APPROCCIO ECOGRAFICO IN PS AL DOLORE TORACICO

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SOC PS-SEMINTENSIVA
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NAPOLI 19-11- 2016

x congresso nazionale
simeu
NAPOLI 18-20 NOVEMBRE 2016

ULTRASOUND
and
CHEST PAIN

According to the consensus statement of the "American Society of Ecocardiography" and the "American College of Emergency Medicine":

- respiratory difficulty
- chest pain, or
- shock

are raccomended indication of the
FOCUSED CARDIAC ULTRASOUND
in emergency setting

J Am Soc Echocardiogr 2010; 23:1225-30

ULTRASOUND and CHEST PAIN

The «astute» clinician is cognizant that etiologies classically associate with chest pain, such ACS or and aortic dissection, can be associated with dyspnea or hypotension, or even presents atypically with these two "non cardiac" presentation alone in the absence of chest pain.

J of Intensive Care 2016; 23:1225-30

ULTRASOUND and CHEST PAIN

A patients with pneumothorax can present with shortness of breath and chest pain and develop hypotension when it becomes a tension pneumothorax.

POCUS → MOPOCUS

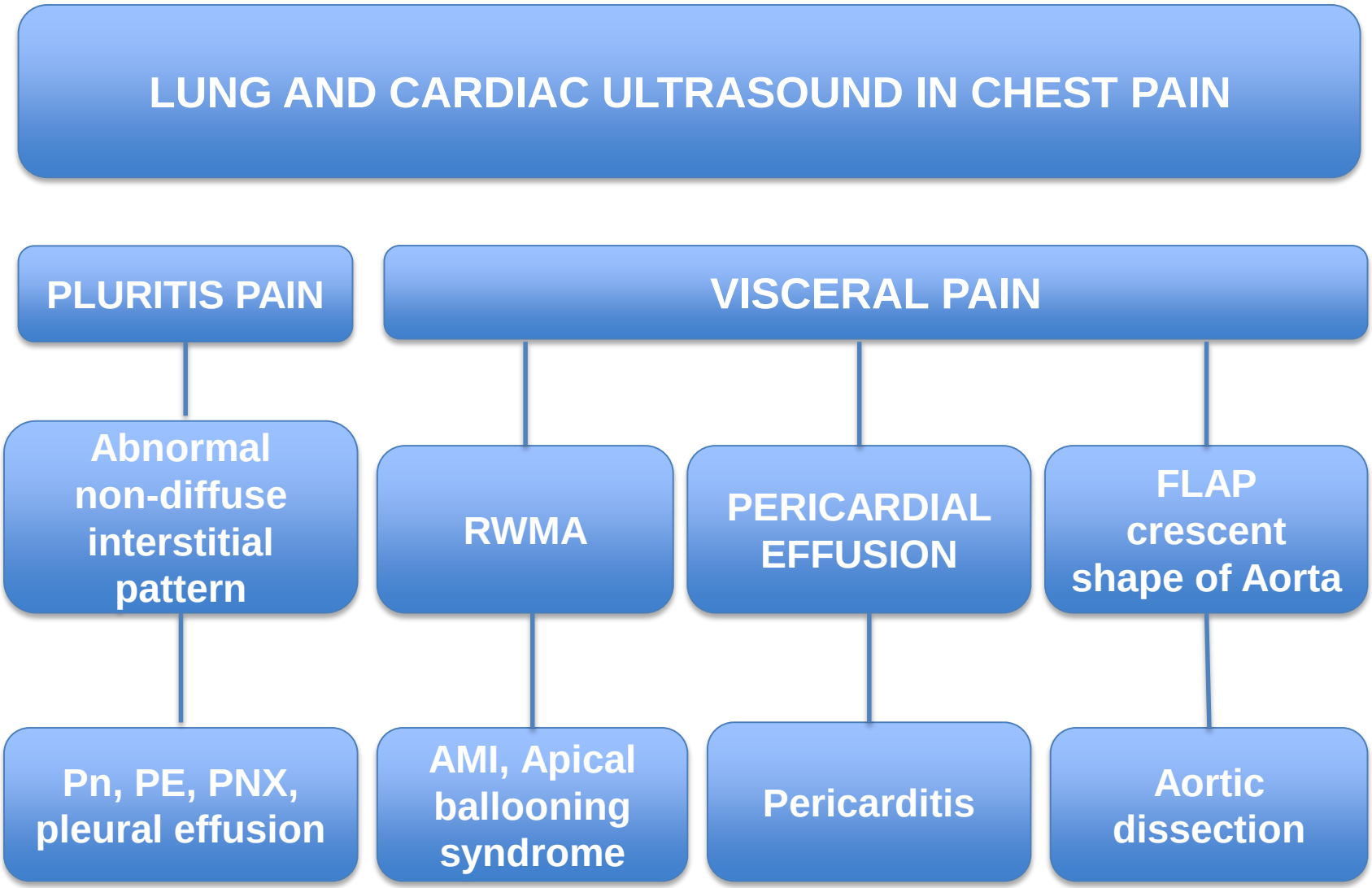
J of Intensive Care 2016; 23:1225-30

IMPORTANT CAUSES OF ACUTE CHEST PAIN

CHEST WALL PAIN	PLEURITIC PAIN	VISCERAL PAIN
Costosternal syndrome	Pulmonary embolism	Typical exertional angina
Costochondritis (Tietze syndrome)	Pneumonia	Atypical (nonexertional) angina
Precordial catch syndrome	Spontaneous pneumothorax	Unstable angina
Slipping rib syndrome	Pericarditis	Acute myocardial infarction
Xiphodynia	Pleurisy	Aortic dissection
Radicular syndromes		Pericarditis
Intercostal nerve syndromes		Esophageal reflux or spasm
Fibromyalgia		Esophageal rupture
		Mitral valve prolapse

Tintinalli's Emergency Medicine

"MOPOCUS" IN CHEST PAIN

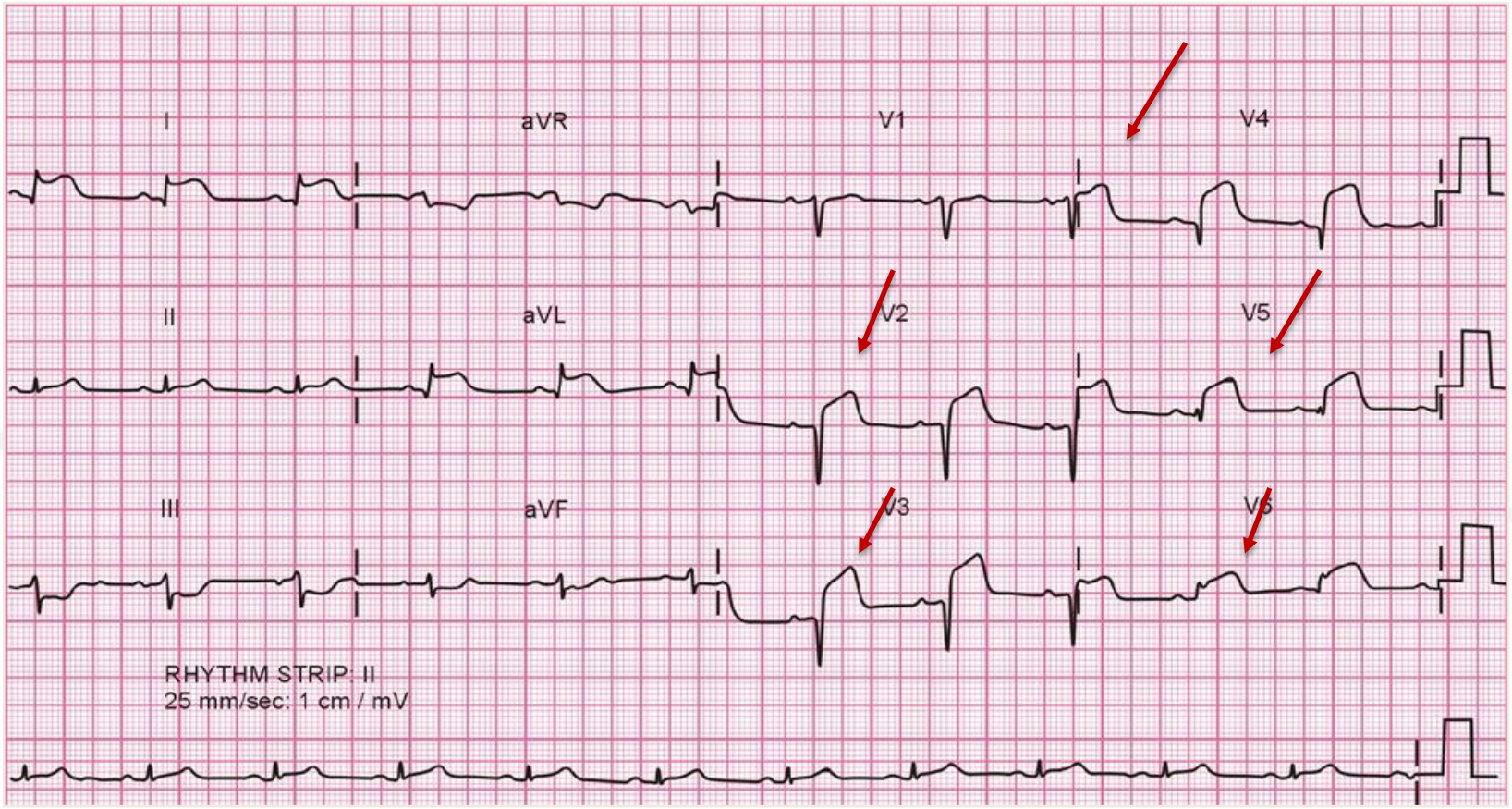


FOCUS and VISCERAL PAIN

FOCUS should not be used primaly in patient with suspected AMI?

J Am Soc Echocardiogr 2010; 23:1225-30

ANY DOUBT?


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
RHYTHM STRIP: II
25 mm/sec: 1 cm / mV

FOCUS
Assessment of mechanical complications

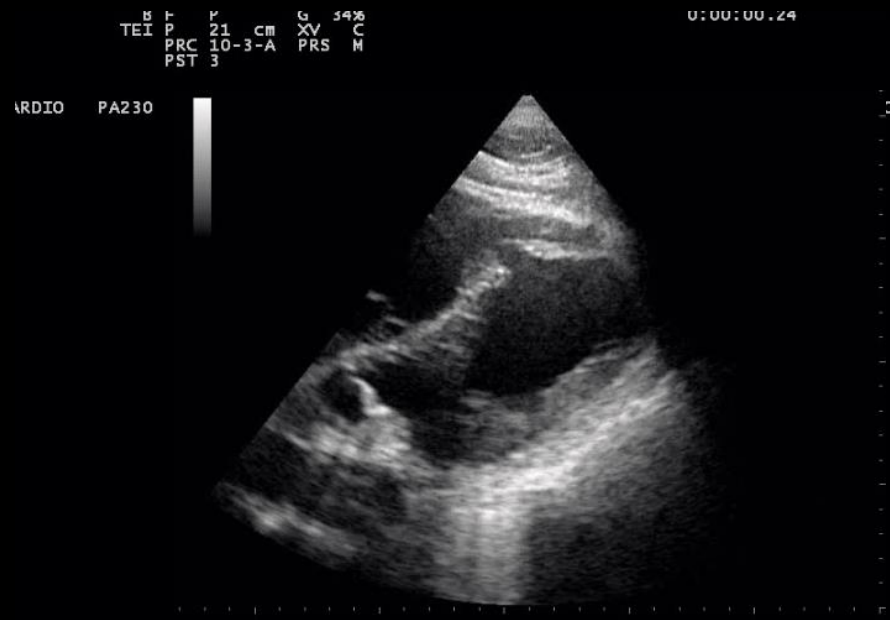
ACUTE FREE WALL RUPTURE

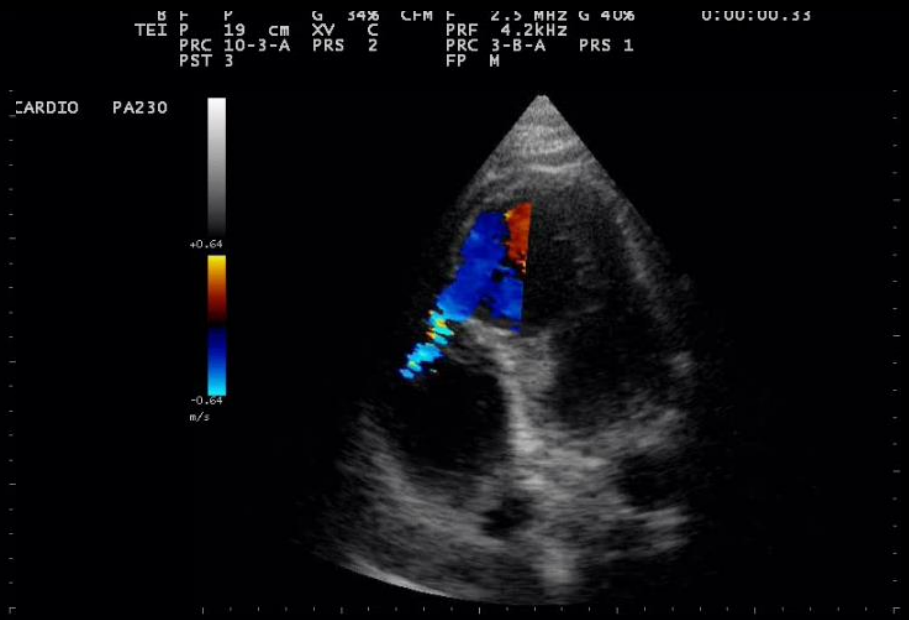
VENTRICULAR SEPTAL RUPTURE

MITRAL REGURGITATION: LV dilatation and dysfunction, papillary muscle dysfunction or rupture of the papillary muscle

