

VIII CONGRESSO NAZIONALE SIMEU

Rimini, 18-21 Ottobre 2012

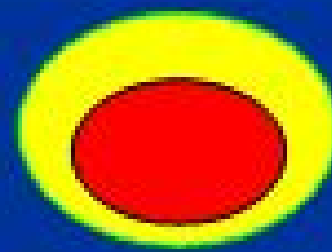
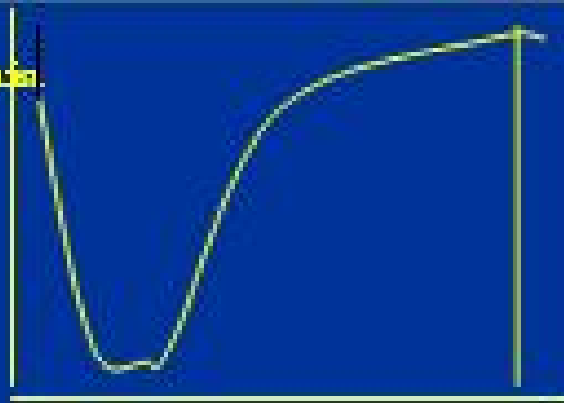
DOLORE TORACICO

Metodologia clinica ed esperienza

P. Di Pasquale

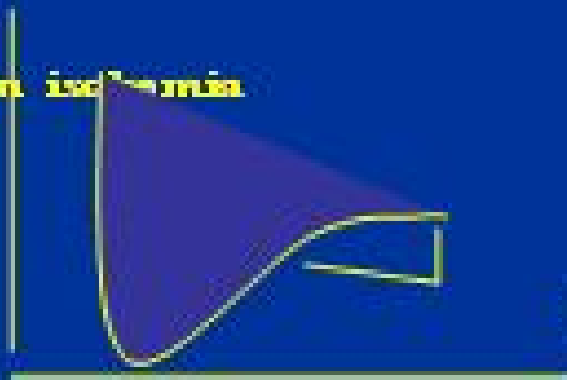
U.O.C. Cardiologia "Paolo Borsellino" G.F. Ingrassia Hospital
Palermo-Italy

15 min ischemia



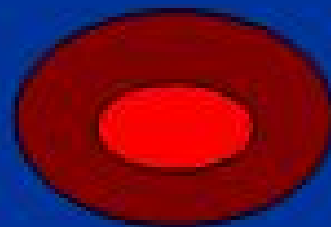
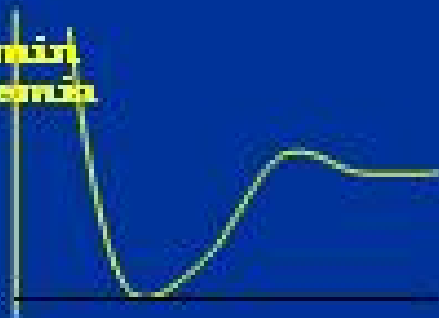
Danno reversibile

30 min ischemia



Parzialmente reversibile

90 min Ischemia



Danno irreversibile

Chest Pain

- Common complaint in ED
 - 5% of all ED visits or 5 million visits per year
- Wide range of etiologies
 - Cardiac, Pulmonary, GI, Musculoskeletal
- Why does distinguishing these causes matter?
- How do you distinguish causes of chest pain?

Chest Pain

- Acute Coronary Syndromes
- Pulmonary Embolism
- Aortic Dissection
- Esophageal Rupture
- Pneumothorax
- Pneumonia
- Pericarditis

- **Location:** Central, left, or right
- **Associated symptoms:** SOB, sweating, nausea
- **Timing:** Gradual or sudden onset
- **Provocation:** What makes worse or better?
- **Quality:** Visceral vs somatic
- **Radiation:** Back, neck, arm
- **Severity:** Scale of 1-10



Advantages of immediate two-dimensional echocardiography in patients with acute cardiac ischemic events

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2.2. Eligibility criteria

Pts hospitalized within 4 h of the onset of symptoms, suitable for thrombolysis, with a 1st episode of AMI, Killip Class I-II, and acceptable echocardiographic window.

an ST elevation or depression > 1 mm in the peripheral leads and >2 mm in precordial leads involving more than one lead, with concomitant alterations of the segmentary motion in the 2DE, performed on admission.

