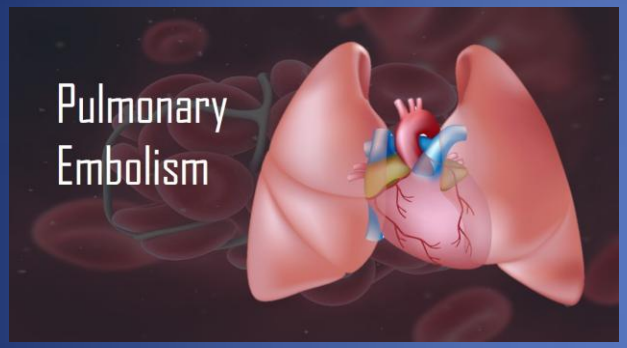
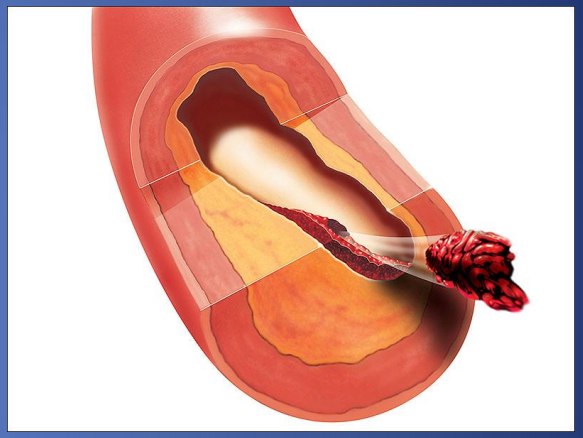
Πνευμονική Εμβολή





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ESC GUIDELINES

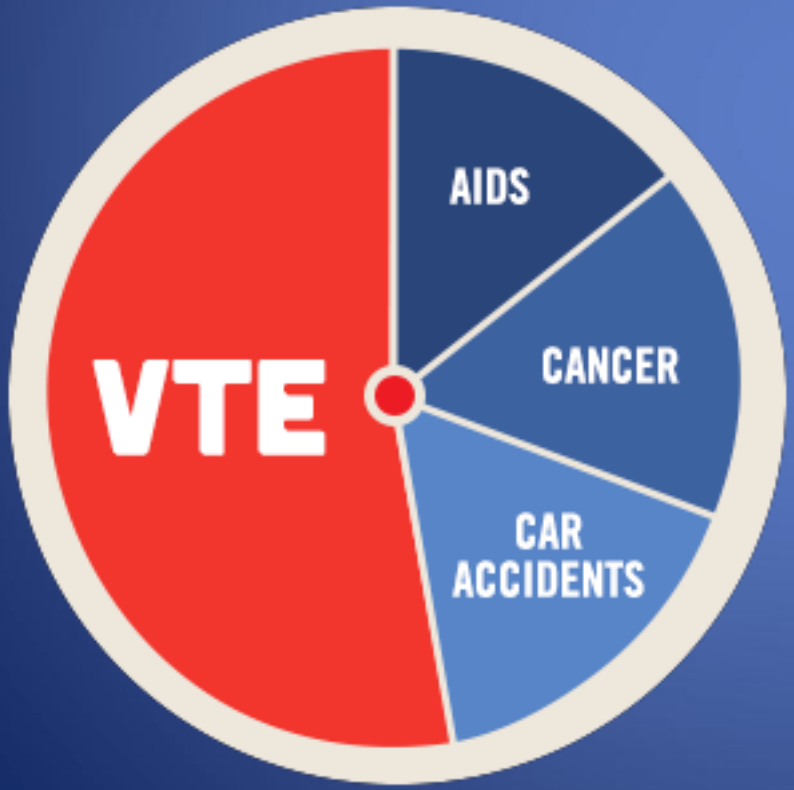
2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism

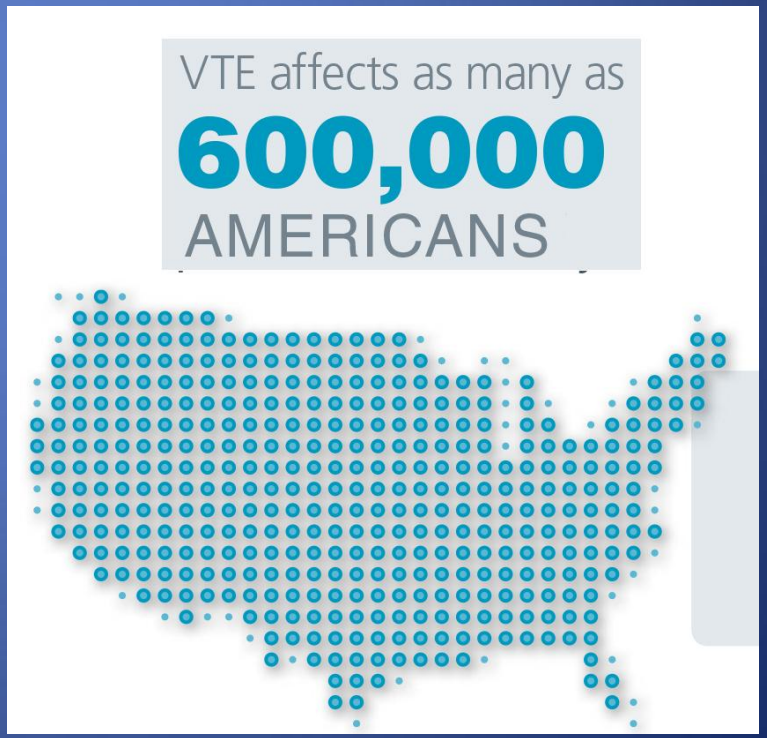
The Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC)

Endorsed by the European Respiratory Society (ERS)

Authors/Task Force Members: Stavros Konstantinides* (Chairperson) (Germany/Greece), Adam Torbicki* (Co-chairperson) (Poland), Giancarlo Agnelli (Italy), Nicolas Danchin (France), David Fitzmaurice (UK), Nazzareno Galiè (Italy), J. Simon R. Gibbs (UK), Menno Huisman (The Netherlands), Marc Humbert† (France), Nils Kucher (Switzerland), Irene Lang (Austria), Mareike Lankeit (Germany), John Lekakis (Greece), Christoph Maack (Germany), Eckhard Mayer (Germany), Nicolas Meneveau (France), Arnaud Perrier (Switzerland), Piotr Pruszczyk (Poland), Lars H. Rasmussen (Denmark), Thomas H. Schindler (USA), Pavel Svitil (Czech

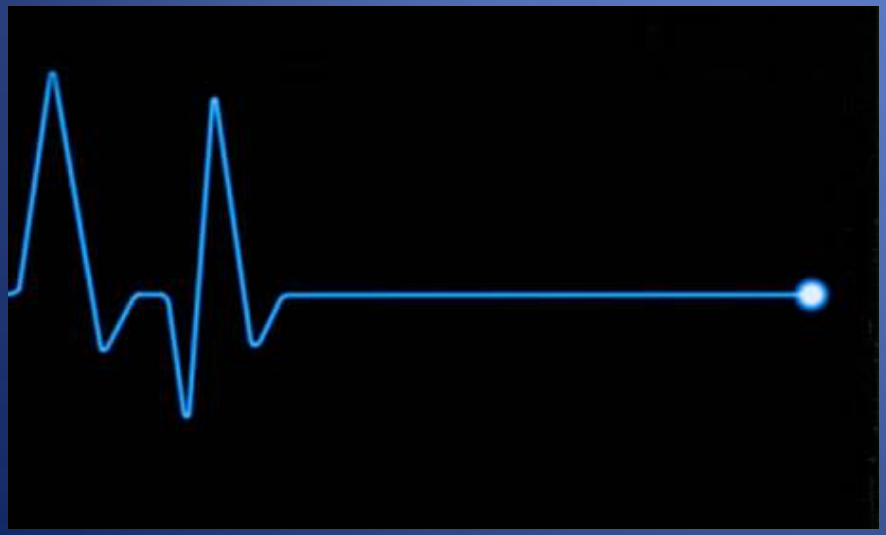
DVT + PE = VTE

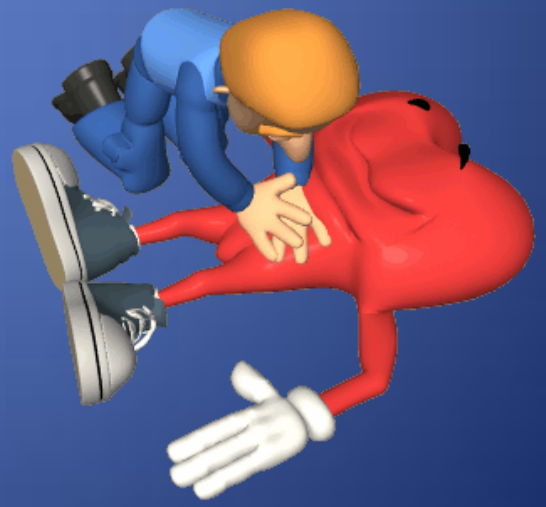

VTE
AIDS
CANCER
CAR ACCIDENTS

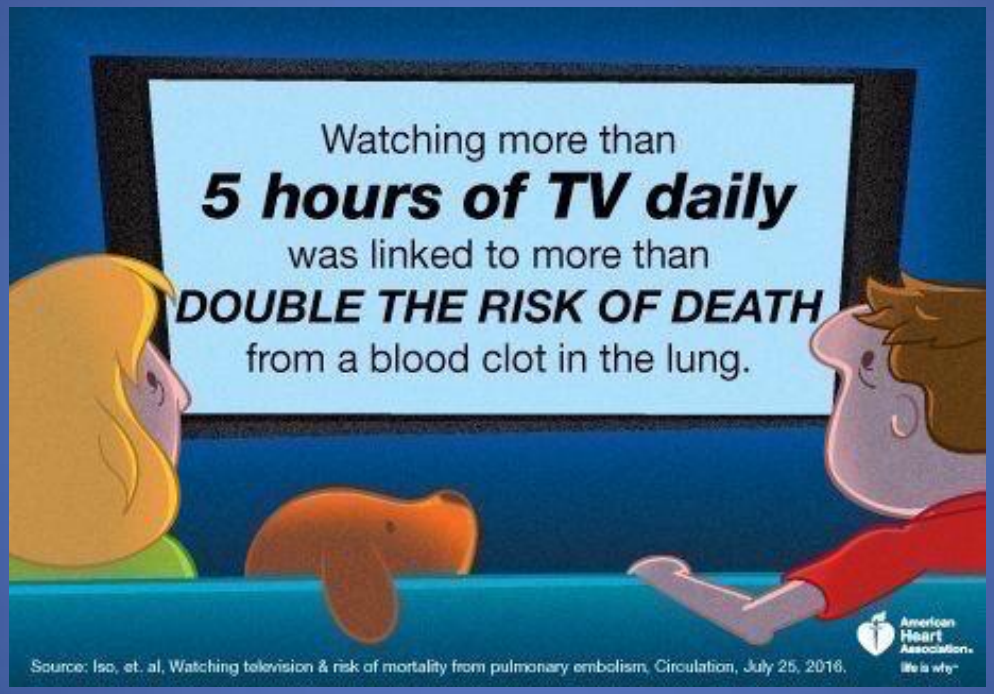

VTE affects as many as
600,000
AMERICANS

Πνευμονική εμβολή

- Θνητότητα στην οξεία φάση της PE = 7-11%
- PE στο 0.4% των νοσηλευόμενων ασθενών στις ΗΠΑ
- 20 νέα επεισόδια PE /10.000 άτομα /έτος