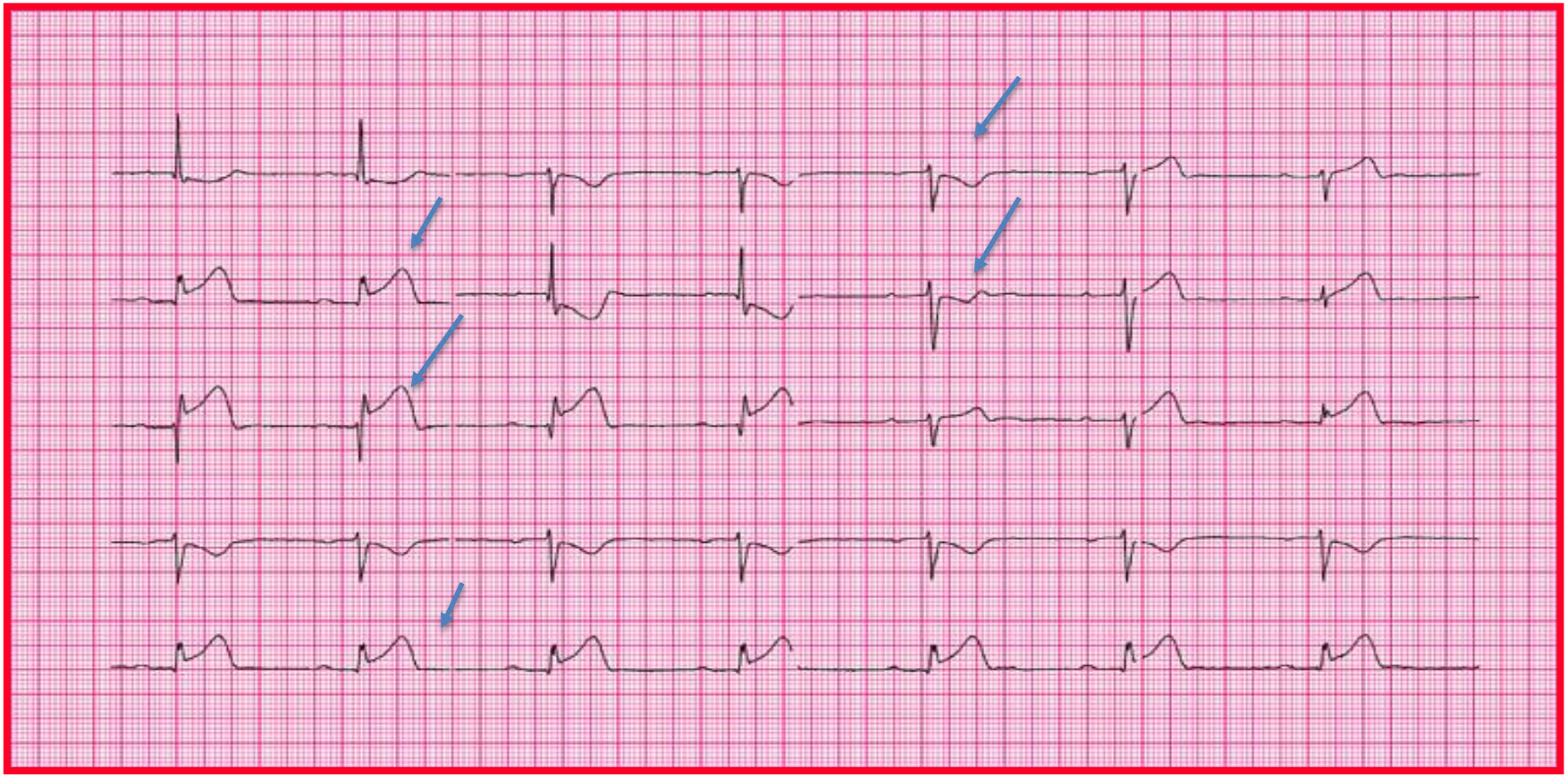
ACUTE FREE WALL RUPTURE

VENTRICULAR SEPTAL RUPTURE





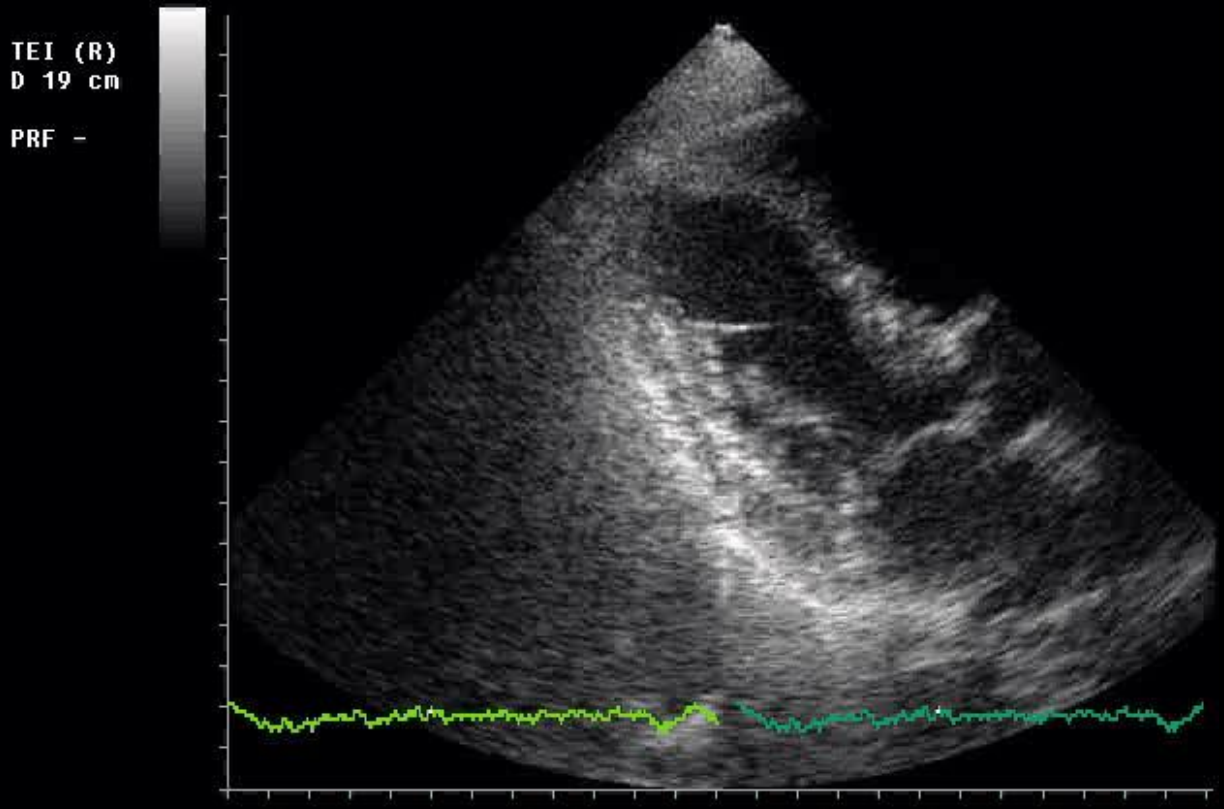
WHICH ONE COMPLICATION?