Pts with chest discomfort at rest (1st episode), that was judged to be caused by ischemia (ST changes as previously reported) and that lasted > 5 min but < 30 min, and pts with chest discomfort without ECG changes and with alterations of segmentary motion were also admitted. Normal CK, CKMB at the basal sample

Table 1**Epidemiological and clinical characteristics of patients**

	Inferior AMI	Anterior AMI	UA/ thrombo- lysis	UA/ heparin
Patients (<i>n</i>)	87	169	87	48
Age (years)	60 ± 13	61 ± 11	62 ± 10	62 ± 12
Sex (F/M)	14/73	30/139	29/58	14/34
Hypertension	19	71	39	20
Diabetes	19	41	30	10
Smokers	22	57	25	16

Table 3**Angiographic characteristics and revascularizations**

	Inferior AMI	Anterior AMI	UA/ thrombo- lysis	UA/ heparin
Angiographies	54	115	74	37
One vessel	18	25	16	9
Two vessels	20	46	25	24
Three vessels	15	35	25	14
Left main vessel	—	3	3	—
Undamaged coro- nary	1	6	5	—
PTCA	18	24	19	6
CABG	17	48	35	21

9 inferior and 19 anterior AMI showed ST depression , and 16 pts normal ECG (7 inferior, 2 anterior AMIs and 7 UA).

All pts with anterior AMI and UA with concomitant RVD dysfunction showed 2/3 damaged vessels on CVG.

Pts with chest pain and without alterations of ECG and 2DE were excluded from the study, and these patients did not show successively (first 24 h) evidence of any cardiac event.

The sensitivity of 2DE to determine the presence of cardiac events was 99%. Specificity, predictive value, and test accuracy were 96%, 98%, and 98%, respectively.

**CURRENT
THERAPEUTIC
RESEARCH®**

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**THROMBOLYSIS PLUS HEPARIN VERSUS HEPARIN ALONE IN
THE ACUTE PHASES OF UNSTABLE ANGINA:
PRELIMINARY FINDINGS**

**PIETRO DI PASQUALE,¹ SALVATORE PATERNA,² VINCENZO BUCCA,¹
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153 pts admitted between March 31, 1989, and April 30, 1994, were randomized in a single blind manner to receive thrombolytic therapy and heparin or heparin alone.

Pts had to meet the following criteria:

Chest discomfort at rest (1st episode) that was judged to be caused by ischemia and that lasted >5 min but <30 min.

(Killip class 1-2);

an acceptable echocardiographic window ;

on admission ECG showing an ST elevation or depression of at least 1 mm in the peripheral leads and 2 mm in precordial leads and involving more than one lead, with concomitant

alterations of the segmentary kinetic in the ECHO on

admission; pain and ST segment alterations lack of response to intravenous nitroglycerin;

CK and CK-MB) within the normal range.

Table I. Epidemiologic and clinical characteristics of patients.

	Study Group	
	Thrombolysis + Heparin	Heparin
No. of patients	77	76
Sex (n)		
Female	20	17
Male	57	59
Age (y)*	62.3 ± 10	63.2 ± 9
Hypertension (n)	37	32
Diabetes (n)	17	12
Smoker (n)	18	20
Hypercholesterolemia (n)	16	12

Table II. Antianginal regimens, revascularizations, and angiographies in both groups.

	Study Group		P
	Thrombolysis + Heparin (n)	Heparin (n)	
RTPA	35	—	—
Urokinase	42	—	—
Beta-blockers	23	20	NS
Ca ⁺⁺ antagonists	—	4	—
ACE inhibitors	44	20	<0.02
PTCA	16	16	NS
CABG	20	24	NS
Coronary angiography	52	53	NS

RTPA = recombinant tissue-type plasminogen activator; Ca⁺⁺ = calcium; ACE = angiotensin-converting enzyme; PTCA = percutaneous transluminal coronary angioplasty; CABG = coronary artery bypass grafting.



Sensitivity, specificity and predictive value of the echocardiography and troponin-T test combination in patients with non-ST elevation acute coronary syndromes

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Eligibility criteria included the following

Presence of ST depression, T-wave changes, and non-diagnostic ECG in patients presenting with chest pain at rest, that was judged to be caused by ischemia, an acceptable echocardiographic window, evidence or no evidence of concomitant alterations of the segmentary motion in the 2DE, performed on admission, and evidence and no evidence of injury, as assessed by biochemical markers (TnT) (normal values 0.01–0.1 ng/ml), by quantitative testing (Boehringer Mannheim Corp.) at admission and in subsequent samples (4–8–12–24 h). Blood CK, CK-MB had to be within the normal range in the serial samples (4–8–12–24 h) obtained during hospitalisation.