Watching more than
5 hours of TV daily
was linked to more than
DOUBLE THE RISK OF DEATH
from a blood clot in the lung.
Source: Iso, et. al, Watching television & risk of mortality from pulmonary embolism, Circulation, July 25, 2016.
American Heart Association.
life is why

Προδιαθεσικοί παράγοντες

Strong risk factors (odds ratio >10)
Fracture of lower limb
Hospitalization for heart failure or atrial fibrillation/flutter (within previous 3 months)
Hip or knee replacement
Major trauma
Myocardial infarction (within previous 3 months)
Previous venous thromboembolism
Spinal cord injury

Moderate risk factors (odds ratio 2–9)
Arthroscopic knee surgery
Auto–immune diseases
Blood transfusion
Central venous lines
Chemotherapy
Congestive heart or respiratory failure
Erythropoiesis-stimulating agents
Hormone replacement therapy (depends on formulation)
In vitro fertilization
Infection (specifically pneumonia, urinary tract infection and HIV)
Inflammatory bowel disease
Cancer (highest risk in metastatic disease)
Oral contraceptive therapy
Paralytic stroke
Postpartum period
Superficial vein thrombosis
Thrombophilia

Weak risk factors (odds ratio <2)
Bed rest >3 days
Diabetes mellitus
Hypertension
Immobility due to sitting (e.g. prolonged car or air travel)
Increasing age
Laparoscopic surgery (e.g. cholecystectomy)
Obesity
Pregnancy
Varicose veins

Παθοφυσιολογία

- $PCO_2 = k \cdot VCO_2 / V_A$

VA= minute alveolar ventilation

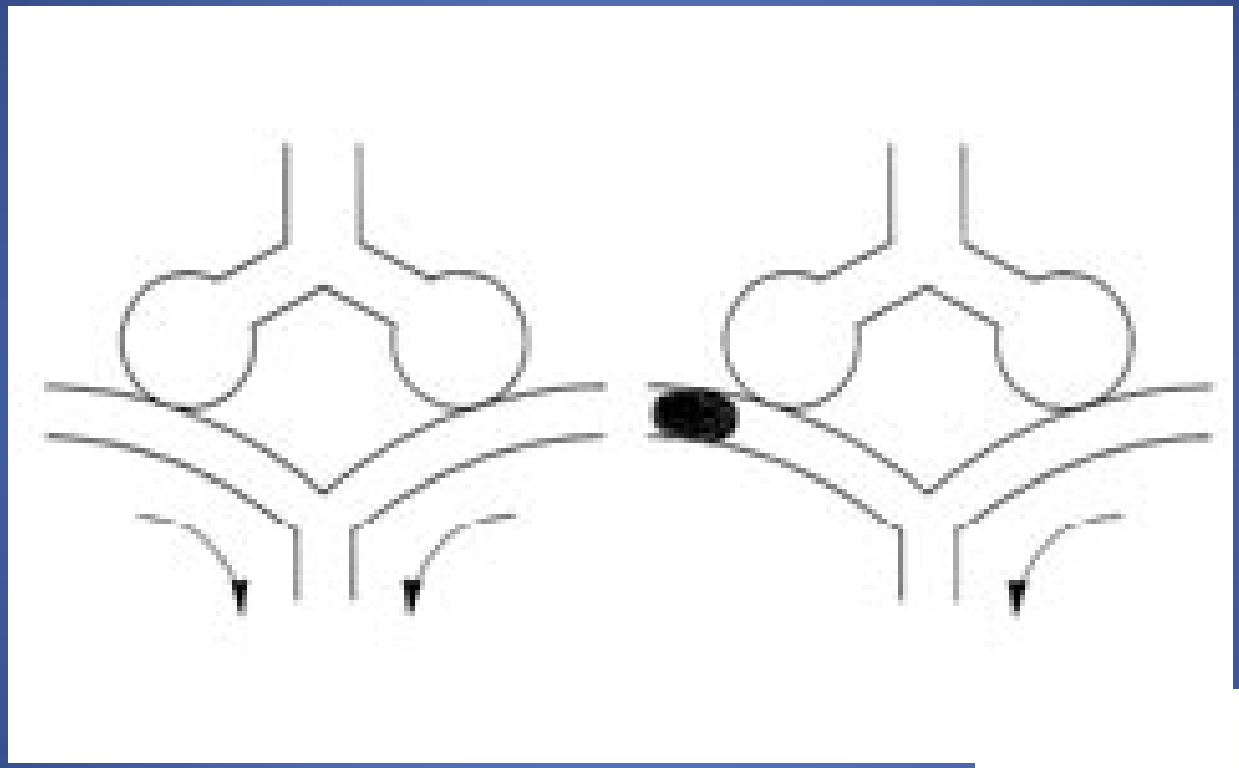
VA = VE – VD

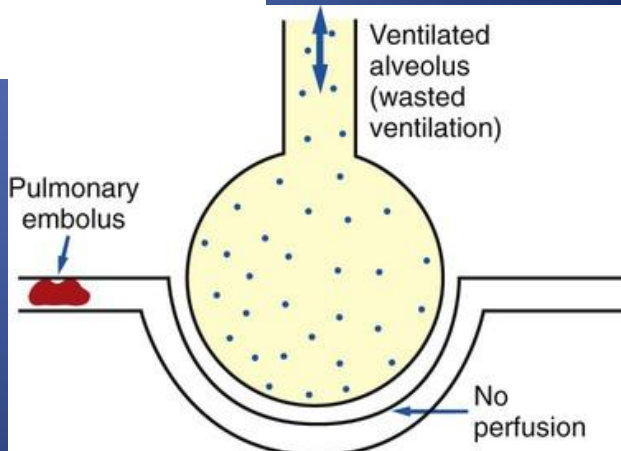
where:

VA = Alveolar Ventilation (ml/min)

VE = Pulmonary Ventilation (ml/min)

VD = Dead Space Ventilation (ml/min)




Ventilated alveolus (wasted ventilation)
Pulmonary embolus
No perfusion

Παθοφυσιολογία

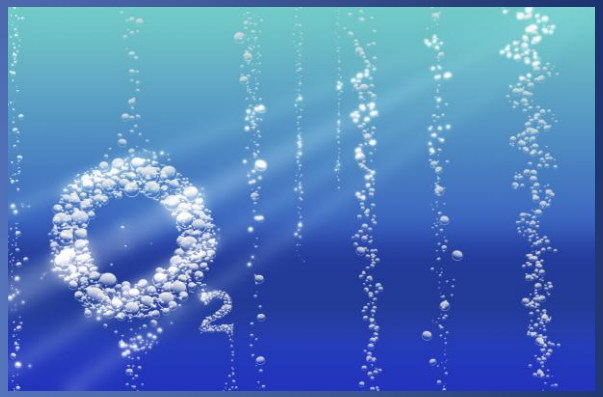
Αν VE αμετάβλητο όπως σε ασθενείς ΜΕΘ υπό μηχανικό αερισμό (μοντέλο ελεγχόμενου όγκου) τότε υπερκαπνία

Αν ο ασθενής δεν είναι σε μηχανικό αερισμό τότε υποκαπνία

Αν όμως συμβεί σε ασθενή με πνευμονοπάθεια (ΧΑΠ κλπ.), τότε κόπωση αναπνευστικών μυών και υπερκαπνία