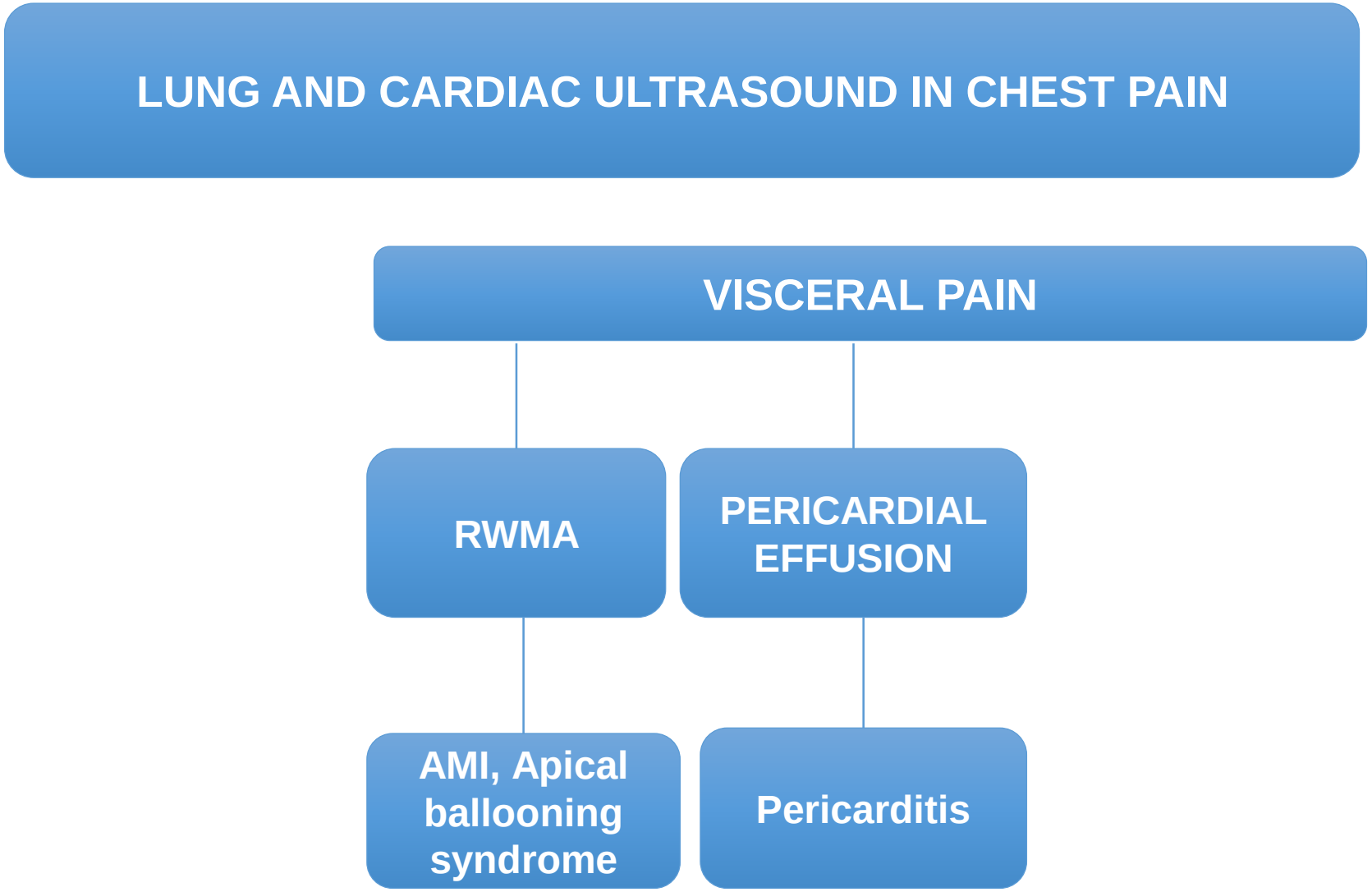
DYSPNEA

DIFFUSE INTERSTITIAL SYNDROME

PAPILLARY MUSCLE DYSFUNCTION/ RUPTURE



"MOPOCUS" IN CHEST PAIN



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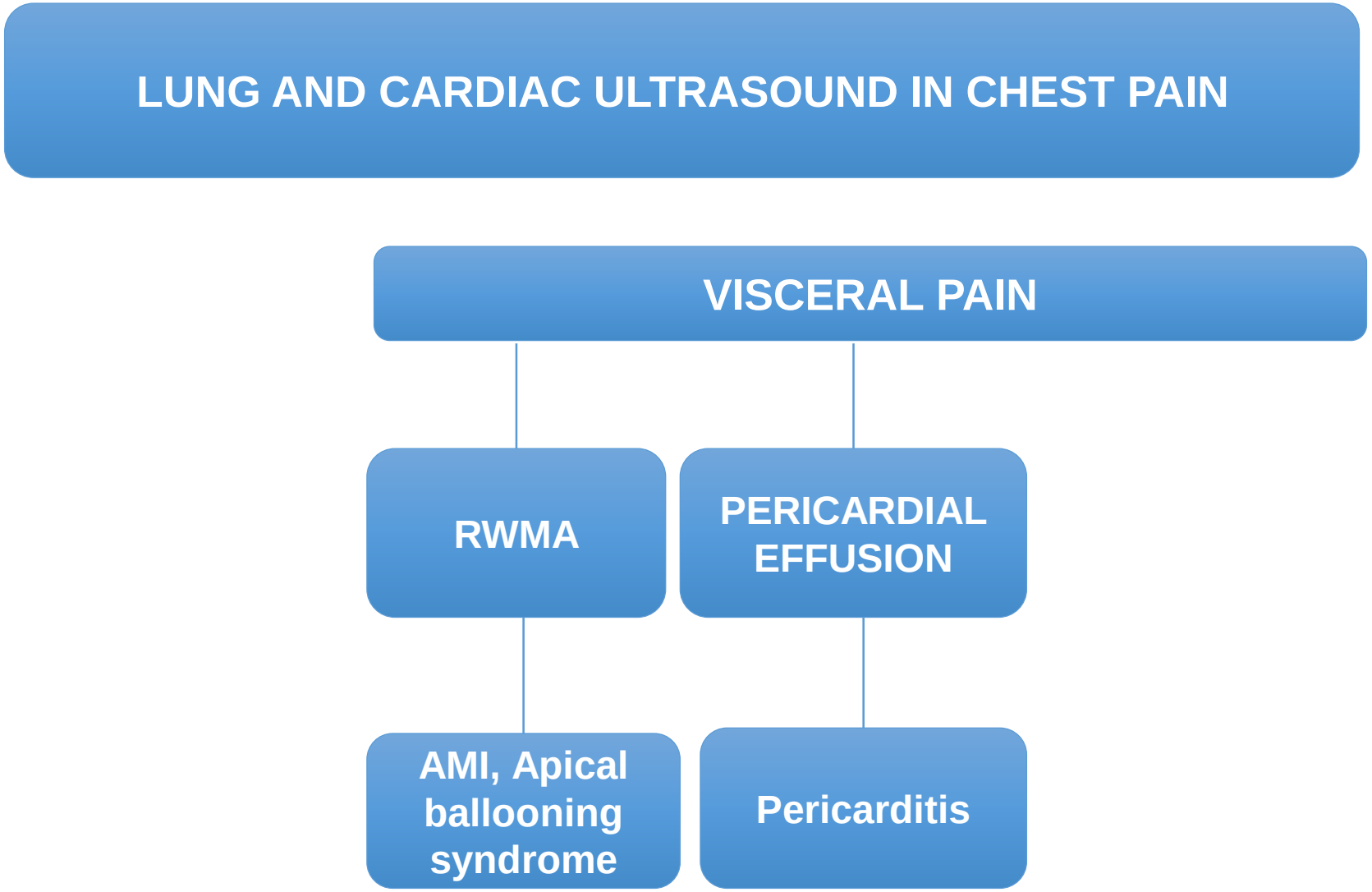
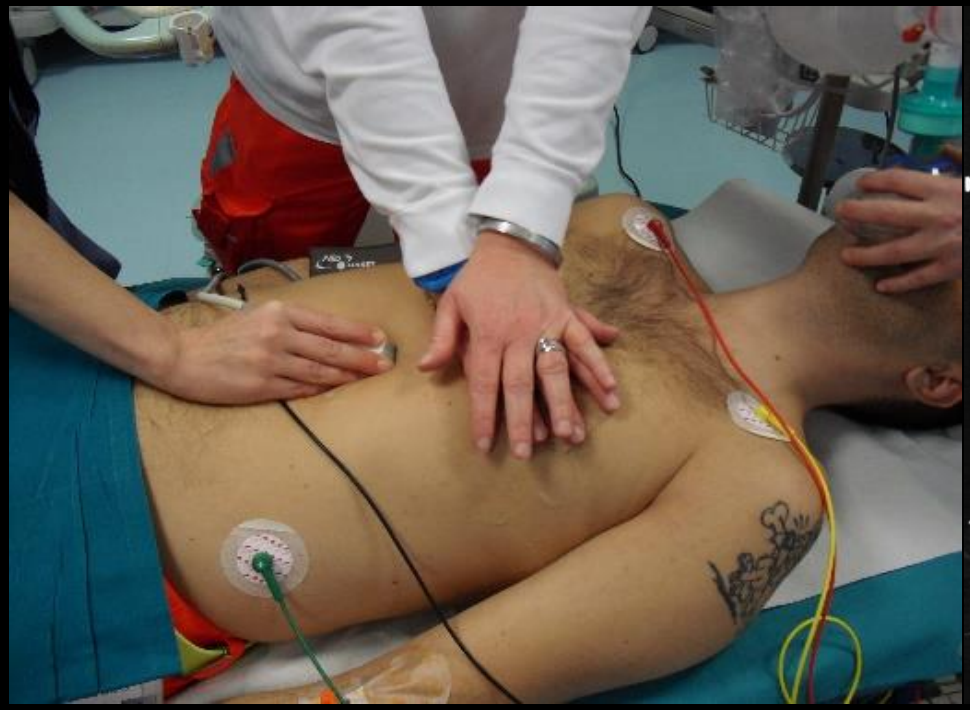
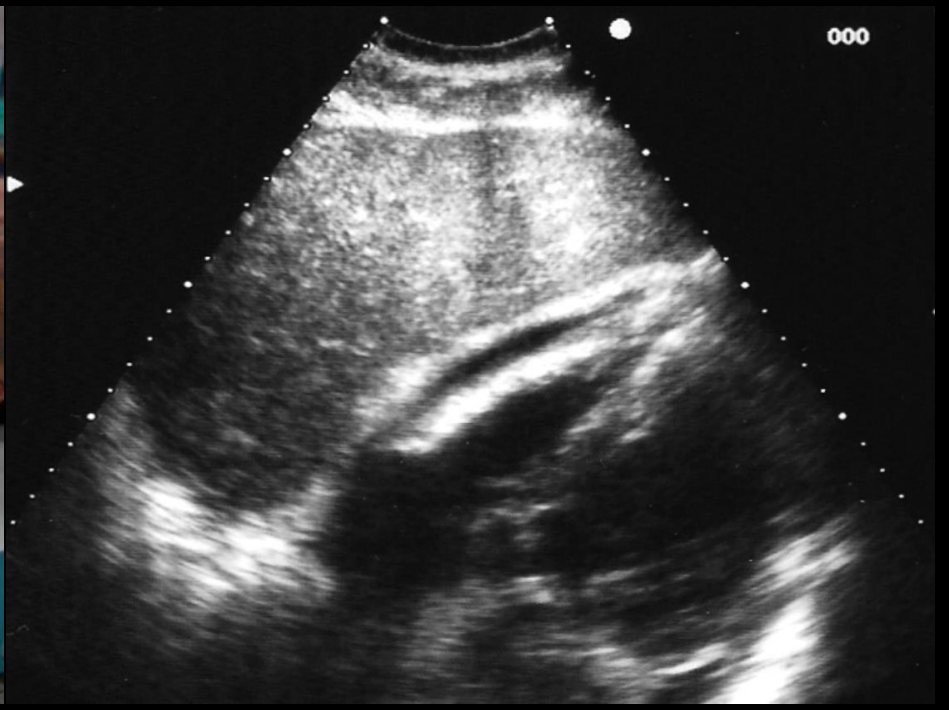


PERICARDITIS
MYOCARDIOPERICARDITIS



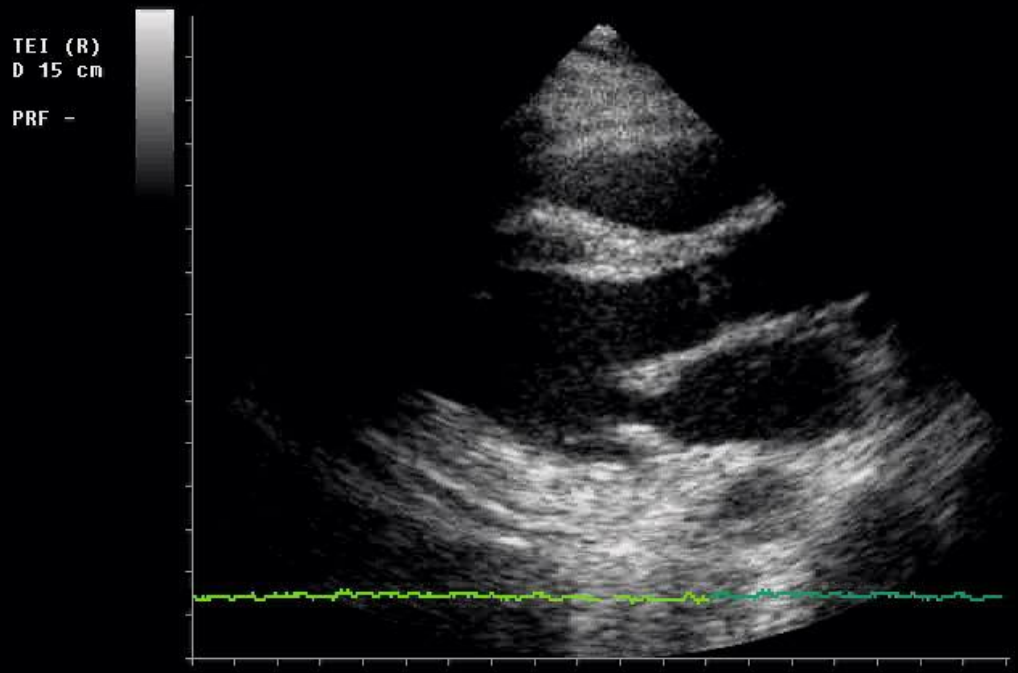


ESC 2015 Guidelines for the diagnosis and Managment of pericardial diseases

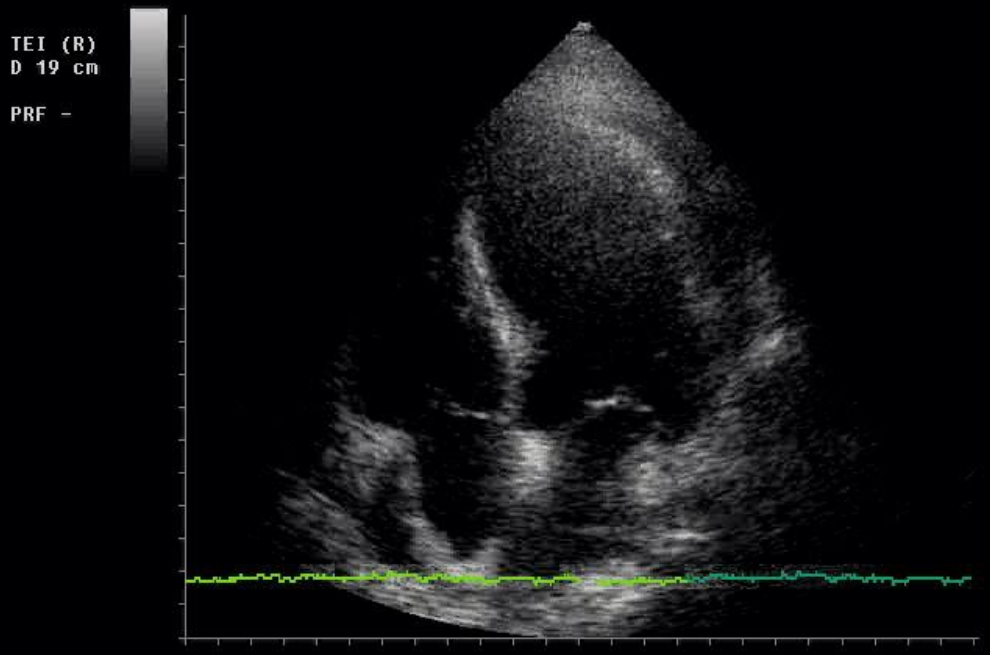
Pericarditis	Definition and diagnostic criteria
Acute	Inflammatory pericardial syndrome to be diagnosed with at least 2 of the 4 following criteria: (1) pericarditic chest pain (2) pericardial rubs (3) new widespread ST-elevation or PR depression on ECG (4) pericardial effusion (new or worsening) Additional supporting findings: - Elevation of markers of inflammation (i.e. C-reactive protein, erythrocyte sedimentation rate, and white blood cell count); - Evidence of pericardial inflammation by an imaging technique (CT, CMR).
Incessant	Pericarditis lasting for >4–6 weeks but <3 months without remission.
Recurrent	Recurrence of pericarditis after a documented first episode of acute pericarditis and a symptom-free interval of 4–6 weeks or longer[a].
Chronic	Pericarditis lasting for >3 months.