Table 2. Data of all the enrolled patients divided according to ECG presentations.

ECG	ST-depression	Non-diagnostic	T-wave inversion
Pts no.	192 (68.5%)	52 (18.5%)	36 (13%)
Tnt +	124	14	4
Tnt -	68	38	32
2DE+	142	22	14
2DE-	50	30	22
CAD+	140	28	14
CAD-	52	24	22
1V	70	12	12
2V	33	4	-
3V	35	12	-
LMCA	2	-	2
PTCA	94	14	12
CABG	38	14	2

Pts – patients; LMCA – left main coronary artery; PTCA – percutaneous transluminal coronary; CABG – coronary artery by-pass grafting; V – vessel; CAD – coronary angiography; (+) – positive; (-) – negative; Echo – echocardiogram; TnT – troponin T.

Table 3. Subgroup with ST-depression at entry ECG.

	CAD+	CAD-
Pts no. 192	140	52
Age (years) 61 ± 11.8		
TnT+, 2DE+	116	2
Tnt+, 2DE-	2	4
Tnt-, 2DE+	22	2
Tnt-, 2DE-	–	44
2DE+	138	4
TnT+ (>0.1–>1.0 ng/ml)	118	6
2DE-	2	42
TnT- (0.01–<0.1 ng/ml)	22	46

Table 4. Group of patients with T-wave inversion at entry ECG.

	CAD+	CAD-
Pts. no. 36	14	22
Age (years) 60.2 ± 12.4		
TnT+, 2DE+	4	—
TnT-, 2DE+	8	2
TnT-, 2DE-	2	20
2DE+	12	2
TnT+ (>0.1—>1.0 ng/ml)	4	—
2DE-	2	20
TnT- (0.01—<0.1 ng/ml)	10	22

2DE – echocardiogram; TnT – troponin T.

Table 5. Group of patients with non-diagnostic ECG at entry.

	CAD+	CAD-
Pts. no. 52	28	24
Age 58.25 ± 7.2	–	–
TnT–, 2DE+	10	–
TnT+, 2DE+	10	2
TnT+, 2DE–	–	2
TnT–, 2DE–	8	20
2DE+	20	2
TnT+ (>0.1–>1.0 ng/ml)	10	4
2DE–	8	22
TnT– (0.01–<0.1 ng/ml)	18	20

2DE – echocardiogram; TnT – troponin T.

- Sensitivity, Specificity and predictive values of the TNT, 2DE and their combination (TnT+ and 2DE+, and TnT+ plus 2DE+).

<u>ST-depression</u>	<u>TnT</u>	<u>2DE</u>	<u>2DE+ and TnT+</u>	<u>TnT + plus 2DE+</u>
• Sensitivity	84%	98%	82%	100%
• Specificity	88%	86%	96%	84%
• Pos. Pred. V.	95%	97%	98%	94%
• Neg. Pred.V.	67%	95%	67%	100%
<u>T-wave Inversion</u>				
• Sensitivity	28%	85%	28%	85%
• Specificity	100%	90%	100%	90%
• Pos.Pred. V	100%	85%	100%	85%
• Neg. Pred. V.	68%	90%	68%	90%
<u>Non diagnostic ECG</u>				
• Sensitivity	35%	71%	35%	71%
• Specificity	83%	91%	91%	83%
• Pos. Pred. V.	71%	90%	83%	83%
• Neg. Pred. V.	52%	73%	55%	71%

Table 7. Kendall concordance coefficient (W) vs. coronary artery angiography.

	ST-depression		T-wave-inversion		Non-Diagnostic ECG	
	W	P	W	P	W	P
TnT+	0.8497	<0.0001	0.7018	0.0066	0.6711	0.0061
2DE+	0.9459	<0.0001	0.8831	<0.0001	0.7879	<0.0001
TnT+ and 2DE	0.8484	<0.0001	0.7018	0.0066	0.6404	0.02
TnT+ plus 2DE	0.959	<0.0001	0.8831	<0.0001	0.8183	<0.0001

TnT and 2DE – troponin T and echocardiogram calculated as single test; TnT+ plus 2DE calculated as combination.

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**ACR Appropriateness Criteria[®] on Chest Pain,
Suggestive of Acute Coronary Syndrome**

US echocardiography transthoracic resting Primarily
for evaluating wall motion abnormalities and aortic
dissection.