Παθοφυσιολογία

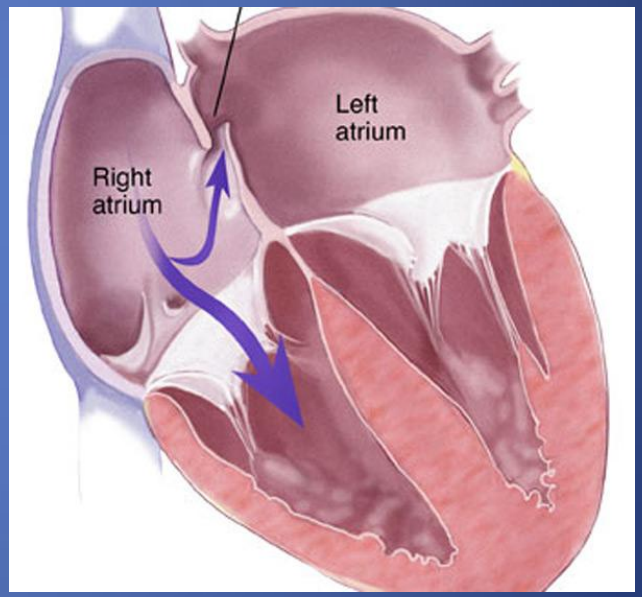
80% ασθενών εμφανίζουν ↓ PO_2



20% PO_2 ΚΦ εξαιτίας υπεραερισμού

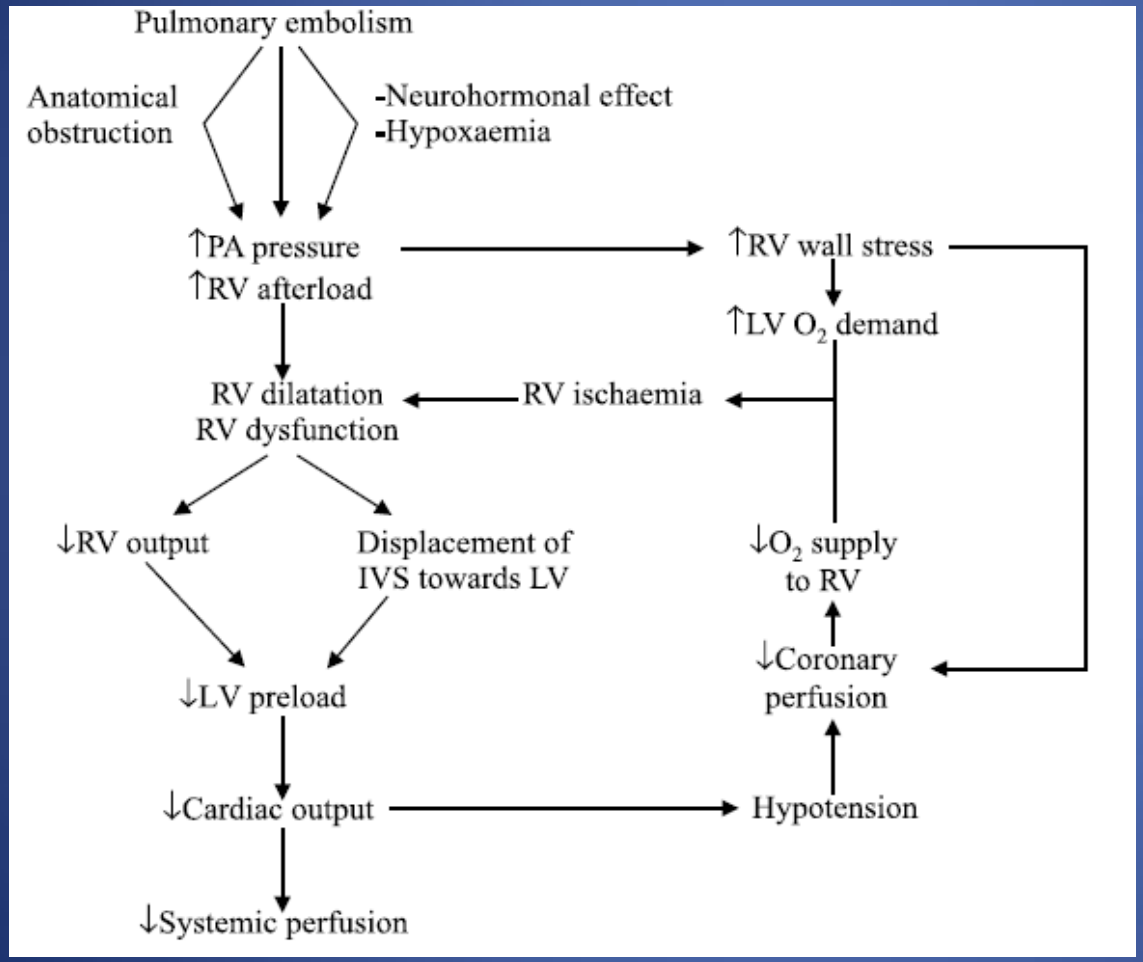
Παθοφυσιολογία

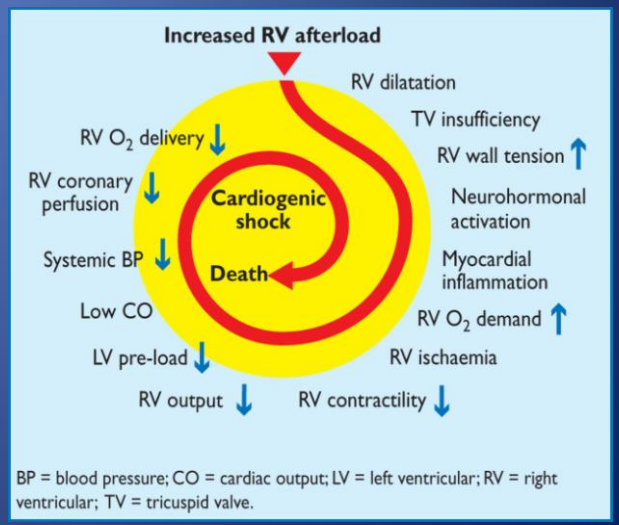
- Μείωση καρδιακής παροχής (αποκορεσμό SvO2)
- V/Q mismatch
- 1/3 των ασθενών: shunt (μέσω ανοιχτού ωοειδούς τρήματος)



Παράδοξη εμβολή

Παθοφυσιολογία





Διάγνωση

Feature	PE confirmed (*n* = 1880)	PE not confirmed (*n* = 528)
Dyspnoea	50%	51%
Pleuritic chest pain	39%	28%
Cough	23%	23%
Substernal chest pain	15%	17%
Fever	10%	10%
Haemoptysis	8%	4%
Syncope	6%	6%
Unilateral leg pain	6%	5%
Signs of DVT (unilateral extremity swelling)	24%	18%

Διάγνωση

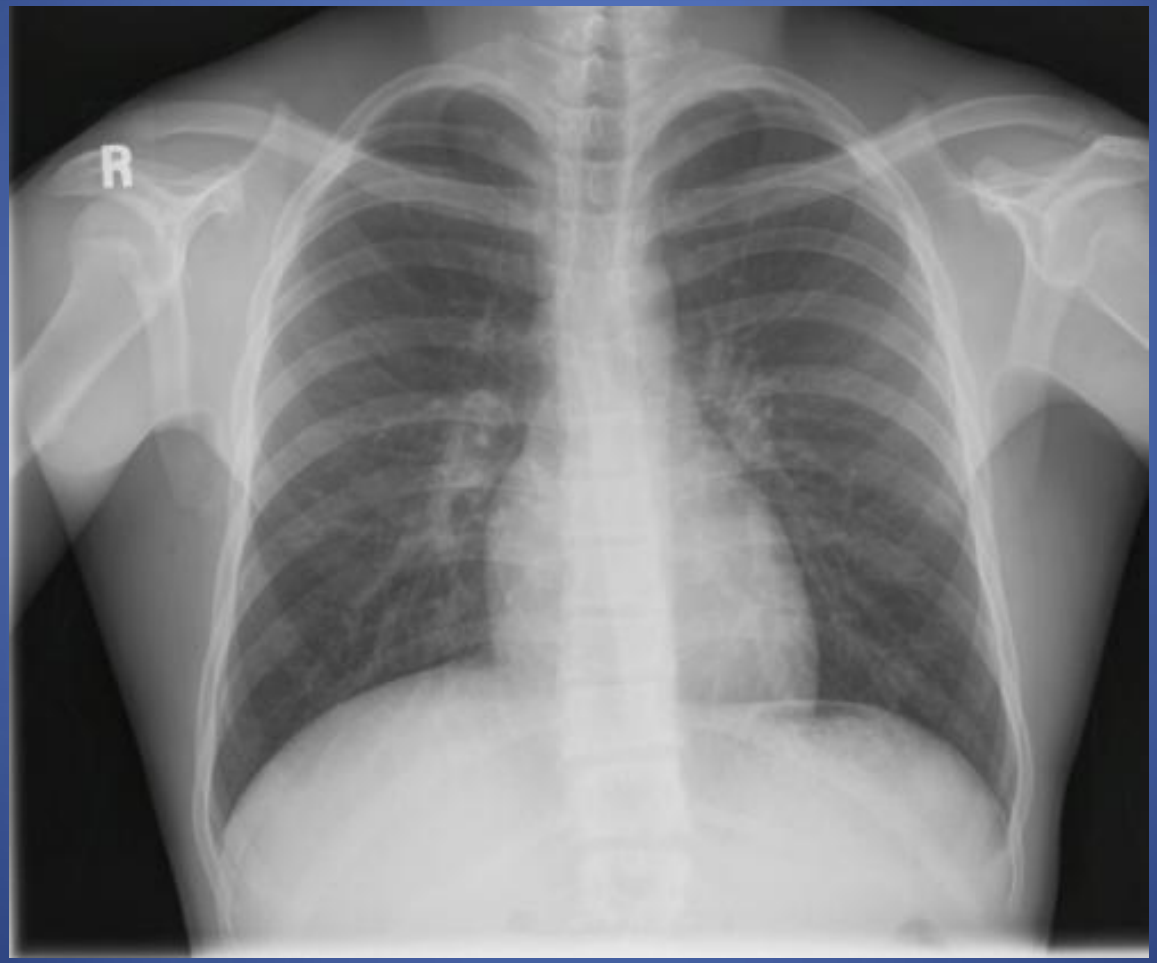
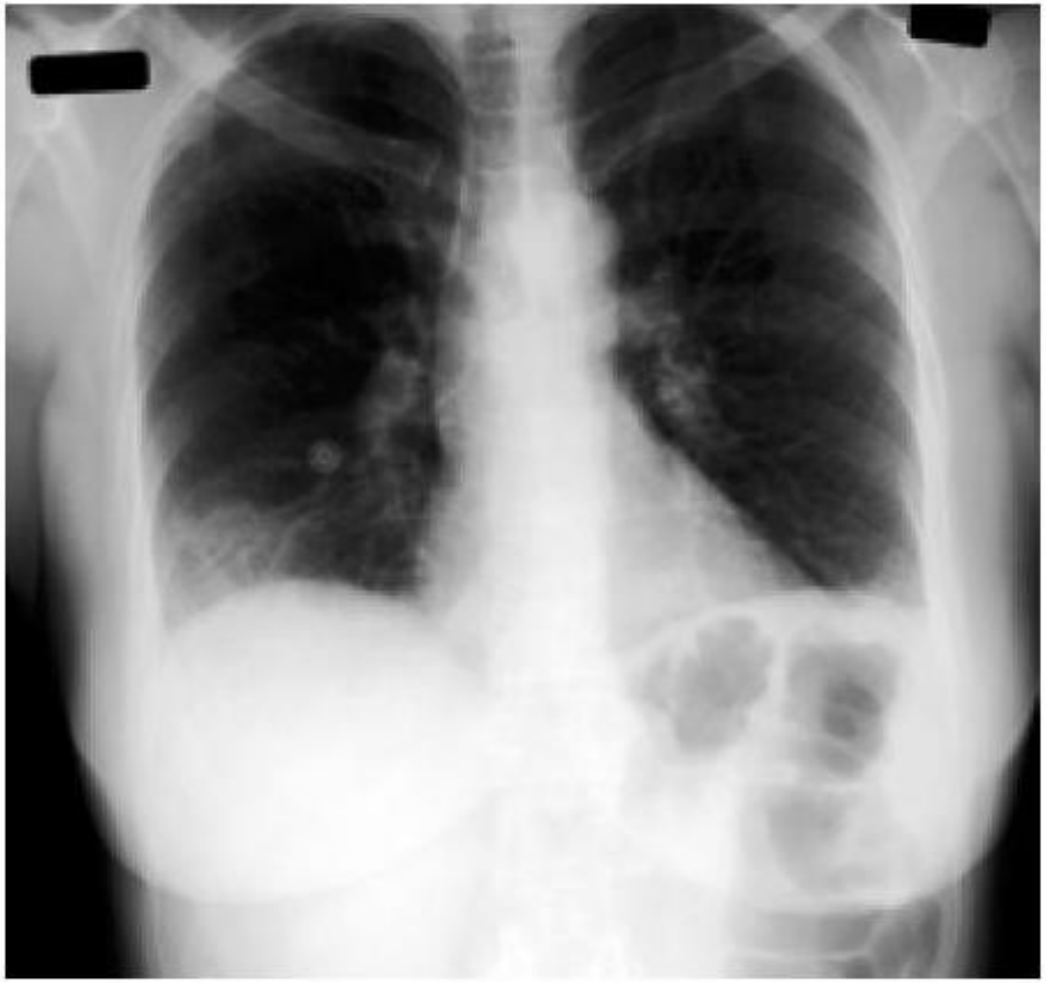


Table 8. Chest X-Ray Findings In Patients With Pulmonary Embolism.

Atelectasis
Parenchymal infiltrates
Elevated diaphragm (both unilateral and bilateral)
Enlarged hilum
Enlarged mediastinum
Cardiomegaly (in chronic PE)
Pleural effusion
Oligemia (Westermark's sign)
Prominent central pulmonary artery (Fleischner sign)
Pleural-based area of increased opacity (Hampton's hump)
Pulmonary edema

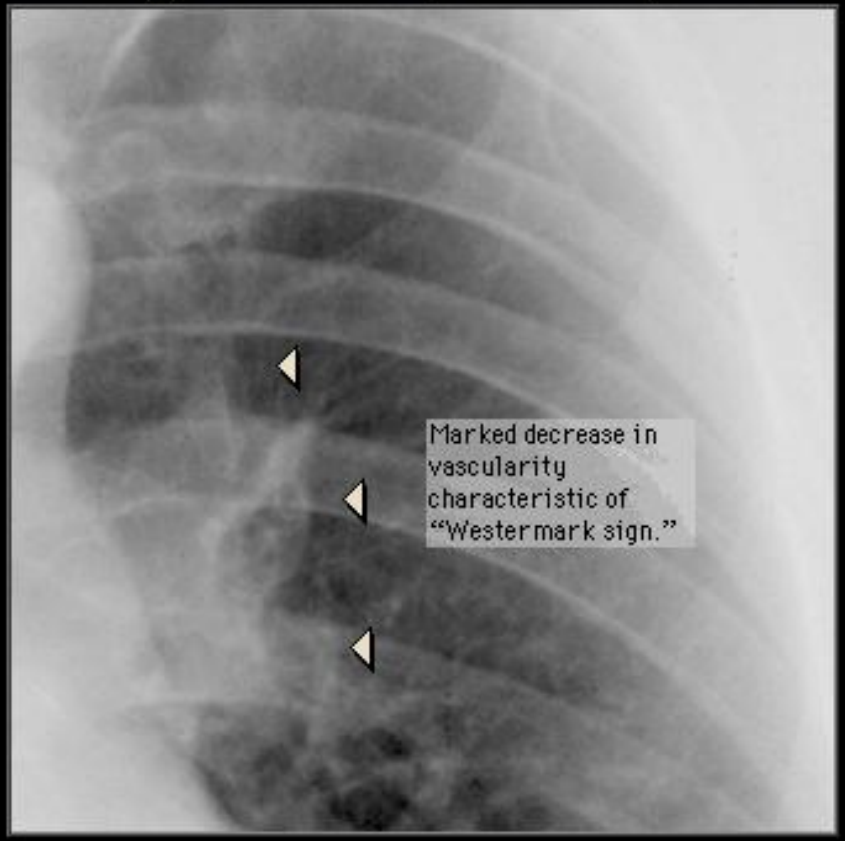
Figure 5. Hampton's hump.