Eur Heart J 2015

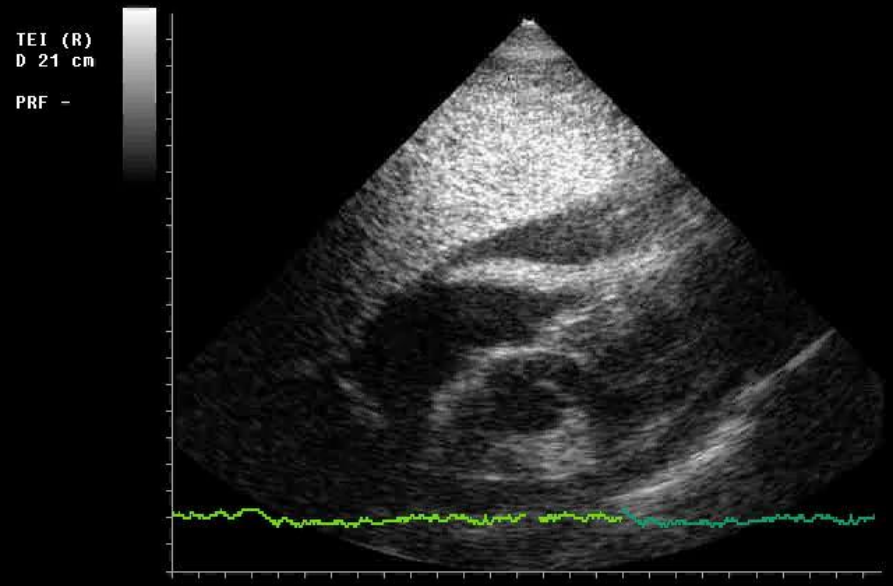
PERICARDIAL EFFUSION

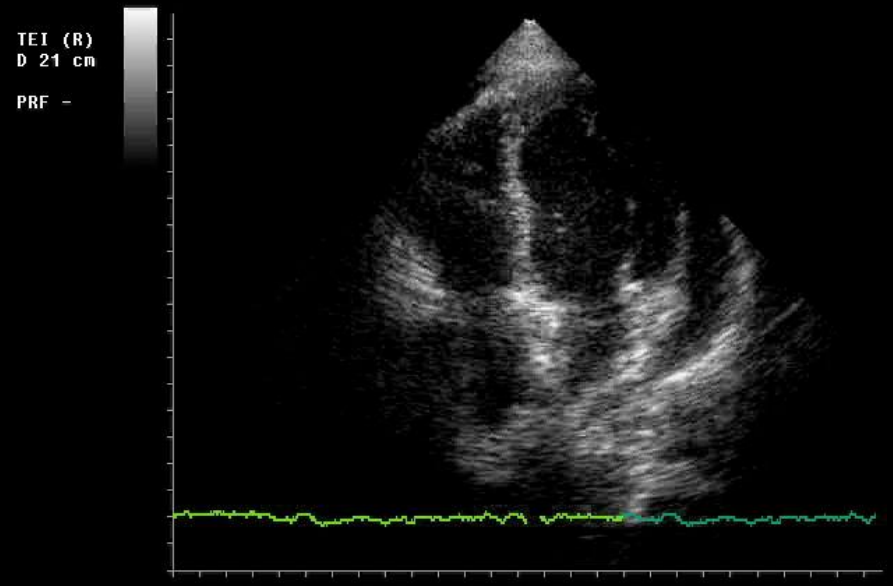


PERICARDIAL EFFUSION



RA AND VD COLLAPSE



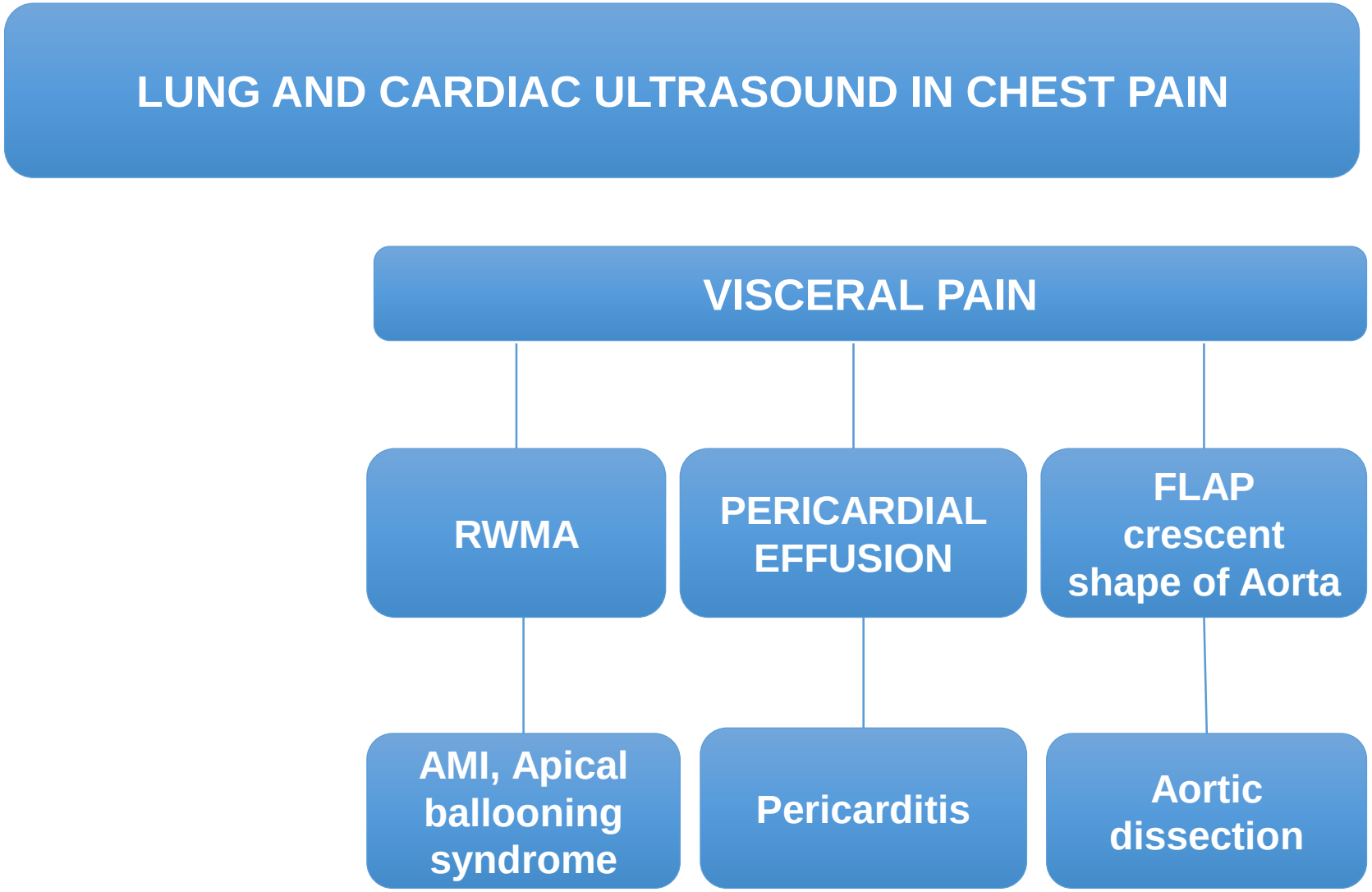


MESSAGES

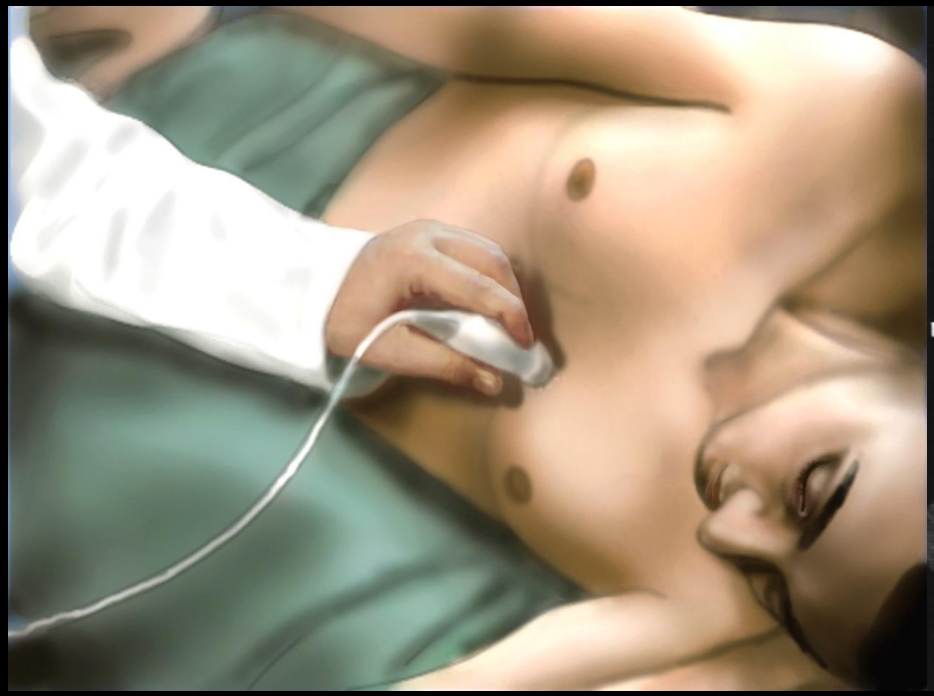
In patients with clear clinical signs of cardiac tamponade, the only detection of pericardial effusion confirm the diagnosis.

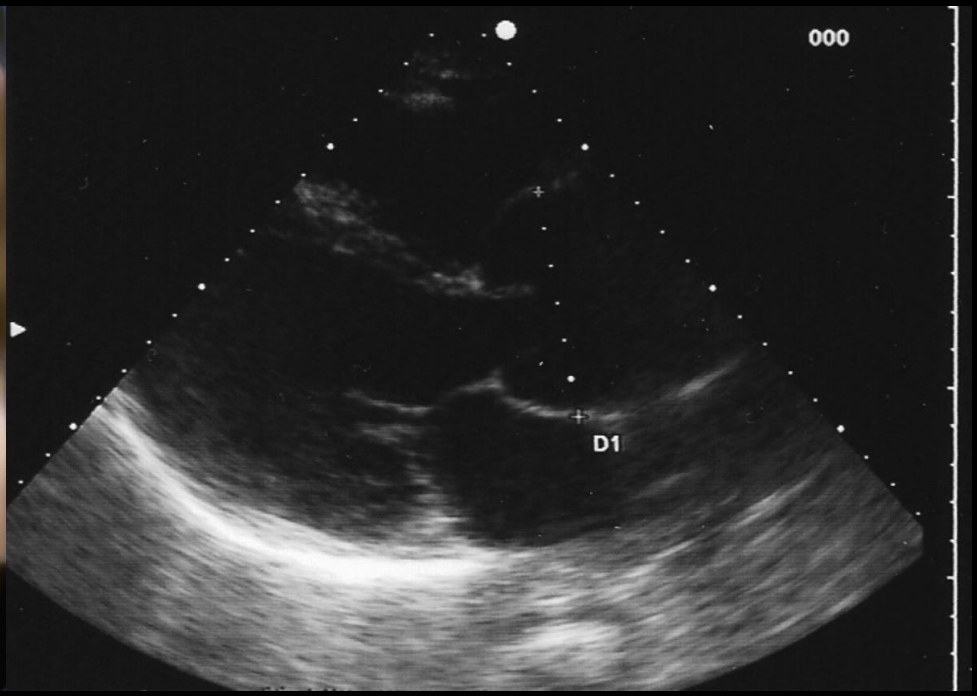
When clinical picture is not clear, sonographic evalution should investigate, RA collaps and IVC, in order to reach a correct diagnosis.

"MOPOCUS" IN CHEST PAIN



ACUTE THORACIC AORTIC SYNDROME





INITIAL DIAGNOSTIC STEPS IN THE EMERGENCY ROOM

CLINICAL SUSPICION IS REQUIRED FOR QUICK RISK STRATIFICATION AND MANAGEMENT

DIAGNOSTIC IMAGING TO ESTABLISH A RAPID AND CORRECT DIAGNOSIS WHILE AVOID IN DIAGNOSTIC OVERKILL

ROLE OF ECHOCARDIOGRAPHY

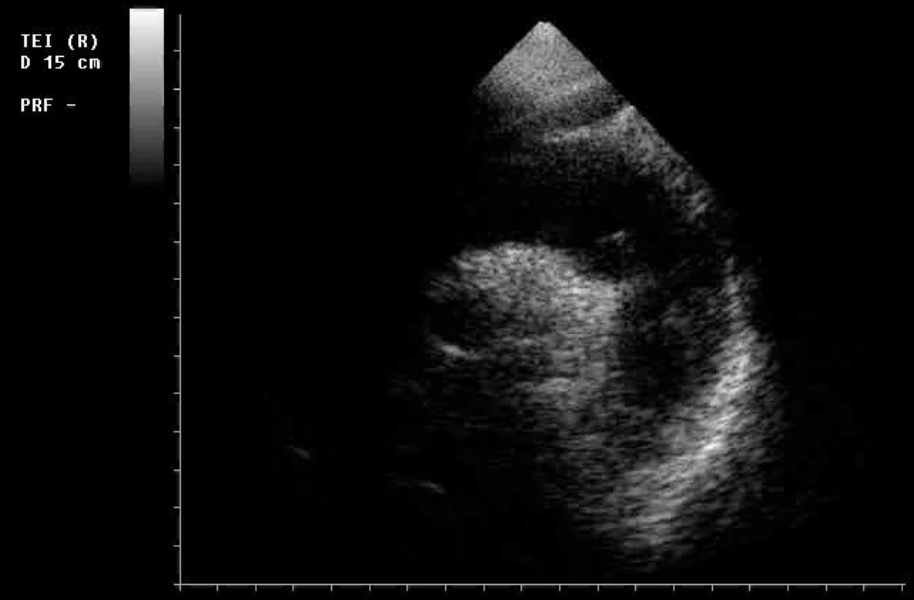
TTE: sensitivity 77-80%, specificity 93-96% for the involvement of the ascending aorta.

