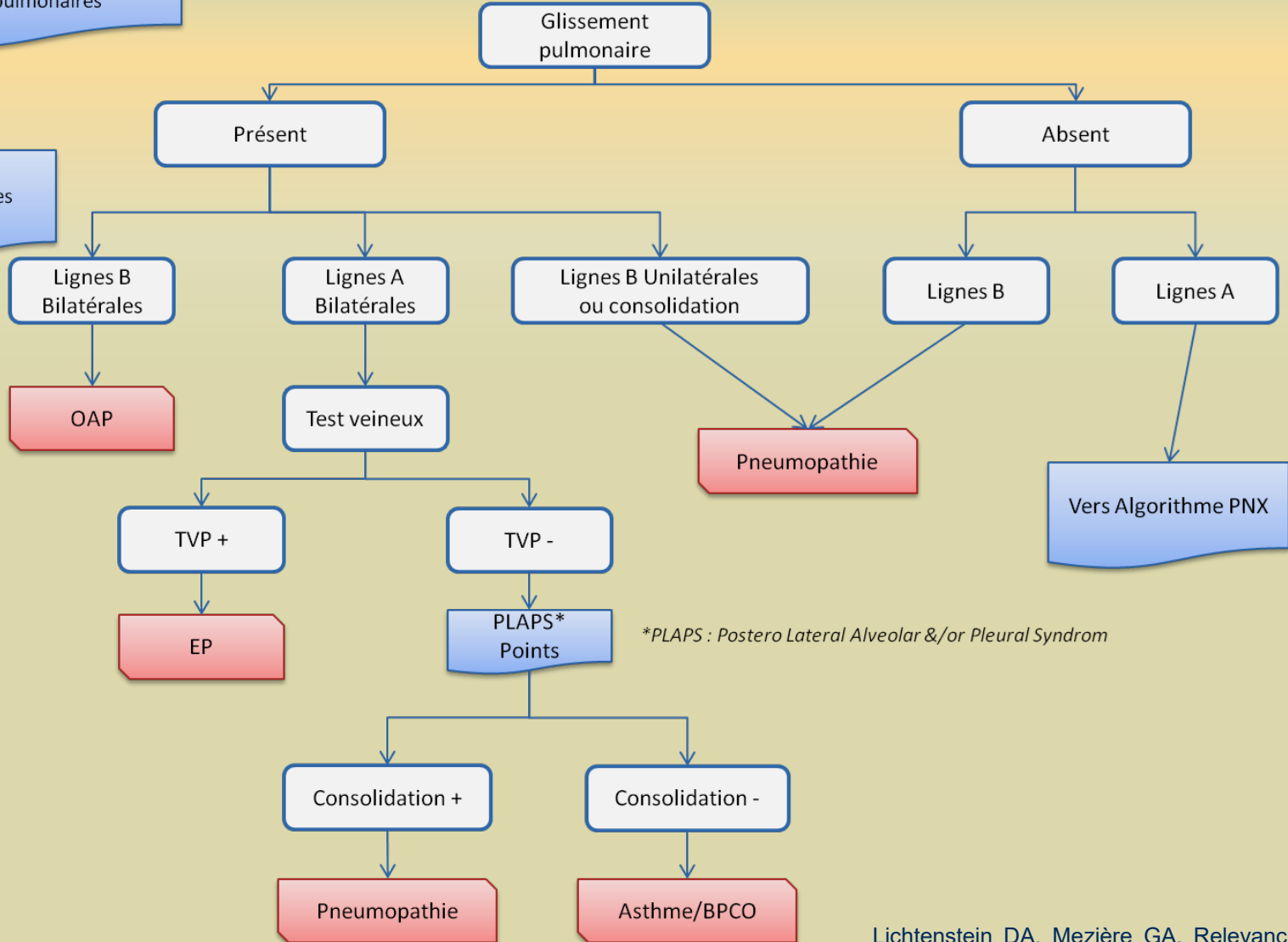


Détresse respiratoire : **BLUE**-Protocol