Hampton's hump is a wedge-shaped pleural-based infiltrate that is occasionally seen with PE. Note the density at the right costophrenic angle in this film.

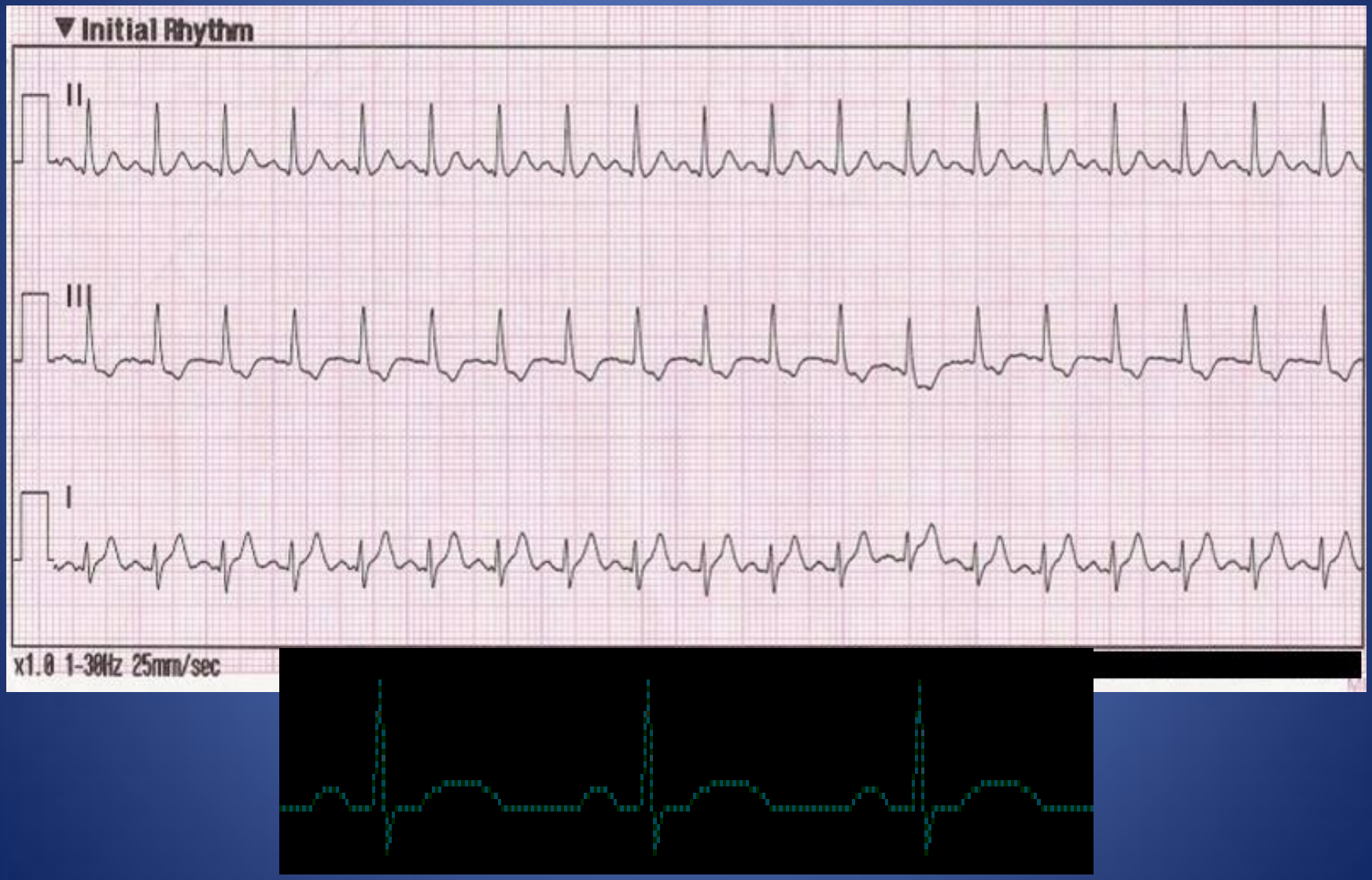


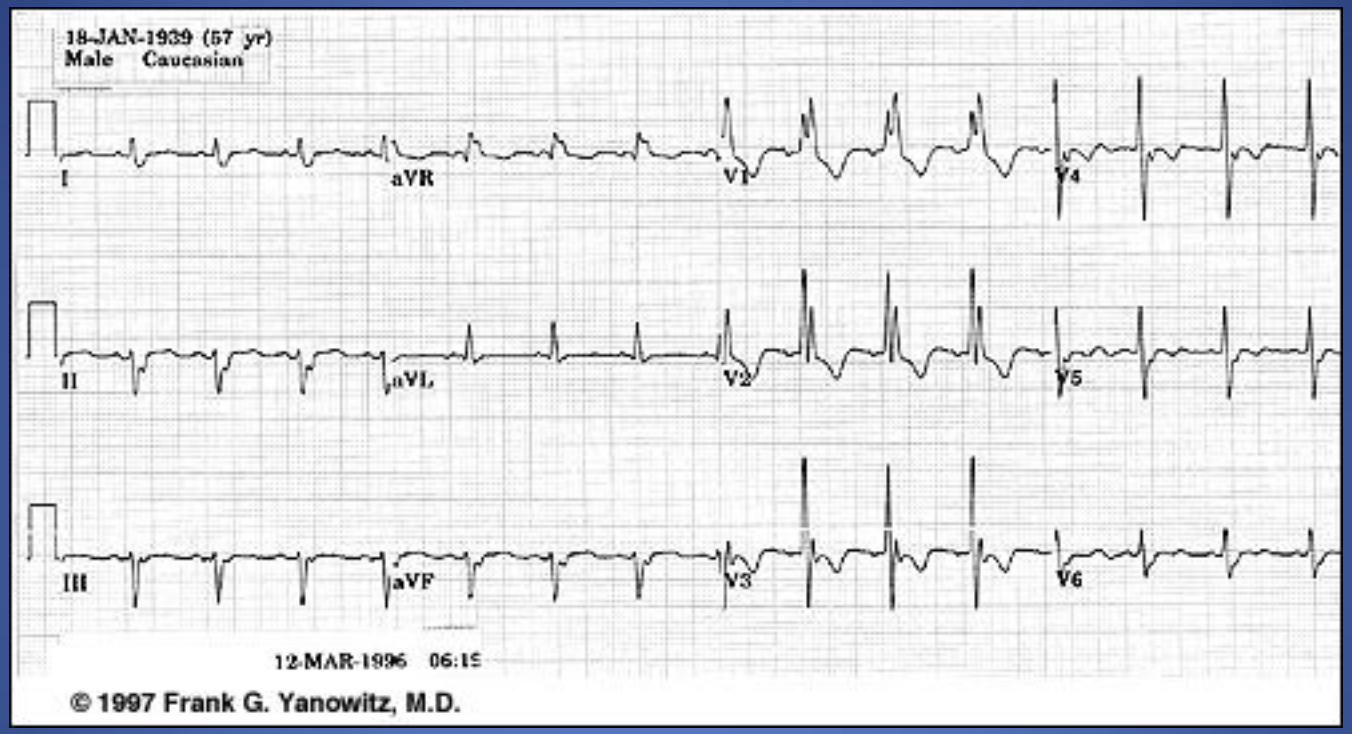
Zoom Image—Westermark Sign in Pulmonary Embolus

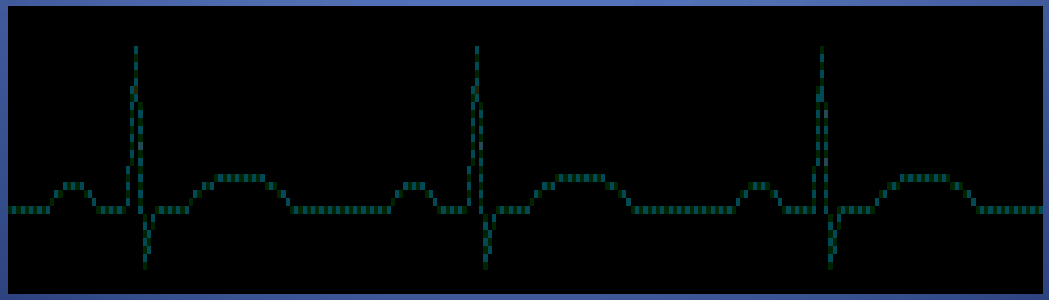
Close

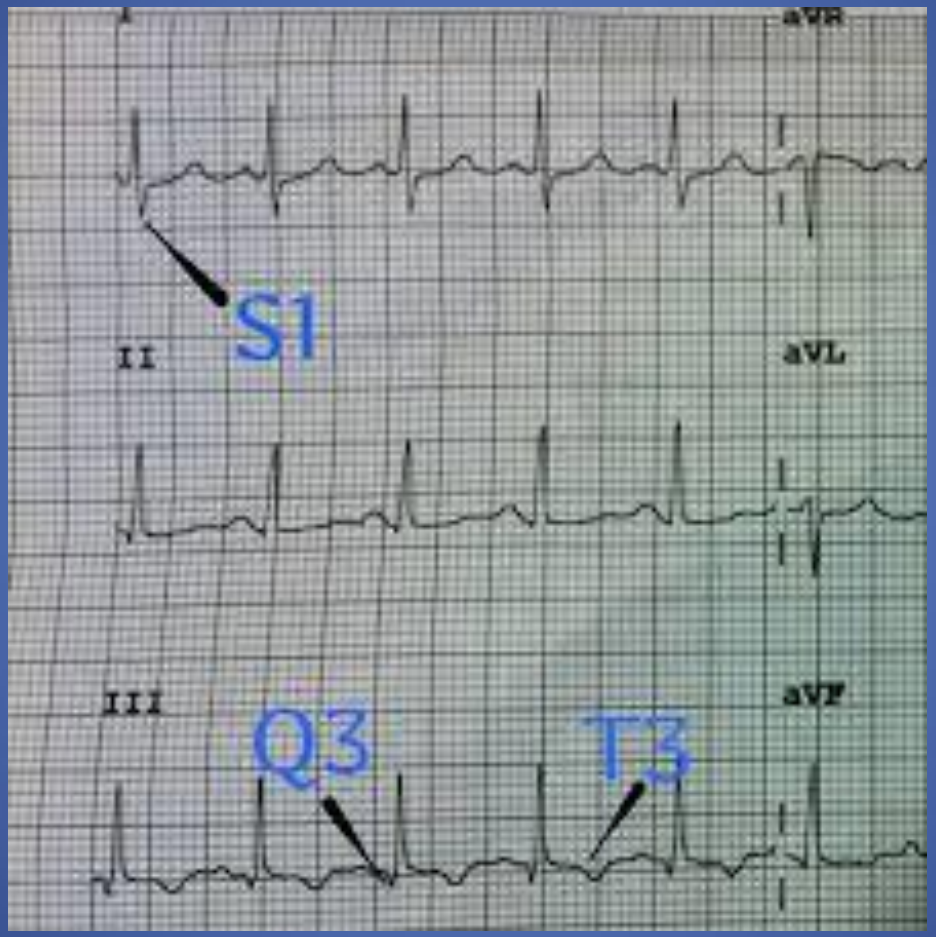


The classical, but rare frontal Xray finding is clearcut truncation of pulmonary vessels with normal appearing pulmonary parenchyma implying recent sudden obstruction of the local pulmonary artery.