TTE detecting a distal dissection of thoracic aorta in 70% of the patients.

TOE: sensitivity 99%, specificity 89% and PPV 89%, NPV 99%

ESC Guidelines 2014

AORTIC DISSECTION



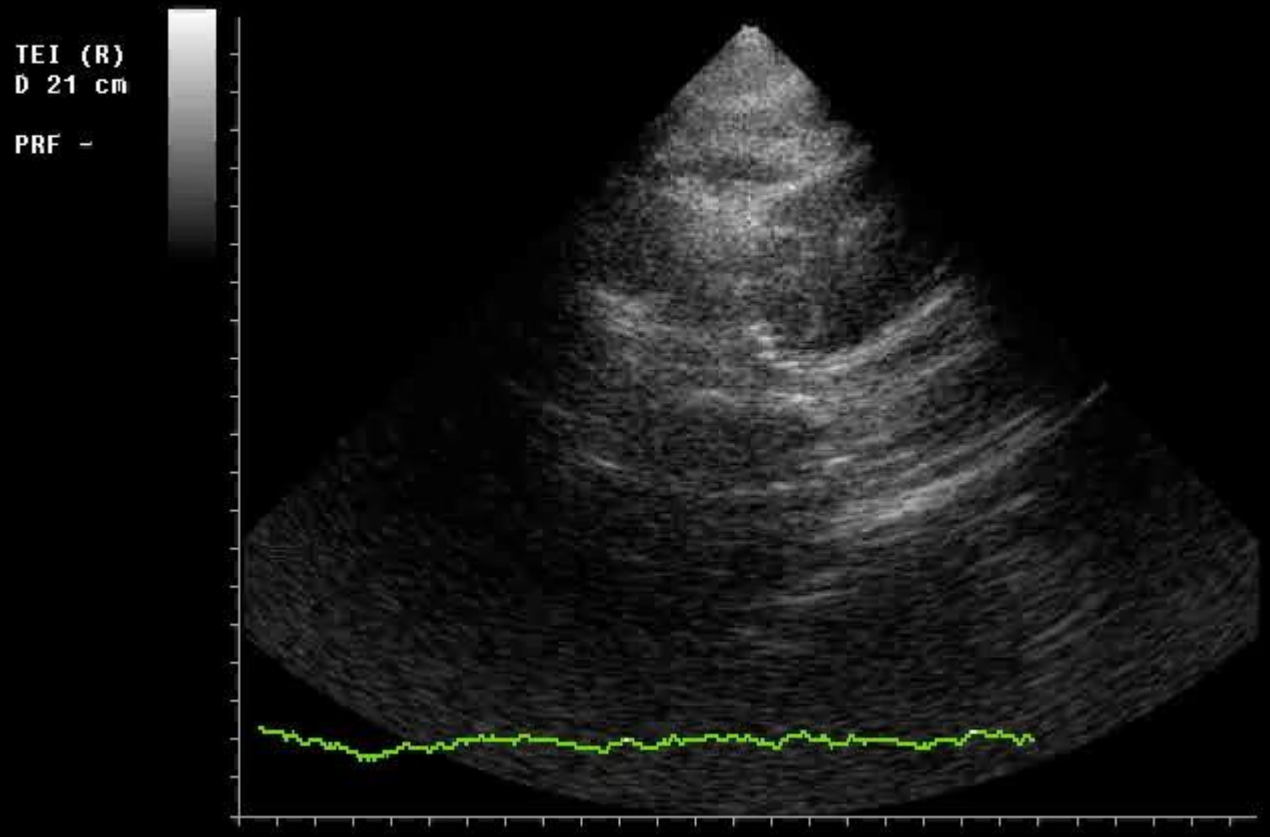
ADDITIONAL INFORMATION

AORTIC REGURGITATION

˝INTIMAL FLAP˝

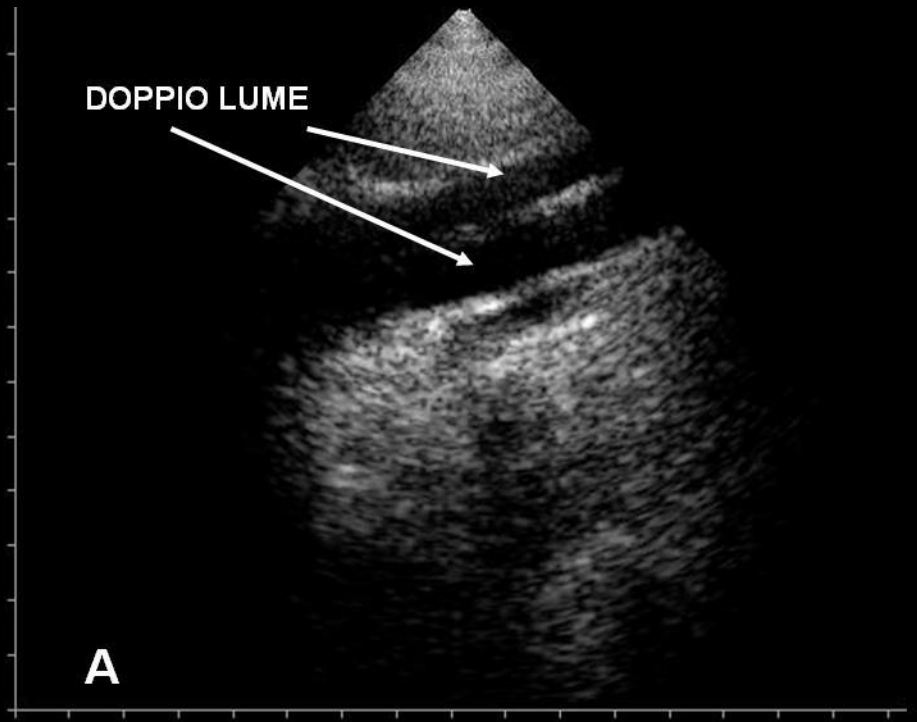
abdominal aortic

Supra aortic — arch



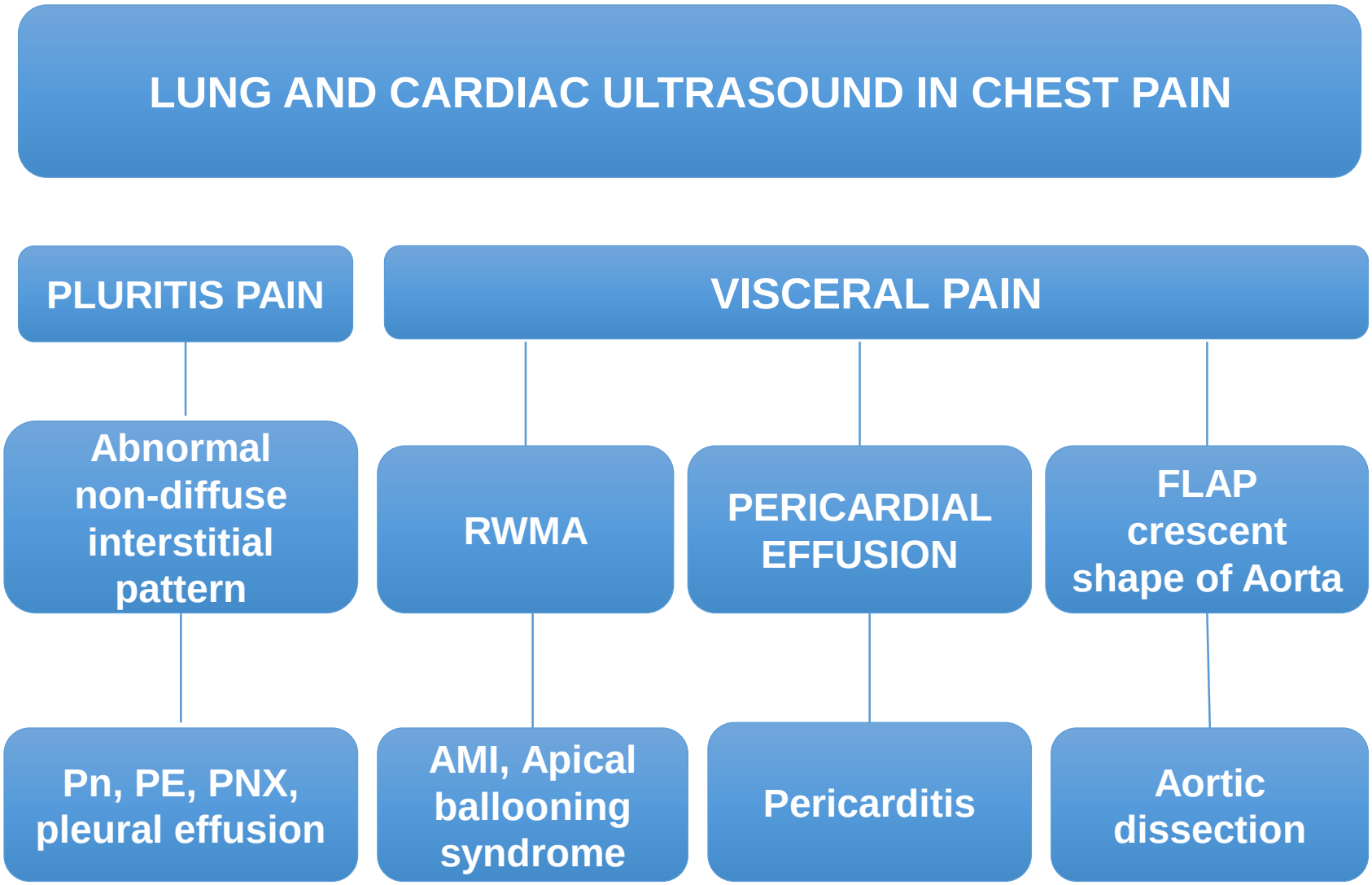