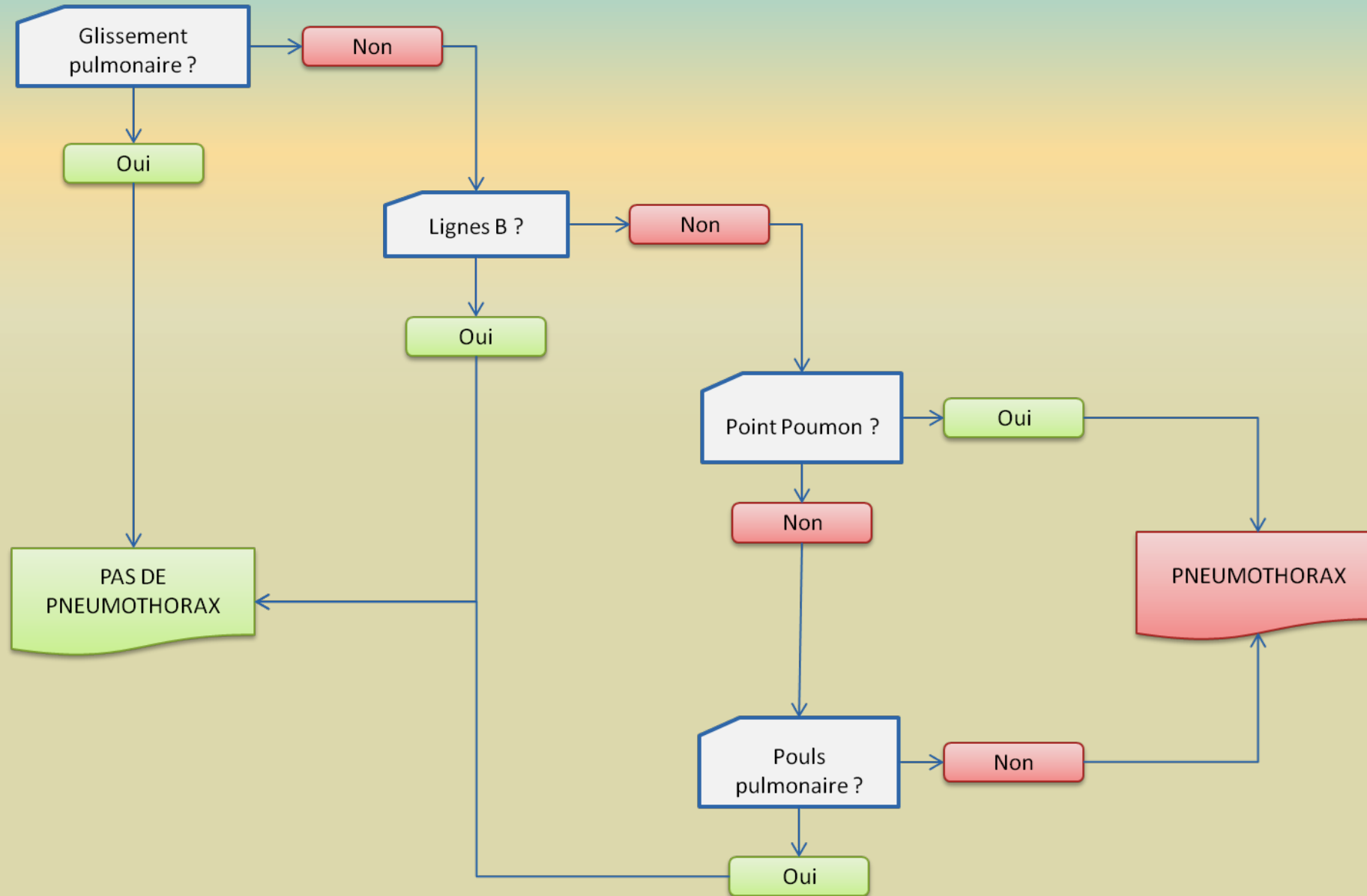
Étape 1 : Examiner les zones déclives et proclives de tous les champs pulmonaires