▼Initial Rhythm
II
III
I
x1.0 1-38Hz 25mm/sec


18-JAN-1939 (57 yr)
Male Caucasian
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
12-MAR-1996 06:15
© 1997 Frank G. Yanowitz, M.D.




I
aVR
S1
II
aVL
III
aVF
Q3
T3


LOW | MEDIUM | HIGH
RISK

Εκτίμηση της κλινικής πιθανότητας

Items	Clinical decision rule points	
Wells rule	**Original version[85]**	**Simplified version[107]**
Previous PE or DVT	1.5	1
Heart rate ≥100 b.p.m.	1.5	1
Surgery or immobilization within the past four weeks	1.5	1
Haemoptysis	1	1
Active cancer	1	1
Clinical signs of DVT	3	1
Alternative diagnosis less likely than PE	3	1
Clinical probability		
Three-level score		
Low	0–1	N/A
Intermediate	2–6	N/A
High	≥7	N/A
Two-level score		
PE unlikely	0–4	0–1
PE likely	≥5	≥2

Εκτίμηση κλινικής πιθανότητας

Revised Geneva score	Original version[93]	Simplified version[108]
Previous PE or DVT	3	1
Heart rate 75–94 b.p.m. ≥95 b.p.m.	 3 5	 1 2
Surgery or fracture within the past month	2	1
Haemoptysis	2	1
Active cancer	2	1
Unilateral lower limb pain	3	1
Pain on lower limb deep venous palpation and unilateral oedema	4	1
Age >65 years	1	1
Clinical probability		
Three-level score		
Low	0–3	0–1
Intermediate	4–10	2–4
High	≥11	≥5
Two-level score		
PE unlikely	0–5	0–2
PE likely	≥6	≥3

D-dimers

Τεχνική ELISA

Ευαισθησία >95%

Ειδικότητα 40%

Χρήσιμη για τον αποκλεισμό PE σε ασθενείς με **χαμηλή & ενδιάμεση** κλινική πιθανότητα

Τεχνική LATEX

Ευαισθησία 85-90%

Χρήσιμη για τον αποκλεισμό PE σε ασθενείς με **χαμηλή** κλινική πιθανότητα

Diagnostic criterion	Clinical probability of PE				
	Low	Intermediate	High	PE unlikely	PE likely
Exclusion of PE					
D-dimer					
Negative result, highly sensitive assay	+	+	–	+	–
Negative result, moderately sensitive assay	+	±	–	+	–

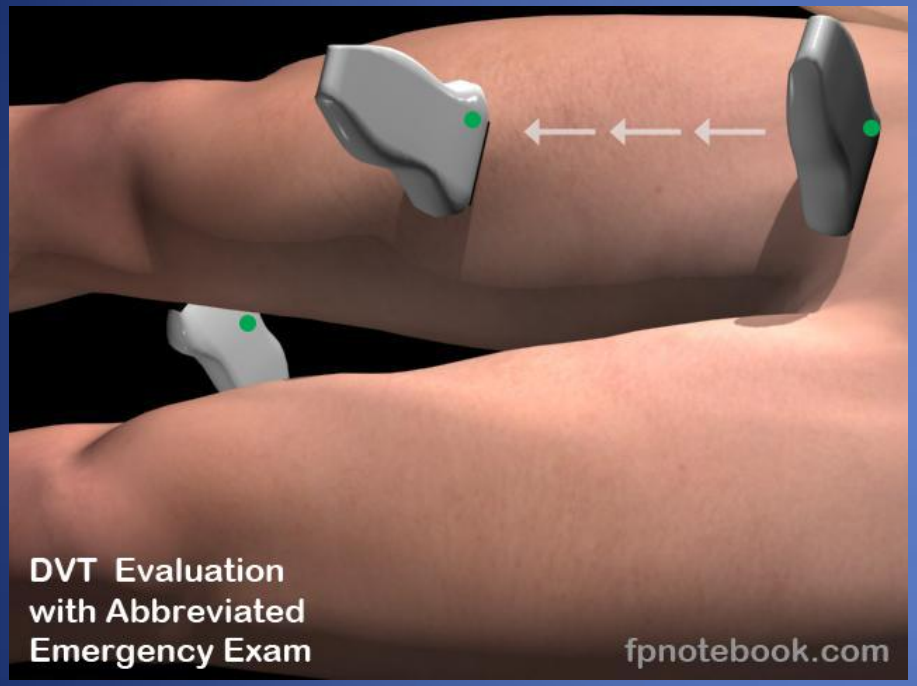
U/S φλεβών κάτω άκρων

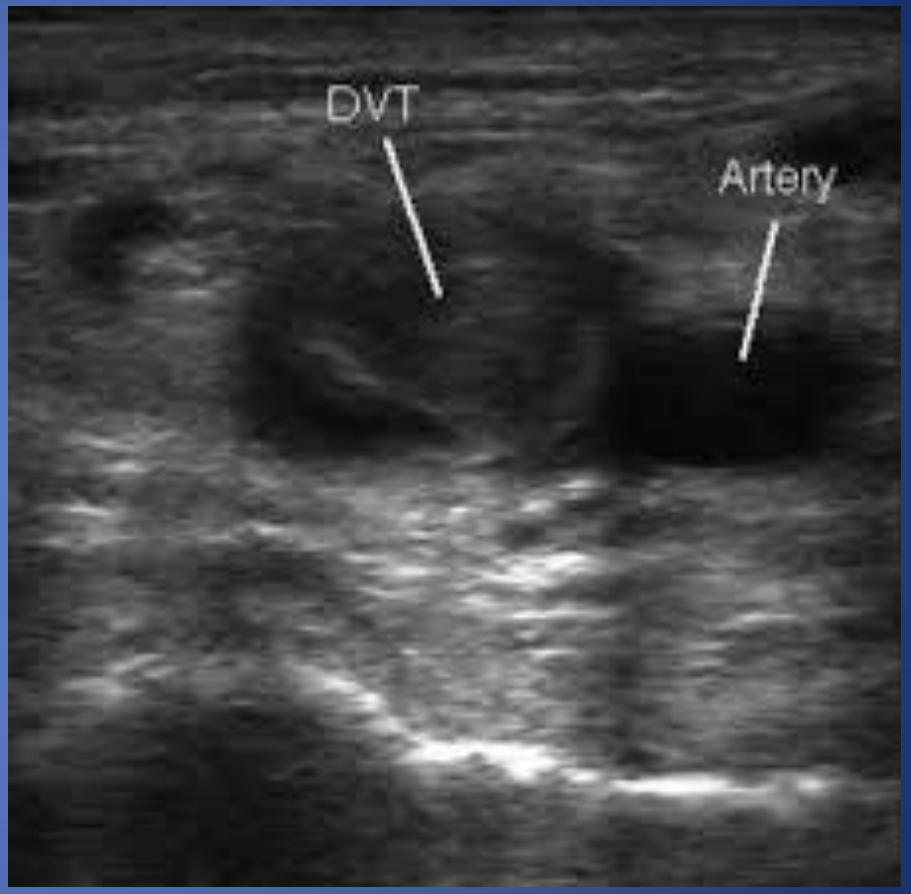
Εγγύς DVT: 20%

Ανεύρεση εγγύς DVT σε ασθενή με υποψία πνευμονικής εμβολής αρκεί για να γίνει έναρξη αντιπηκτικής αγωγής χωρίς περαιτέρω εξετάσεις!!!

Η ειδικότητα μειώνεται από 96 σε 84% όταν γίνεται U/S και στις περιφερικές φλέβες αν και η ευαισθησία αυξάνεται

Χρησιμοποιείται για την αποφυγή CT σε περίπτωση που αυτή αντενδείκνυται πχ. Νεφρική ανεπάρκεια, αλλεργία


DVT Evaluation
with Abbreviated
Emergency Exam
fpnotebook.com


DVT
Artery

V/Q scan

Φυσιολογικό: αποκλείει την PE ανεξαρτήτως κλινικής πιθανότητας

Υψηλής πιθανότητας: Επιβεβαιώνει τη διάγνωση ανεξαρτήτως κλινικής πιθανότητας

Μη διαγνωστικό (χαμηλής & ενδιάμεσης πιθανότητας): Αν ο ασθενής έχει χαμηλή κλινική πιθανότητα + αρνητικό U/S εγγύς φλεβών κάτω άκρων => αποδεκτό κριτήριο για τον αποκλεισμό της PE!!!

Σε όλες τις άλλες περιπτώσεις: περαιτέρω έλεγχος

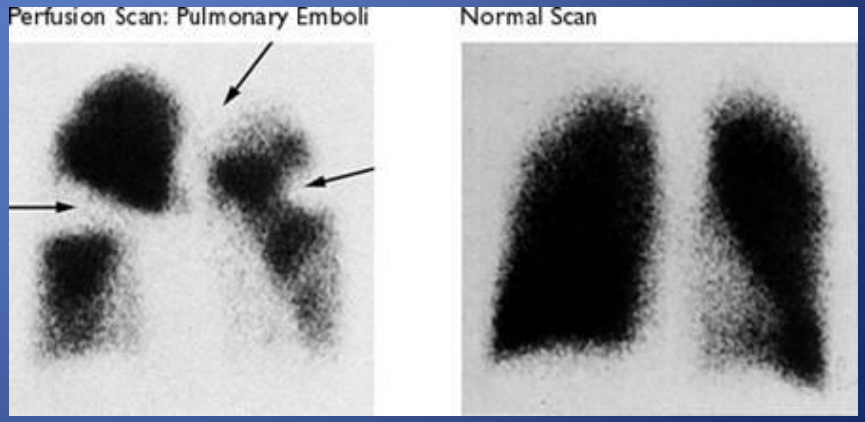
Exclusion of pulmonary embolism

V/Q scan					
Normal perfusion lung scan	+	+	+	+	+
Non-diagnostic lung scan[a] and negative proximal CUS	+	±	–	+	–

V/Q scan

Πρέπει να γίνεται σε:

- εξωτερικούς ασθενείς χαμηλής κλινικής πιθανότητας με φυσιολογική Ro θώρακα
- νέους ασθενείς (ιδίως γυναίκες)
- έγκυες
- αλλεργίες πχ. σε σκιαγραφικό
- σοβαρή νεφρική ανεπάρκεια



CTPA

Multi Detector CT
Ευαισθησία 83%
Ειδικότητα 96%

<u>NPV</u>
Επί χαμηλής & μέσης κλινικής πιθανότητας >90%
Επί υψηλής κλινικής πιθανότητας 60% !!!