INTIMAL FLAP WITHIN AORTA

INTIMAL FLAP IN ABDOMINAL AORTIC

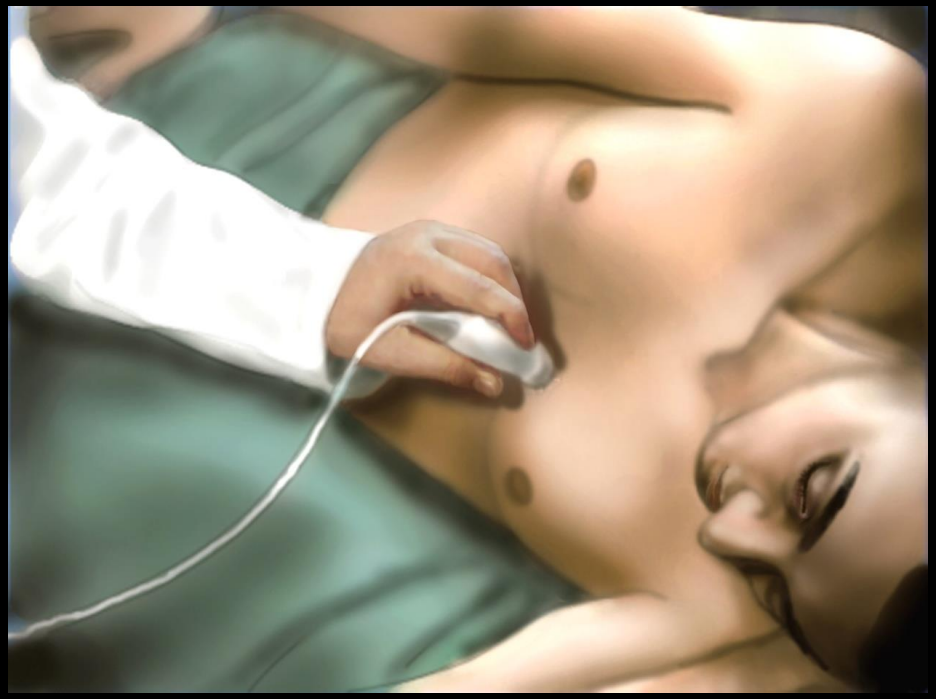


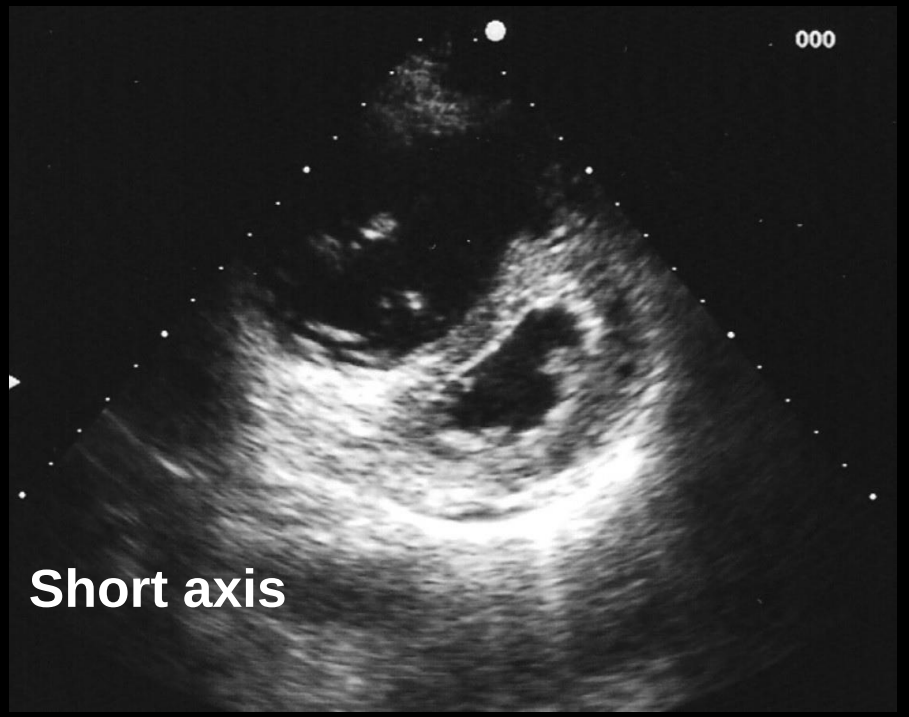
“ INTIMAL FLAP” SUPRA AORTIC — ARCH

"MOPOCUS" IN CHEST PAIN

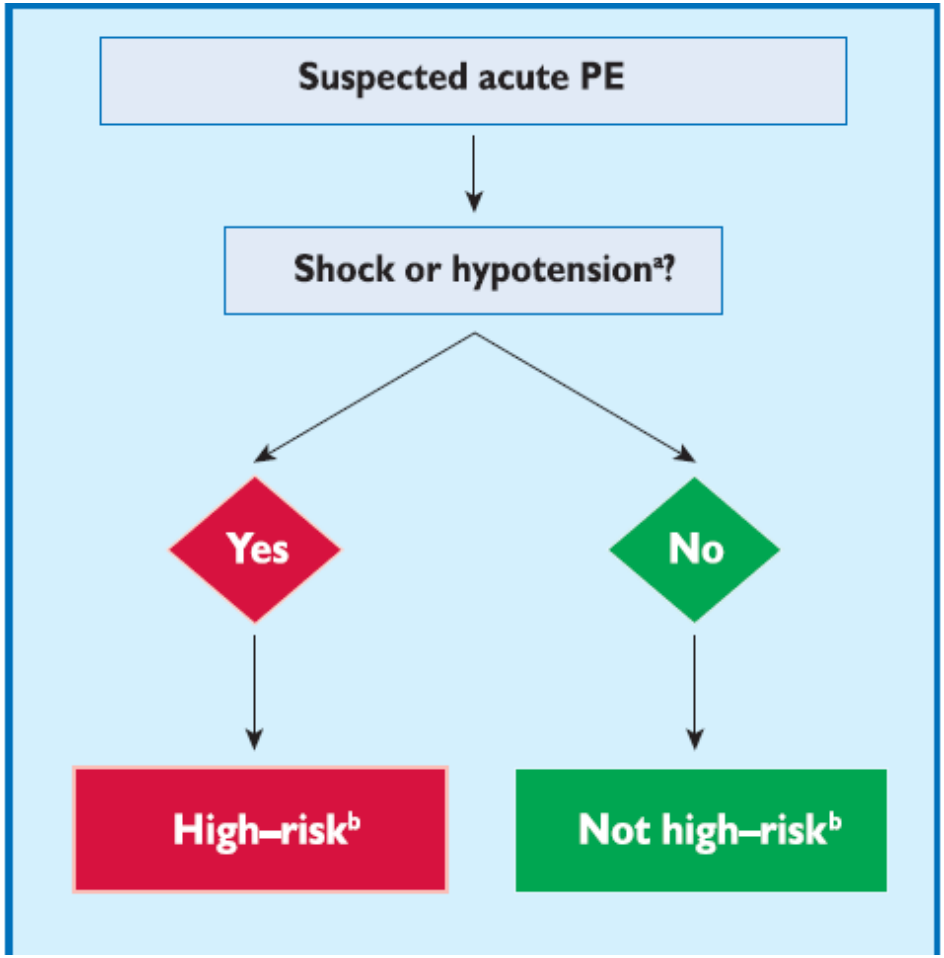


PULMONARY EMBOLISM





ESC Guidelines on the diagnosis and management of acute pulmonary embolism



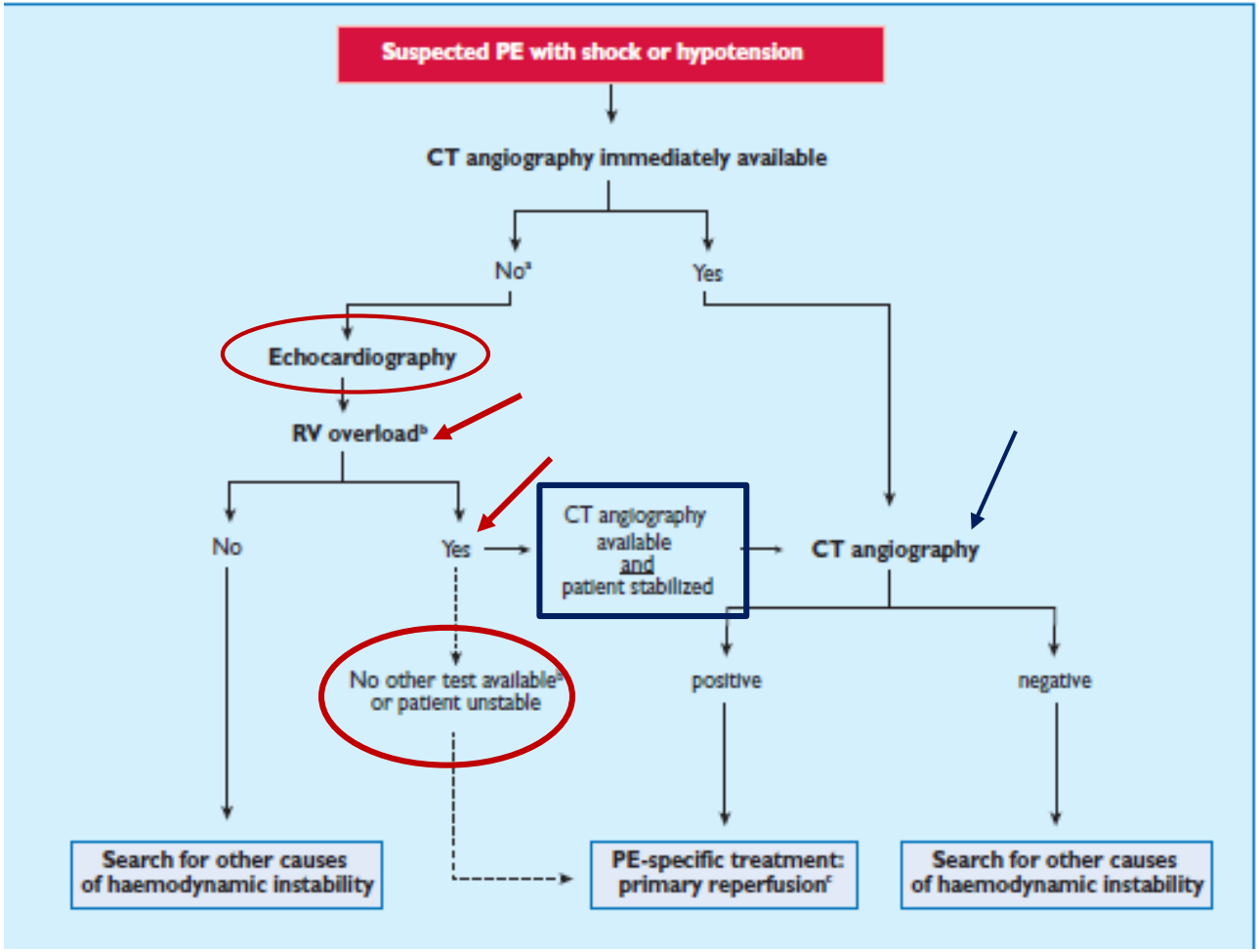
Eur Heart J 2014