Blue Protocol

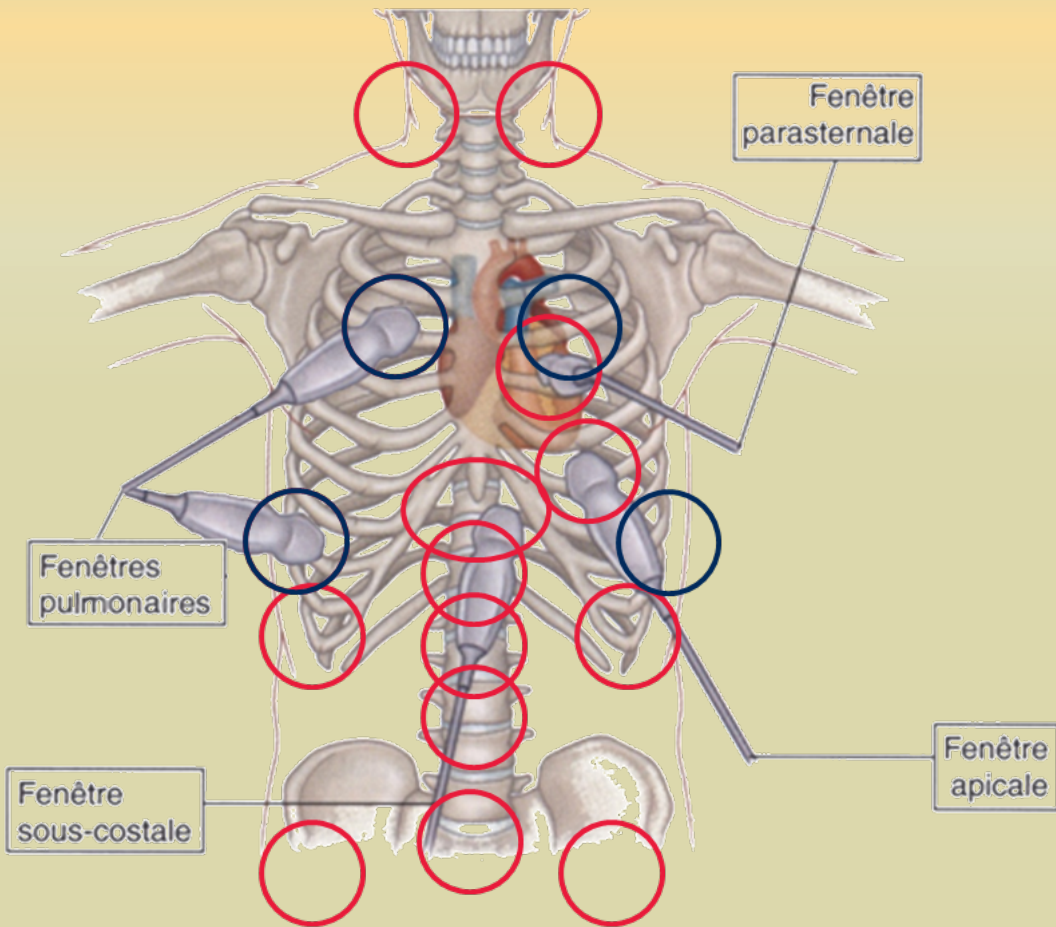
Étape 2 : Rechercher les lignes A et B



Pneumothorax



RUSH (Rapid Ultrasound in SHock)



Étape 1 Évaluation de la pompe	A. Parasternales (grand et petit axe) B. Sous xiphoïdienne C. Apicale
Étape 2 Évaluation du réservoir	A. VCI grand axe B. FAST / QSD avec incidence pleurale C. FAST / QSG avec incidence pleurale D. FAST / Pelvis E. PNX / Œdème pulmonaire
Étape 3 Évaluation des tuyaux	A. Aorte suprasternale B. Aorte parasternale C. Aorte épigastrique D. Aorte supra-ombilicale E. TVP fémorale F. TVP poplitée

RUSH (Rapid Ultrasound in SHock)

	Choc hypovolémique	Choc cardiogénique	Choc obstructif	Choc "distributif"
Pompe	Hyperkinésie cardiaque Cavités de petite taille	Hypokinésie et dilatation des cavités cardiaques	Hyperkinésie Ep. péricardique Tamponade VD surchargé Thrombus cardiaque	Hyperkinésie (sepsis précoce) Hypokinésie (sepsis tardif)
Réservoir	VCI aplatie VJI aplaties Ep. péritonéal et/ou pleural (perte liquidienne)	VCI distendue VJI distendues Lignes B (œdème pulmonaire) Ep. péritonéal et/ou pleural (transsudat)	VCI distendue VJI distendues Signes de PNX (glissement = lignes b = pouls pulmonaire = 0)	VCI normale ou aplatie (sepsis précoce) Ep. péritonéal et/ou pleural (exsudat)
Tuyaux	AAA Dissection aortique	Normaux	TVP	Normaux