Αρνητική MDCT αποκλείει την PE σε ασθενείς με **χαμηλή & ενδιάμεση** κλινική πιθανότητα
Αρνητική MDCT + **υψηλή** κλινική πιθανότητα… περαιτέρω έλεγχος με U/S, V/Q scan, πνευμονική αγγειογραφία;;;

Exclusion of pulmonary embolism

Chest CT angiography					
Normal multidetector CT alone	+	+	±	+	±

CTPA

PPV

Επί υψηλής & μέσης κλινικής πιθανότητας **>90%**

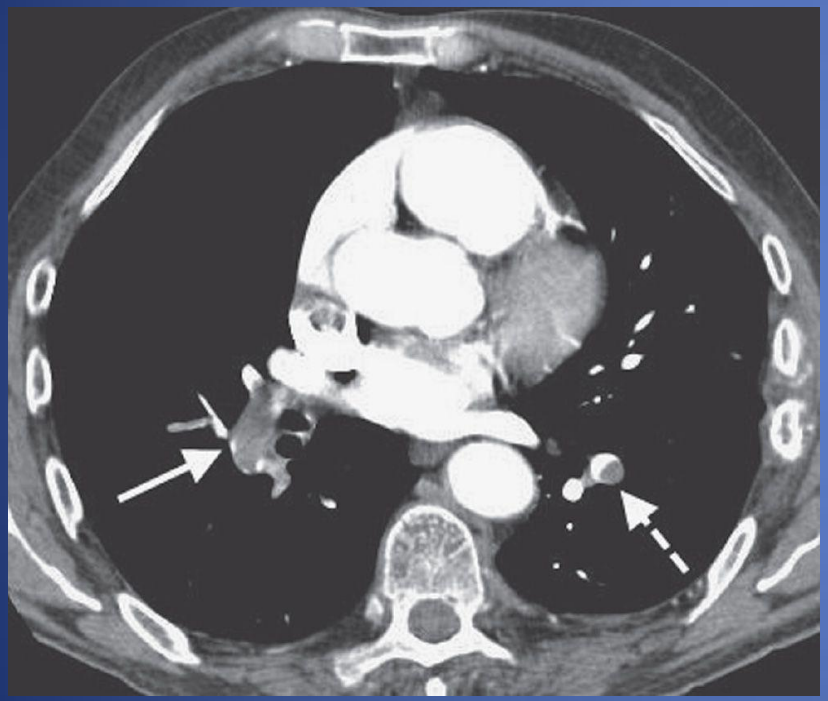
Επί χαμηλής κλινικής πιθανότητας μόλις **58%** !!!

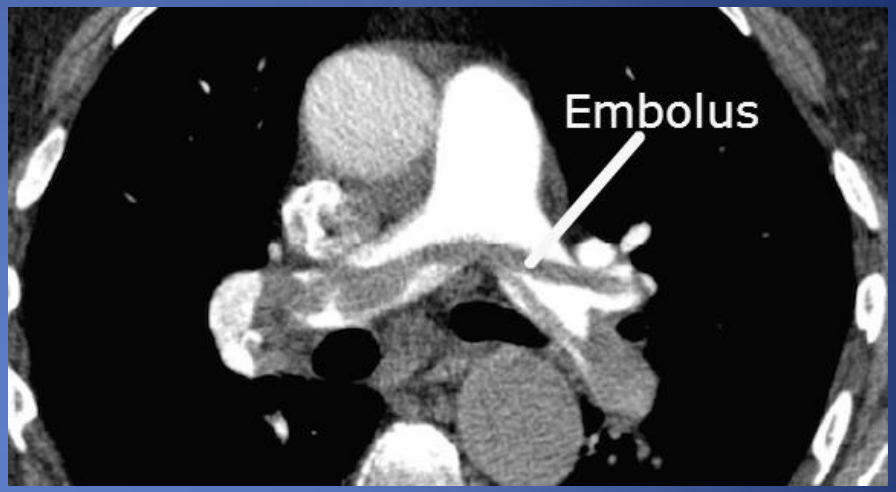
MDCT με θρόμβο στις τμηματικές αρτηρίες ή κεντρικότερα… θέτει τη διάγνωση της PE ανεξαρτήτως κλινικής πιθανότητας.

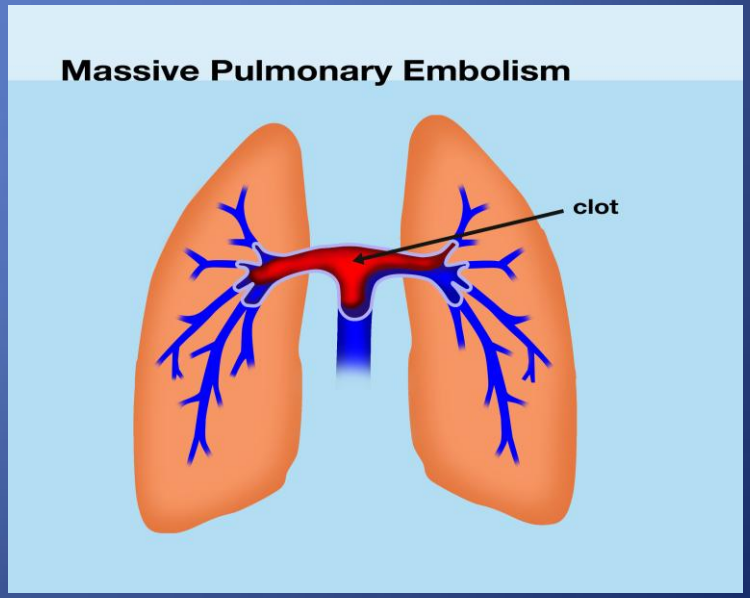
Confirmation of pulmonary embolism

Confirmation of PE					
Chest CT angiogram showing at least segmental PE	+	+	+	+	+

CTPA







CTPA

Μεμονωμένος θρόμβος υποτμηματικά σε ασθενή χωρίς DVT είναι άγνωστο αν θα πρέπει να αντιμετωπιστεί.

Συστήνεται U/S κάτω άκρων & αξιολόγηση της κλινικής πιθανότητας και του κινδύνου αιμορραγίας.

Επί τυχαίας ανεύρεσης θρόμβου σε CT θώρακα => αντιπηκτική αγωγή αν:

- ασθενής με Ca
- θρόμβος σε λοβαίο κλάδο ή κεντρικότερα

U/S triplex καρδιάς

Συνήθη υπερηχοκαρδιογραφικά ευρήματα:

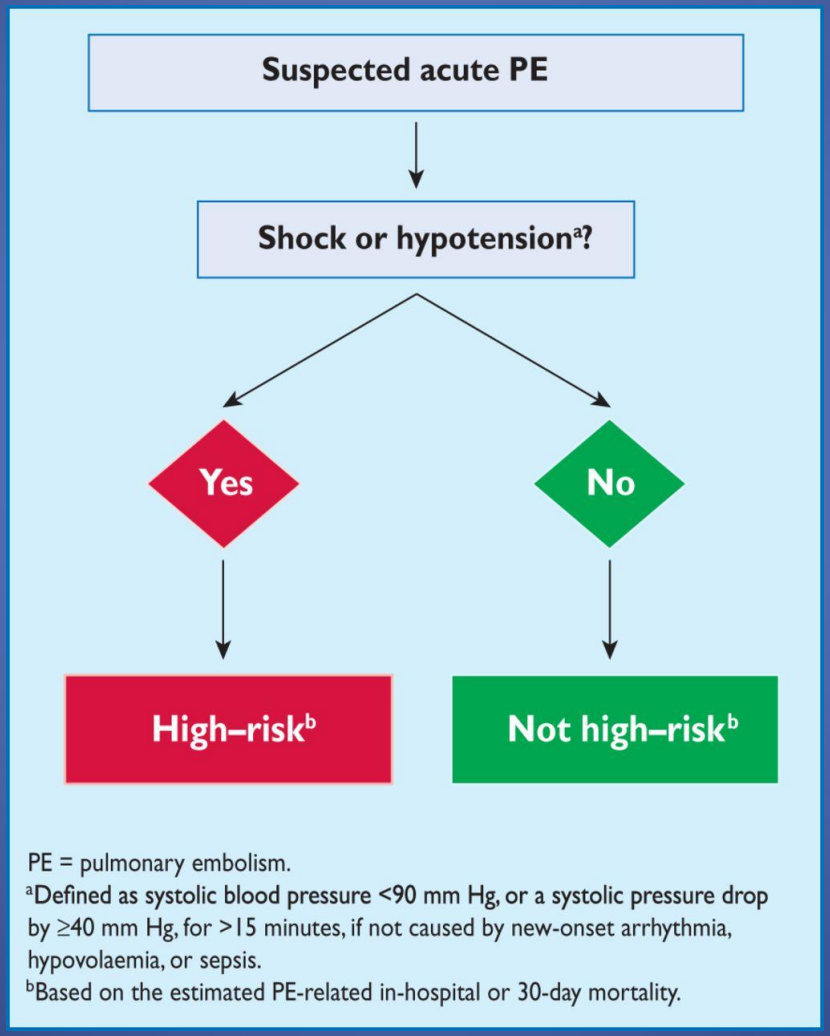
- Διάταση ΔΕ κοιλίας
- Επιπέδωση μεσοκοιλιακού διαφράγματος
- Ανεπάρκεια τριγλώχινας
- Jet velocity
- Θρόμβοι ΔΕ κοιλίας

Ευρήματα με μεγαλύτερη PPV:

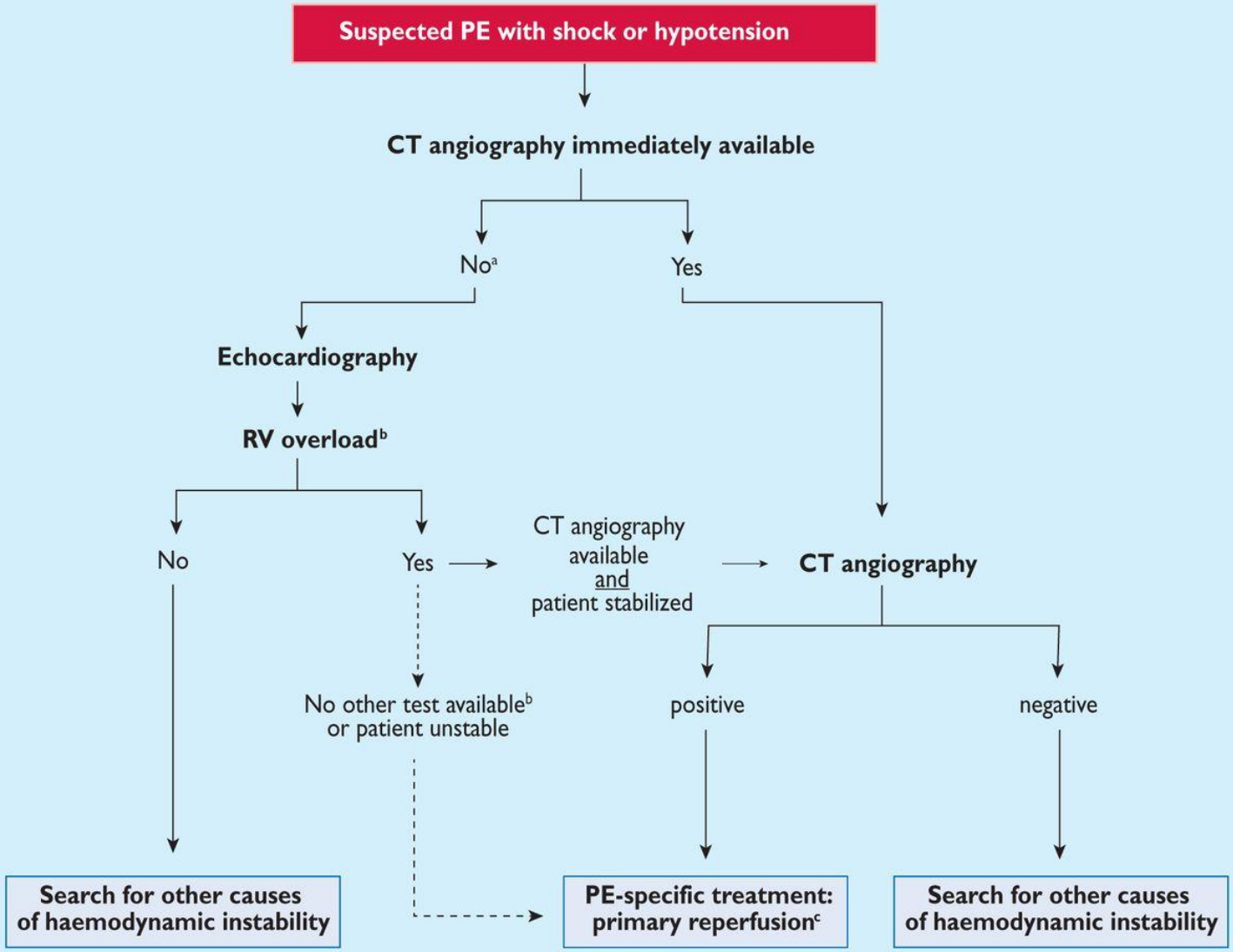
Σημείο 60/60

Mc Connell

Αρχική σταδιοποίηση κινδύνου



PE = pulmonary embolism.
[a]Defined as systolic blood pressure <90 mm Hg, or a systolic pressure drop by ≥40 mm Hg, for >15 minutes, if not caused by new-onset arrhythmia, hypovolaemia, or sepsis.
[b]Based on the estimated PE-related in-hospital or 30-day mortality.