PATIENTS UNSTABLE

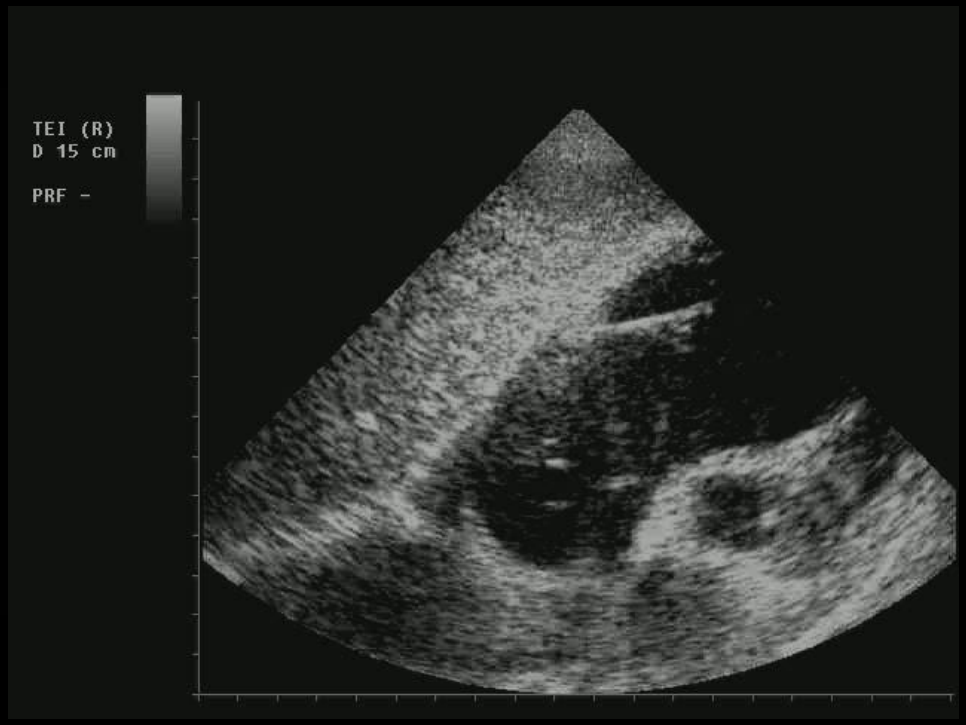
THEY REPRESENTED THE 10%

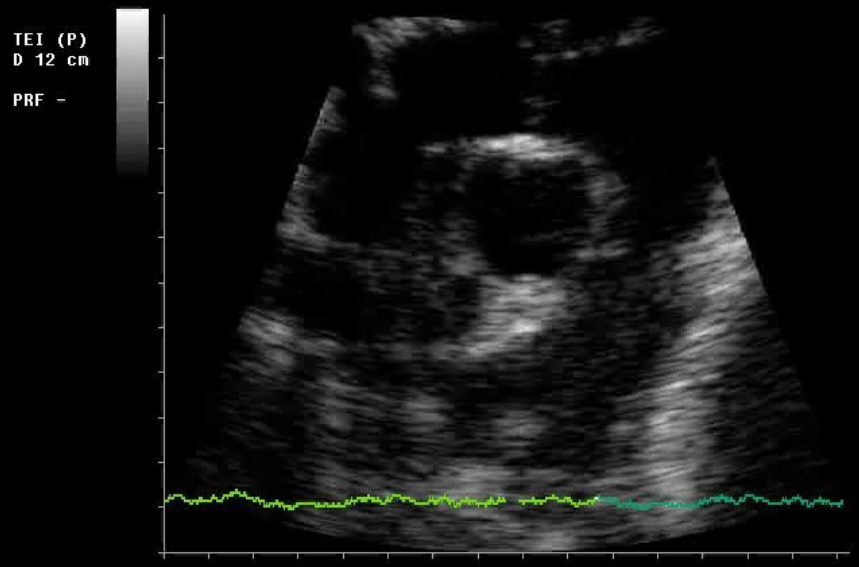
Eur Heart J 2014

Guidelines on the diagnosis and management of acute pulmonary embolism



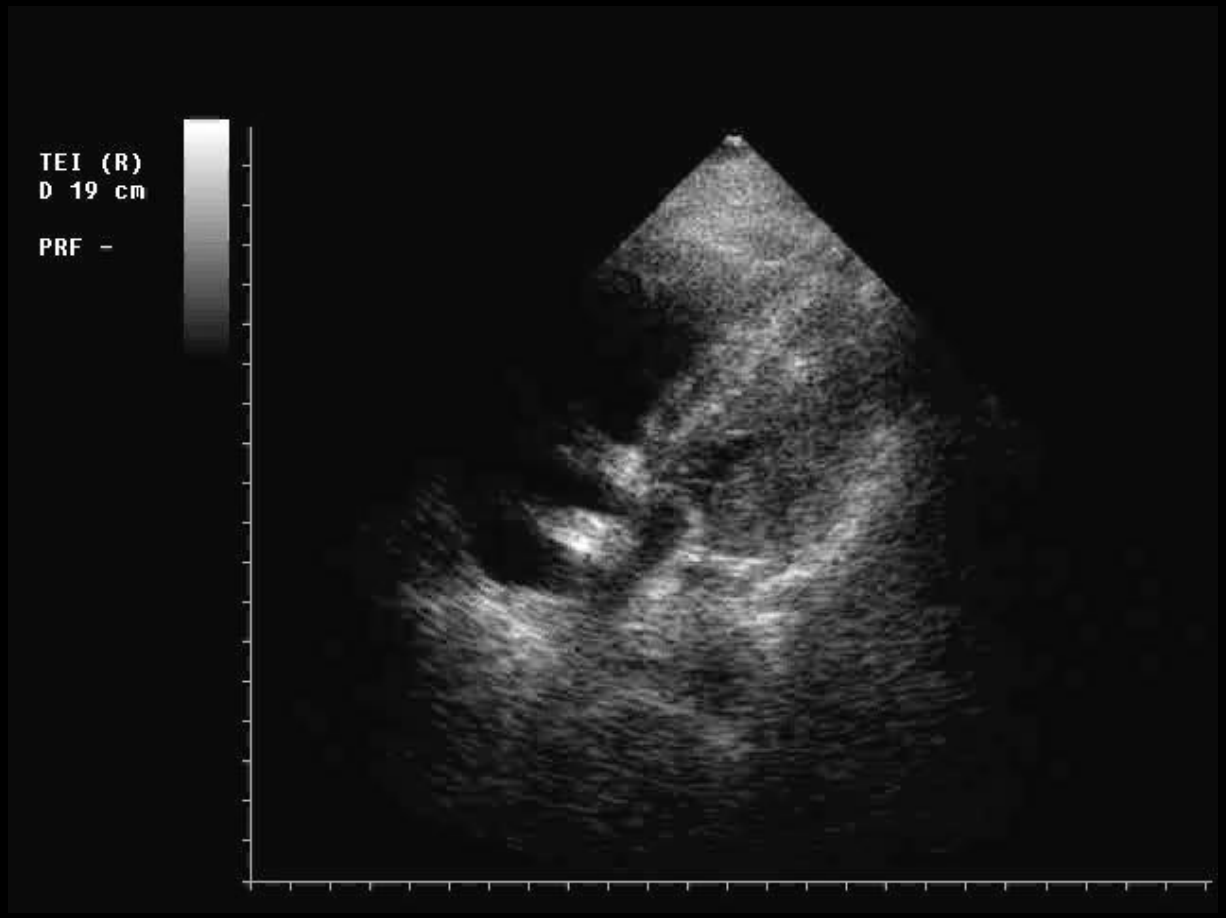
Eur Heart J 2014





PREVALENCE 3-23%

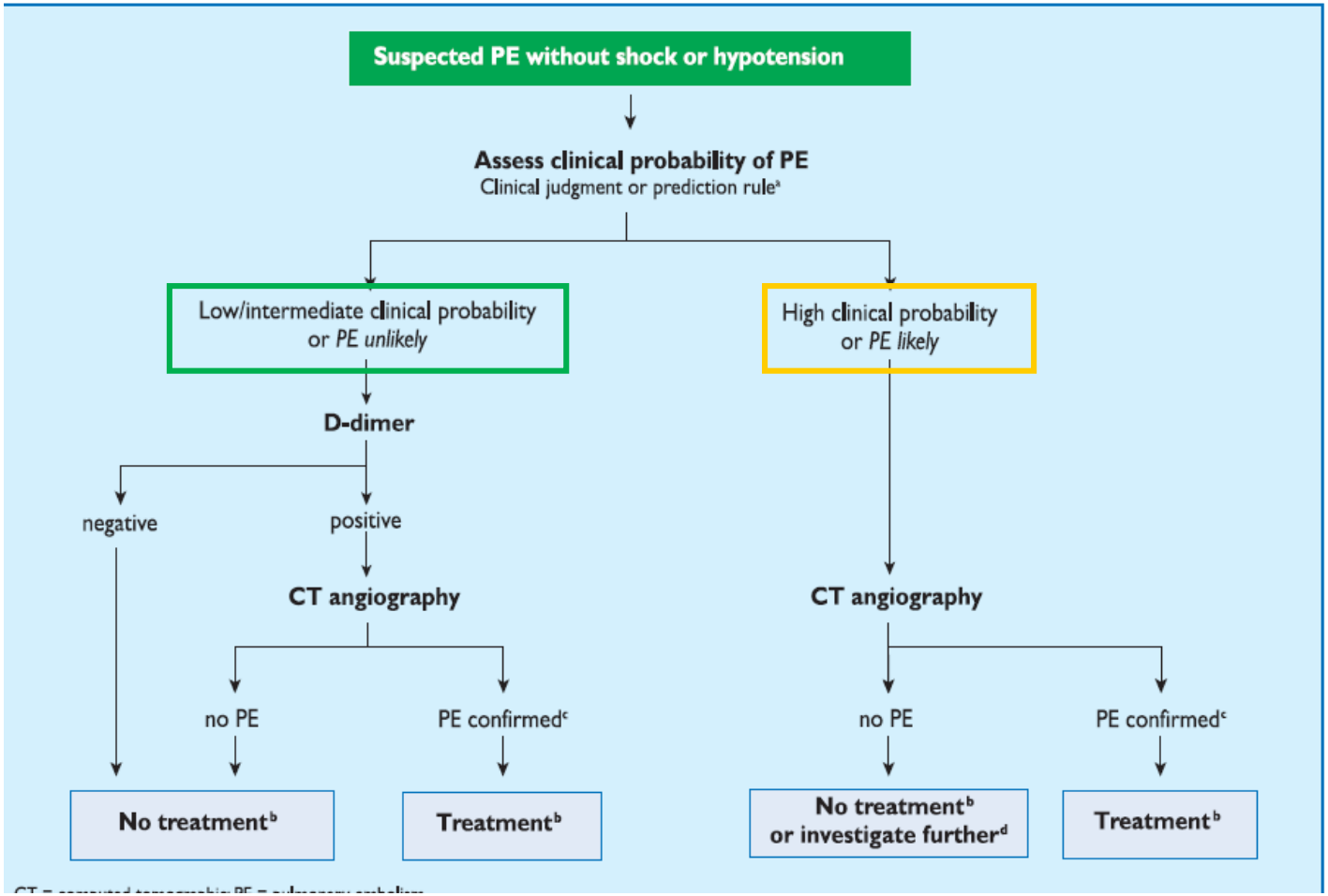
MORTALITY 21-45%



McCONNEL SIGN (SENS.41-77%-SPEC.94% IN ACUTE PE)