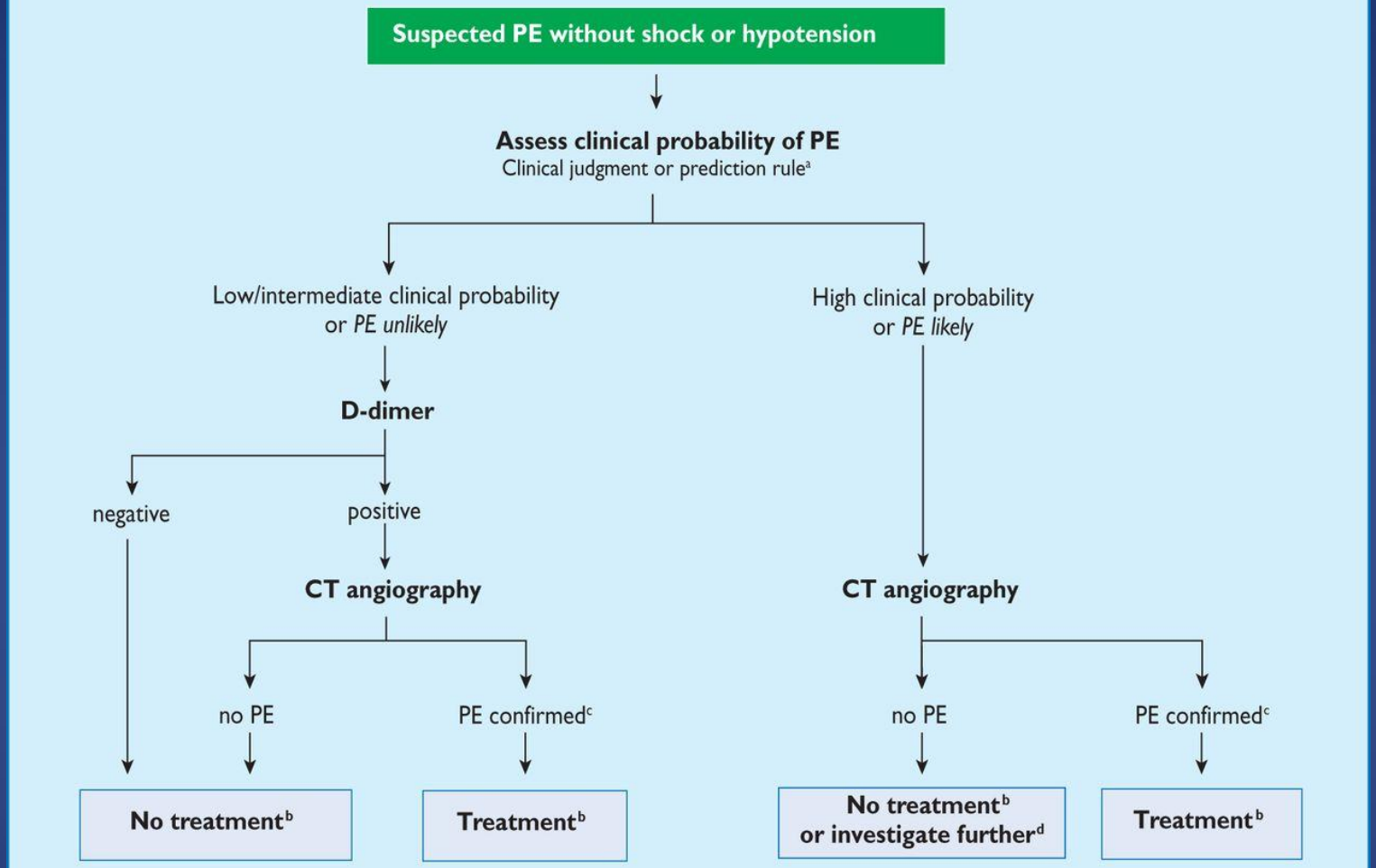


CT = computed tomographic; PE = pulmonary embolism; RV = right ventricular.

[a]Includes the cases in which the patient's condition is so critical that it only allows bedside diagnostic tests.

[b]Apart from the diagnosis of RV dysfunction, bedside transthoracic echocardiography may, in some cases, directly confirm PE by visualizing mobile thrombi in the right heart chambers. Ancillary bedside imaging tests include transoesophageal echocardiography, which may detect emboli in the pulmonary artery and its main branches, and bilateral compression venous ultrasonography, which may confirm deep vein thrombosis and thus be of help in emergency management decisions.

[c]Thrombolysis; alternatively, surgical embolectomy or catheter-directed treatment (Section 5).



CT = computed tomographic; PE = pulmonary embolism.

[a]Two alternative classification schemes may be used for clinical probability assessment, i.e. a three-level scheme (clinical probability defined as low, intermediate, or high) or a two-level scheme (PE unlikely or PE likely). When using a moderately sensitive assay, D-dimer measurement should be restricted to patients with low clinical probability or a PE-unlikely classification, while highly sensitive assays may also be used in patients with intermediate clinical probability of PE. Note that plasma D-dimer measurement is of limited use in suspected PE occurring in hospitalized patients.

[b]Treatment refers to anticoagulation treatment for PE.

[c]CT angiogram is considered to be diagnostic of PE if it shows PE at the segmental or more proximal level.

[d]In case of a negative CT angiogram in patients with high clinical probability, further investigation may be considered before withholding PE-specific treatment.

Πρόγνωση

Parameter	Original version[214]	Simplified version[218]
Age	Age in years	1 point (if age >80 years)
Male sex	+10 points	–
Cancer	+30 points	1 point
Chronic heart failure	+10 points	1 point
Chronic pulmonary disease	+10 points	
Pulse rate ≥110 b.p.m.	+20 points	1 point
Systolic blood pressure <100 mm Hg	+30 points	1 point
Respiratory rate >30 breaths per minute	+20 points	–
Temperature <36 °C	+20 points	–
Altered mental status	+60 points	–
Arterial oxyhaemoglobin saturation <90%	+20 points	1 point
	Risk strata[a]	
	Class I:≤65 points very low 30-day mortality risk (0–1.6%) **Class II: 66–85 points** low mortality risk (1.7–3.5%) **Class III: 86–105 points** moderate mortality risk (3.2–7.1%) **Class IV: 106–125 points** high mortality risk (4.0–11.4%) **Class V: >125 points** very high mortality risk (10.0–24.5%)	**0 points**= 30-day mortality risk 1.0% (95% CI 0.0%–2.1%) **≥1 point(s)**= 30-day mortality risk 10.9% (95% CI 8.5%–13.2%)

Ευρήματα από U/S ή CT

U/S

- Διάταση ΔΕ κοιλίας
- RV/LV > 0.9
- Υποκινησία ελεύθερου τοιχώματος ΔΕ κοιλίας
- Αυξημένο jet από την τριγλώχινα
- shunt από ΔΕ προς ΑΡ
- Ελεύθεροι θρόμβοι στη ΔΕ κοιλία

CT

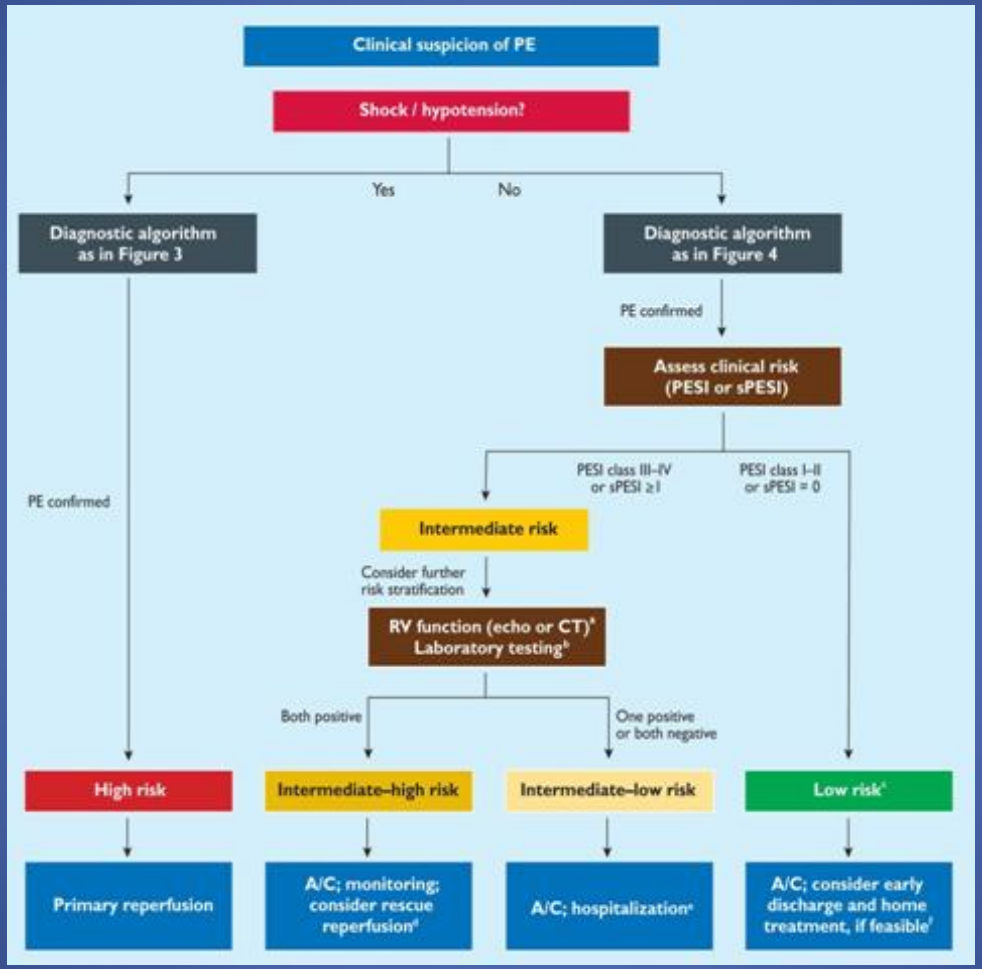
- Διάταση ΔΕ κοιλίας RV/LV >0.9

Εργαστηριακά ευρήματα

- BNP ή NT-proBNP
- Τροπονίνη

Σταδιοποίηση κινδύνου

Early mortality risk		Risk parameters and scores			
		Shock or hypotension	PESI class III-V or sPESI ≥1[a]	Signs of RV dysfunction on an imaging test[b]	Cardiac laboratory biomarkers[c]
High		+	(+)[d]	+	(+)[d]
Intermediate	Intermediate–high	–	+	Both positive	
	Intermediate–low	–	+	Either one (or none) positive[e]	
Low		–	–	Assessment optional; if assessed, both negative[e]	


Clinical suspicion of PE
Shock / hypotension?
Yes
No
Diagnostic algorithm as in Figure 3
Diagnostic algorithm as in Figure 4
PE confirmed
Assess clinical risk (PESI or sPESI)
PESI class III–IV or sPESI ≥ I
PESI class I–II or sPESI = 0
PE confirmed
Intermediate risk
Consider further risk stratification
RV function (echo or CT)[a]
Laboratory testing[b]
Both positive
One positive or both negative
High risk
Intermediate–high risk
Intermediate–low risk
Low risk[c]
Primary reperfusion
A/C; monitoring; consider rescue reperfusion[d]
A/C; hospitalization[e]
A/C; consider early discharge and home treatment, if feasible[f]

Θεραπεία

- UFH
- Θρομβόλυση
- Εμβολεκτομή

Recommendations	Class[a]	Level[b]	Ref[c]
PE with shock or hypotension (high-risk)			
It is recommended that intravenous anticoagulation with UFH be initiated without delay in patients with high-risk PE.	I	C	
Thrombolytic therapy is recommended.	I	B	168
Surgical pulmonary embolectomy is recommended for patients in whom thrombolysis is contraindicated or has failed.[d]	I	C	313
Percutaneous catheter-directed treatment should be considered as an alternative to surgical pulmonary embolectomy for patients in whom full-dose systemic thrombolysis is contraindicated or has failed.[d]	IIa	C	

Θεραπεία

Recommendations: acute treatment

High-risk pulmonary embolism

- Anticoagulation with unfractionated heparin should be initiated without delay in patients with high-risk PE
- Systemic hypotension should be corrected to prevent progression of RV failure and death due to PE
- Vasopressive drugs are recommended for hypotensive patients with PE
- Dobutamine and dopamine may be used in patients with PE, low cardiac output and normal blood pressure
- Aggressive fluid challenge is not recommended
- Oxygen should be administered in patients with hypoxaemia
- Thrombolytic therapy should be used in patients with high-risk PE presenting with cardiogenic shock and/or persistent arterial hypotension
- Surgical pulmonary embolectomy is a recommended therapeutic alternative in patients with high-risk PE in whom thrombolysis is absolutely contraindicated or has failed
- Catheter embolectomy or fragmentation of proximal pulmonary arterial clots may be considered as an alternative to surgical treatment in high-risk patients when thrombolysis is absolutely contraindicated or has failed

Θεραπεία

Streptokinase	250 000 IU as a loading dose over 30 min, followed by 100 000 IU/h over 12–24 h
	Accelerated regimen: 1.5 million IU over 2 h
Urokinase	4400 IU/kg as a loading dose over 10 min, followed by 4400 IU/kg/h over 12–24 h
	Accelerated regimen: 3 million IU over 2 h
rtPA	100 mg over 2 h
	or 0.6 mg/kg over 15 min (maximum dose 50 mg)

Absolute contraindications[a]

- Haemorrhagic stroke or stroke of unknown origin at any time
- Ischaemic stroke in preceding 6 months
- Central nervous system damage or neoplasms
- Recent major trauma/surgery/head injury (within preceding 3 weeks)
- Gastrointestinal bleeding within the last month
- Known bleeding

Relative contraindications

- Transient ischaemic attack in preceding 6 months
- Oral anticoagulant therapy
- Pregnancy or within 1 week post partum
- Non-compressible punctures
- Traumatic resuscitation
- Refractory hypertension (systolic blood pressure >180 mmHg)
- Advanced liver disease
- Infective endocarditis
- Active peptic ulcer

- Παρεντερική αντιπηκτική αγωγή επί υψηλής ή ενδιάμεσης κλινικής πιθανότητας
- ΗΧΜΒ
- Παράλληλα με την παρεντερική αντιπηκτική αγωγή έναρξη θεραπείας με ανταγωνιστές βιταμίνης Κ (INR =2.5)
- Rivaroxaban αντί του συνδυασμού παρεντερικής αντιπηκτικής + αναστολέα βιταμίνης Κ

Recommendations	Class[a]	Level[b]	Ref[c]
PE without shock or hypotension (intermediate-or low-risk)[d]			
Anticoagulation: combination of parenteral treatment with VKA			
Initiation of parenteral anticoagulation is recommended without delay in patients with high or intermediate clinical probability of PE while diagnostic work-up is in progress.	I	C	352
LMWH or fondaparinux is the recommended form of acute phase parenteral anticoagulation for most patients.	I	A	273, 274, 281, 353
In parallel to parenteral anticoagulation, treatment with a VKA is recommended, targeting an INR of 2.5 (range 2.0–3.0).	I	B	352, 354
Anticoagulation: new oral anticoagulants			
As an alternative to the combination of parenteral anticoagulation with a VKA, anticoagulation with rivaroxaban (15 mg twice daily for 3 weeks, followed by 20 mg once daily) is recommended.	I	B	296

- Apixaban αντί του συνδυασμού παρεντερικής αντιπηκτικής + αναστολέα βιταμίνης Κ
- Dabigatran αντί του αναστολέα της βιταμίνης Κ
- Edoxaban αντί του αναστολέα της βιταμίνης Κ
- ΟΧΙ χορήγηση των νεότερων αντιπηκτικών σε ασθενείς με νεφρική ανεπάρκεια

As an alternative to the combination of parenteral anticoagulation with a VKA, anticoagulation with apixaban (10 mg twice daily for 7 days, followed by 5 mg twice daily) is recommended.	I	B	297
As an alternative to VKA treatment, administration of dabigatran (150 mg twice daily, or 110 mg twice daily for patients ≥80 years of age or those under concomitant verapamil treatment) is recommended following acute-phase parenteral anticoagulation.	I	B*	293, 294
As an alternative to VKA treatment, administration of edoxaban* is recommended following acute-phase parenteral anticoagulation.	I	B	298
New oral anticoagulants (rivaroxaban, apixaban, dabigatran, edoxaban) are not recommended in patients with severe renal impairment.†	III	A	293, 295–298

- ΟΧΙ θρομβόλυση
- Monitoring των ασθενών με ενδιάμεσου – υψηλού κινδύνου ΠΕ ώστε σε τυχόν αιμοδυναμική αστάθεια να χορηγηθεί θρομβόλυση ή να γίνει εμβολεκτομή αν ο κίνδυνος αιμορραγίας είναι υψηλός

Reperfusion treatment			
Routine use of primary systemic thrombolysis is not recommended in patients not suffering from shock or hypotension.	III	B	253
Close monitoring is recommended in patients with intermediate-high risk PE to permit early detection of haemodynamic decompensation and timely initiation of 'rescue' reperfusion therapy.	I	B	253
Thrombolytic therapy should be considered for patients with intermediate-high-risk PE and clinical signs of haemodynamic decompensation.	IIa	B	252, 253
Surgical pulmonary embolectomy may be considered in intermediate-high-risk patients if the anticipated risk of bleeding under thrombolytic treatment is high.[g]	IIb	C	
Percutaneous catheter-directed treatment may be considered in intermediate-high-risk patients if the anticipated risk of bleeding under thrombolytic treatment is high.[g]	IIb	B	336

Σε ασθενείς με χαμηλού κινδύνου ΠΕ => Συνέχιση της peros αντιπηκτικής αγωγής στο σπίτι

Early discharge and home treatment			
Patients with acute low-risk PE should be considered for early discharge and continuation of treatment at home if proper outpatient care and anticoagulant treatment can be provided.	IIa	B	217, 237, 347, 349

	Dosage	Interval
Enoxaparin	1.0 mg/kg or 1.5 mg/kg[a]	Every 12 hours Once daily[a]
Tinzaparin	175 U/kg	Once daily
Dalteparin	100 IU/kg[b] or 200 IU/kg[b]	Every 12 hours[b] Once daily[b]
Nadroparin[c]	86 IU/kg or 171 IU/kg	Every 12 hours Once daily
Fondaparinux	5 mg (body weight <50 kg); 7.5 mg (body weight 50–100 kg); 10 mg (body weight >100 kg)	Once daily

Φίλτρο κάτω κοίλης φλέβας

Recommendations	Class[a]	Level[b]	Ref[c]
IVC filters should be considered in patients with acute PE and absolute contraindications to anticoagulation.	IIa	C	
IVC filters should be considered in case of recurrence of PE, despite therapeutic levels of anticoagulation.	IIa	C	
Routine use of IVC filters in patients with PE is not recommended.	III	A	341, 355

Μακροχρόνια αντιπηκτική θεραπεία

- 3 μήνες σε ασθενείς με γνωστό αναστρέψιμο παράγοντα
- Σε ασθενείς με ΠΕ χωρίς γνωστό παράγοντα κινδύνου αντιπηκτική αγωγή για τουλάχιστον 3 μήνες
- Παρατεταμένη χορήγηση αντιπηκτικών σε ασθενείς με πρώτο επεισόδιο ΠΕ χωρίς γνωστό παράγοντα κινδύνου και χαμηλό κίνδυνο αιμορραγίας
- Αντιπηκτική αγωγή για αόριστο χρονικό διάστημα σε ασθενείς με 2ο επεισόδιο ΠΕ χωρίς γνωστό παράγοντα κινδύνου
- Τακτική εκτίμηση για το κόστος – όφελος της συνέχισης της αντιπηκτικής αγωγής

Recommendations	Class[a]	Level[b]	Ref[c]
For patients with PE secondary to a transient (reversible) risk factor, oral anticoagulation is recommended for 3 months.	I	B	358
For patients with unprovoked PE, oral anticoagulation is recommended for at least 3 months.	I	A	363, 372–374
Extended oral anticoagulation should be considered for patients with a first episode of unprovoked PE and low bleeding risk .	IIa	B	375
Anticoagulation treatment of indefinite duration is recommended for patients with a second episode of unprovoked PE.	I	B	360
Rivaroxaban (20 mg once daily), dabigatran (150 mg twice daily, or 110 mg twice daily for patients ≥80 years of age or those under concomitant verapamil treatment) or apixaban (2.5 mg twice daily) should be considered as an alternative to VKA (except for patients with severe renal impairment) if extended anticoagulation treatment is necessary.[d]	IIa	B[e]	295, 370, 371
In patients who receive extended anticoagulation, the risk–benefit ratio of continuing such treatment should be reassessed at regular intervals.	I	C	

- Σε ασθενείς με ΠΕ και καρκίνο => ΗΧΜΒ για τους πρώτους 3-6 μήνες
- Σε ασθενείς με ΠΕ και καρκίνο => χορήγηση αντιπηκτικής αγωγής για αόριστο χρονικό διάστημα ή μέχρι την θεραπεία του καρκίνου

In patients who receive extended anticoagulation, the risk–benefit ratio of continuing such treatment should be reassessed at regular intervals.	I	C	
In patients who refuse to take or are unable to tolerate any form of oral anticoagulants, aspirin may be considered for extended secondary VTE prophylaxis.	IIb	B	368, 369
For patients with PE and cancer, weight adjusted subcutaneous LMWH should be considered for the first 3–6 months.	IIa	B	278, 376, 377
For patients with PE and cancer, extended anticoagulation (beyond the first 3–6 months) should be considered for an indefinite period or until the cancer is cured.	IIa	C	


ANY
QUESTIONS
?

Ευχαριστώ πολύ
για την προσοχή σας