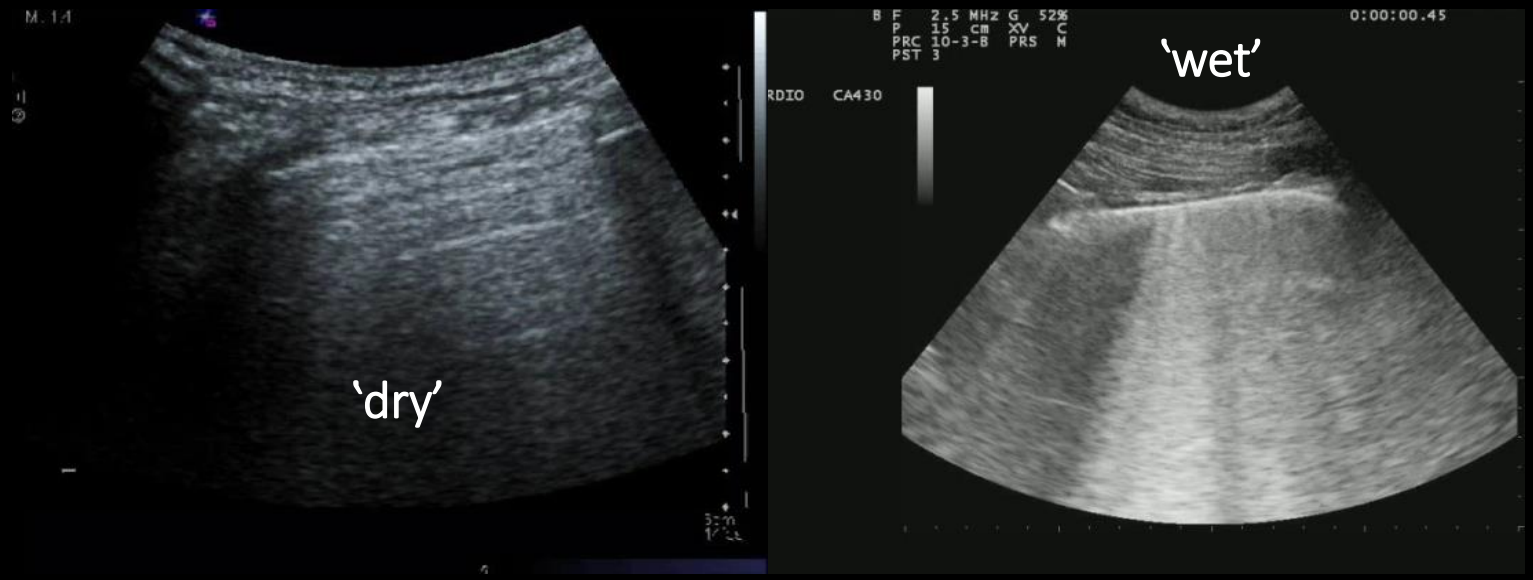
ICV

ESC 2014 GUIDELINES

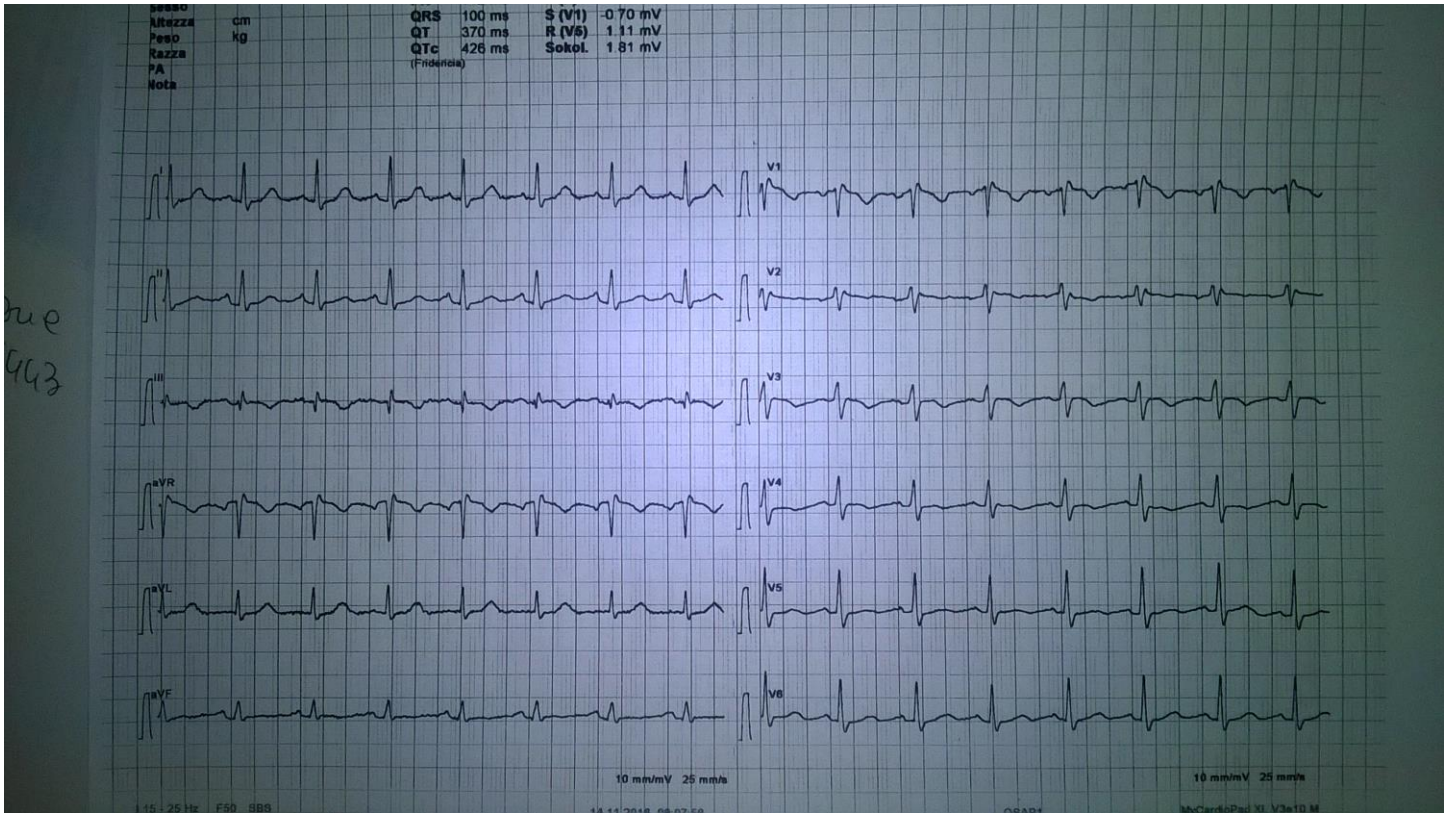


"CUS" FOR DETECTING DVT

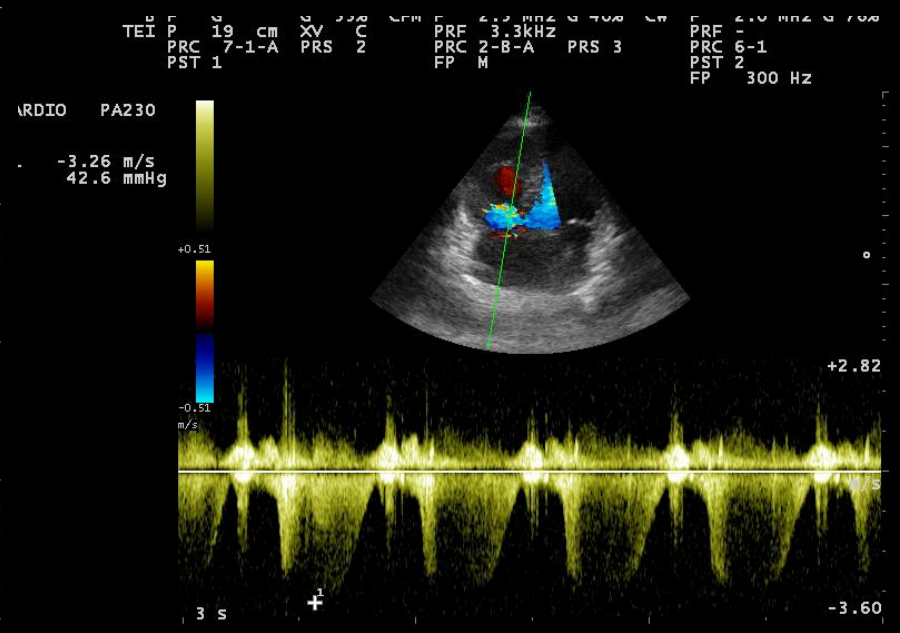
LUNG US AND PE



The "dry lung" (A-lines pattern) and RV overload or dysfunction support PE suspicion

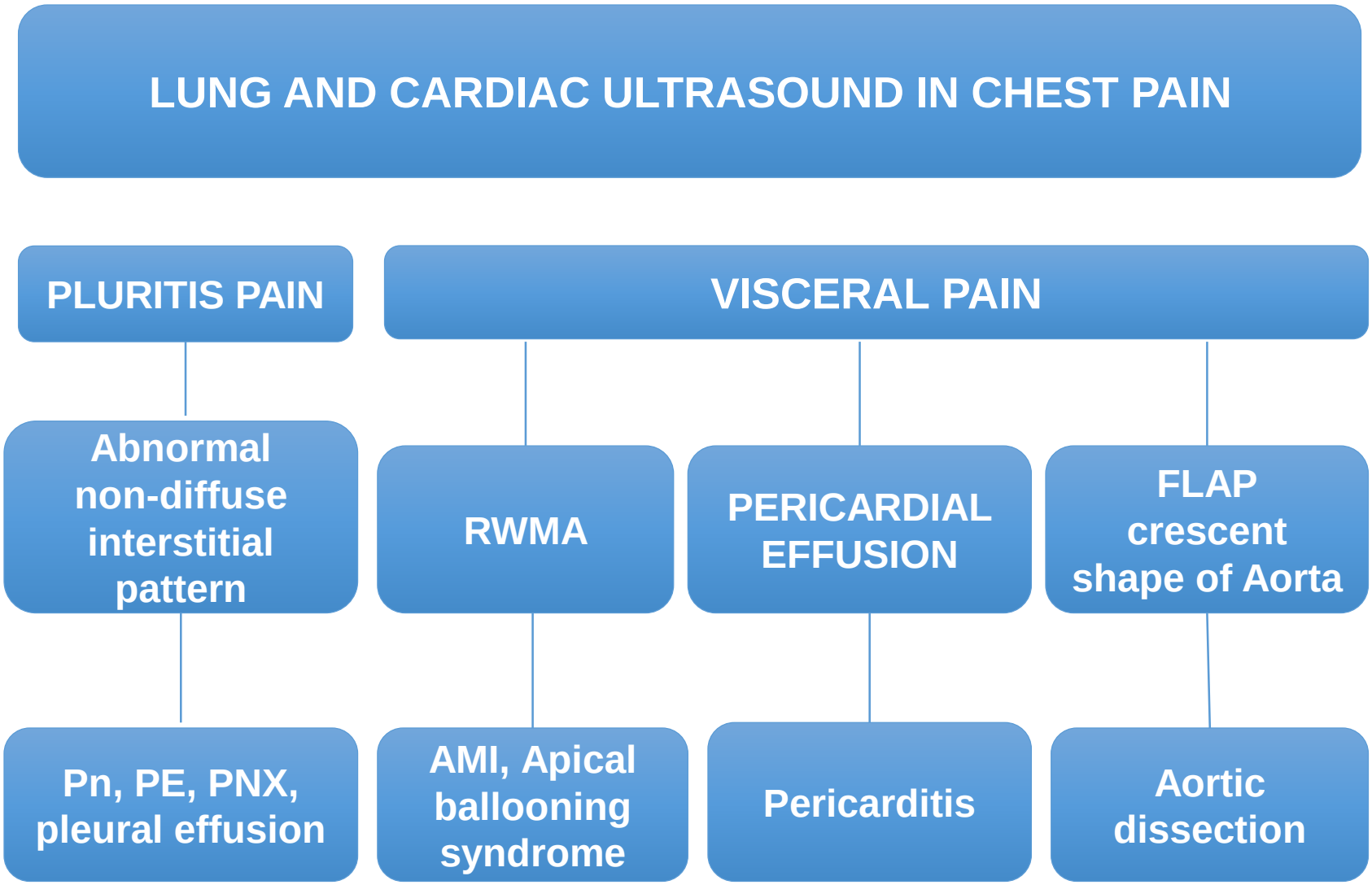

Sesso
Altezza cm
Peso kg
Razza
PA
Nota
QRS 100 ms
QT 370 ms
QTc 426 ms
(Fridericia)
S (V1) 0.70 mV
R (V5) 1.11 mV
Sokol. 1.81 mV
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
10 mm/mV 25 mm/s
10 mm/mV 25 mm/s


B F G G 55%
TEI P 19 cm XV C
PRC 7-1-B PRS M
PST 1
0:00:00.36
CARDIO PA230


TEI P 19 cm XV C
PRC 7-1-A PRS 2
PST 1
PRF 3.3kHz
PRC 2-B-A PRS 3
FP M
PRF -
PRC 6-1
PST 2
FP 300 Hz
ARDIO PA230
-3.26 m/s
42.6 mmHg
+0.51
-0.51
m/s
+2.82
-3.60
3 s

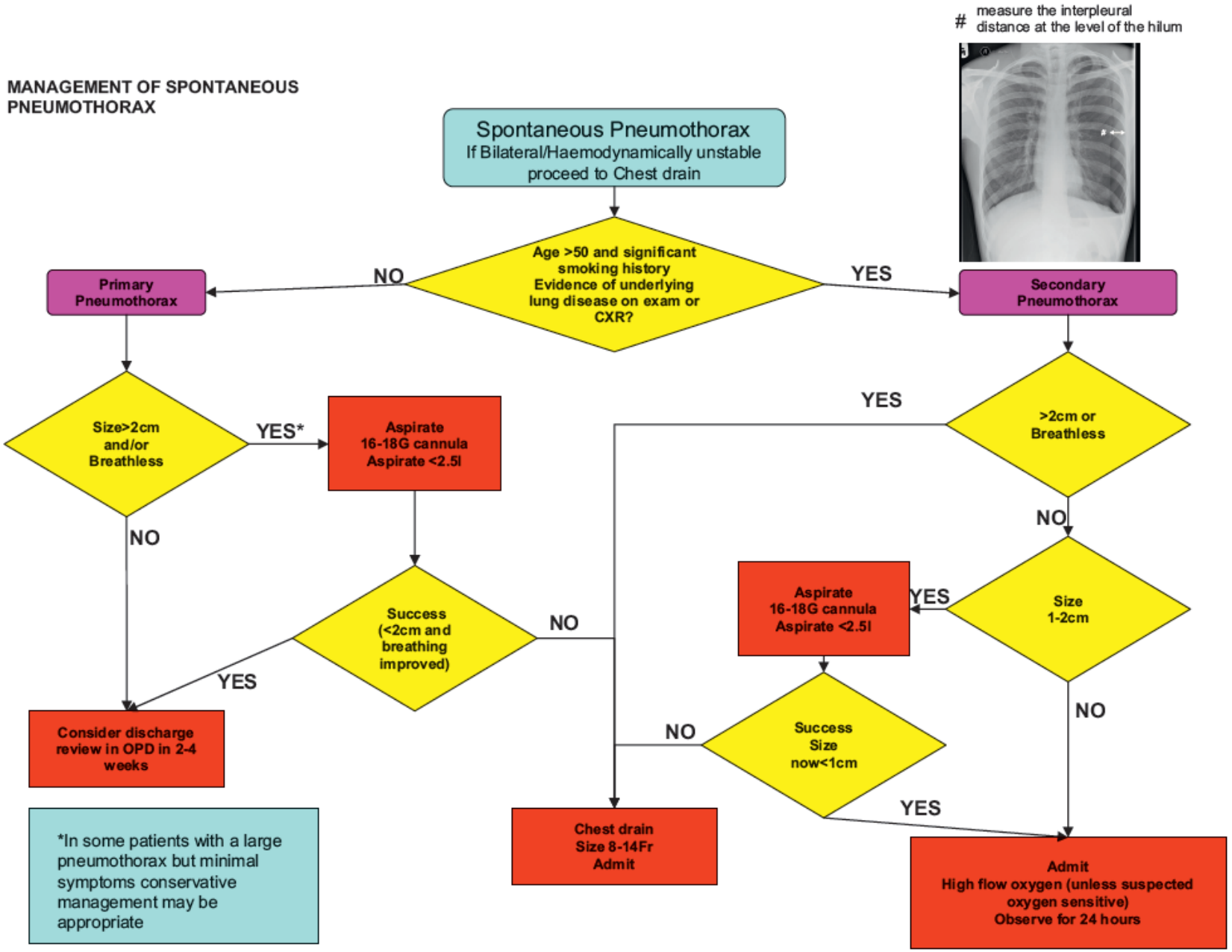

P 6 cm XV C
PRC 9-3-B PRS 4
PST 1
EN. LA332

"MOPOCUS" IN CHEST PAIN



PNEUMOTHORAX

SEGNI	SENSIBILITA’	SPECIFICITA’
ASSENZA DI “LUNG SLIDING”	**95%**	**91-100%**
ASSENZA DI B LINES	**100%**	**VERY LOW**
“LUNG POINT”	**66%**	**100%**



Management of spontaneous pneumothorax: British Thoracic Society pleural disease guideline 2010. Thorax 2010;65(Suppl 2)

CONCLUSIONS

"Multiorgan US" is a powerful adjunct to standard clinical assessment. It provides critical and timely information in the evaluation of patient presenting with acute dyspnea, chest pain or shock.

When and where to do it?: at bedside

It becamed an indispensable part of acute care physician's «armamentarium,» in the battle four our patients' lives