Six-Month Echocardiographic Study in Patients With Submassive Pulmonary Embolism and Right Ventricle Dysfunction: Comparison of Thrombolysis With Heparin

Sergio Fasullo, MD, Sebastiano Scalzo, MD, Giorgio Maringhini, MD, Filippo Ganci, MD, Sergio Cannizzaro, MD, Ivana Basile, MD, Debora Cangemi, MD, Gabriella Terrazzino, MD, Gaspare Parrinello, MD, Filippo M. Sarullo, MD, Roberto Baglini, MD, Salvatore Paterna, MD and Pietro Di Pasquale, MD

TABLE 1. Baseline characteristics of the study population

	Heparin	Thrombolysis	<i>P</i>
N	35	37	NS
Age (yr)	57 ± 15.5	55 ± 16.7	NS
Sex M/F	20/15 (57/43)	21/16 (57/43)	NS
Respiratory rate (breaths/min)	25 ± 7	27 ± 8	NS
SBP (mm Hg)	121 ± 16	123 ± 18	NS
PO ₂ (mm Hg)	61.8 ± 8	62.3 ± 9	NS
PCO ₂ (mm Hg)	27 ± 3.7	28.9 ± 3.2	NS
pH	7.45 ± 0.07	7.44 ± 0.06	NS
HCO ₃ (mmol/L)	22.8 ± 0.05	23.1 ± 0.06	NS
SaO ₂ (air room)	89 ± 3	88 ± 2	NS
Heart rate (beats/min)	112 ± 12	115 ± 13	NS
Thoracic pain	32 (91)	34 (92)	NS
Syncope	1 (2.8)	2 (5.4)	NS
Cyanosis	29 (82.8)	33 (89.2)	NS
Sweats	7 (20)	8 (21.6)	NS
Jugular congest	31 (88.6)	32 (86.5)	NS
Helical computed tomography	35 (100)	37 (100)	NS
S 1-Q3	14 (40)	15 (40.5)	NS
cRBBB	4 (11.4)	5 (13.5)	NS
IRBBB	8 (22.8)	9 (24.3)	NS
I-T-W (V1-V2-V3)	9 (25.7)	8 (21.6)	NS
Echocardiograph: RV dysfunction	35 (100)	37 (100)	NS

Table 3: Echocardiographic data.

	Entry	24h	48h	72h	P<	
PSSM	35	31	24	14		heparin thrombolysis
PSSM	37	24	16	6		
P<	ns	0.1	0.25	0.46		
RVDmm	48 \pm 2.3	46 \pm 1.3	39 \pm 1.2	36 \pm 2.2	0.0001	heparin thrombolysis
RVDmm	49 \pm 2.4	42 \pm 2.1	35 \pm 1.2	28 \pm 1.1	0.0001	
P<	0.069	0.0001	0.0001	0.0001		
RV/LV	1.42\pm0.04	1.25 \pm 0.04	1.22 \pm 0.02	1.15 \pm 0.04	0.0001	heparin thrombolysis
RV/LV	1.41 \pm 0.05	1.12 \pm 0.04	1.03 \pm 0.02	1.01 \pm 0.02	0.0001	
P<	0.354	0.0001	0.0001	0.0001		
PH mmHg	58 \pm 19	53 \pm 16	47 \pm 11	43 \pm 9	0.0001	heparin thrombolysis
PH mmHg	57 \pm 18	45 \pm 13	38 \pm 7	35 \pm 7	0.0001	
P<	0.819	0.0001	0.0001	0.0001		
IVCmm	26.3 \pm 1.1	24.1 \pm 1.5	22.3 \pm 1.2	21.3 \pm 0.9	0.0001	heparin thrombolysis
IVCmm	26.2 \pm 1.4	22.6 \pm 1.3	20.6 \pm 1.0	18.2 \pm 0.6	0.0001	
P<	0.738	0.001	0.0001	0.0001		

PSSM=Paradoxical systolic septal motion.RVD=Right Ventricle diameter. TAPSE=Tricuspid Annular plane Systolic Excursion.

TABLE 4. Inhospital clinical events (first 10 d)

	Heparin, n (%)	Thrombolysis, n (%)	<i>P</i>
Death from all causes	5 (14.2)	0	0.055
Recurrent PE	3 (8.5)	0	NS
Irreversible RVD	2 (5.7)	0	NS
Major bleeding	1 (2.85)	2 (5.4)	NS
Minor bleedings	4 (11.4)	11 (29.7)	0.20
Number TnT positive	11 (31.4)	13 (35.1)	NS

RVD, right ventricle dysfunction; PE, pulmonary embolism.

Kaplan Meier curves according with combined endpoint

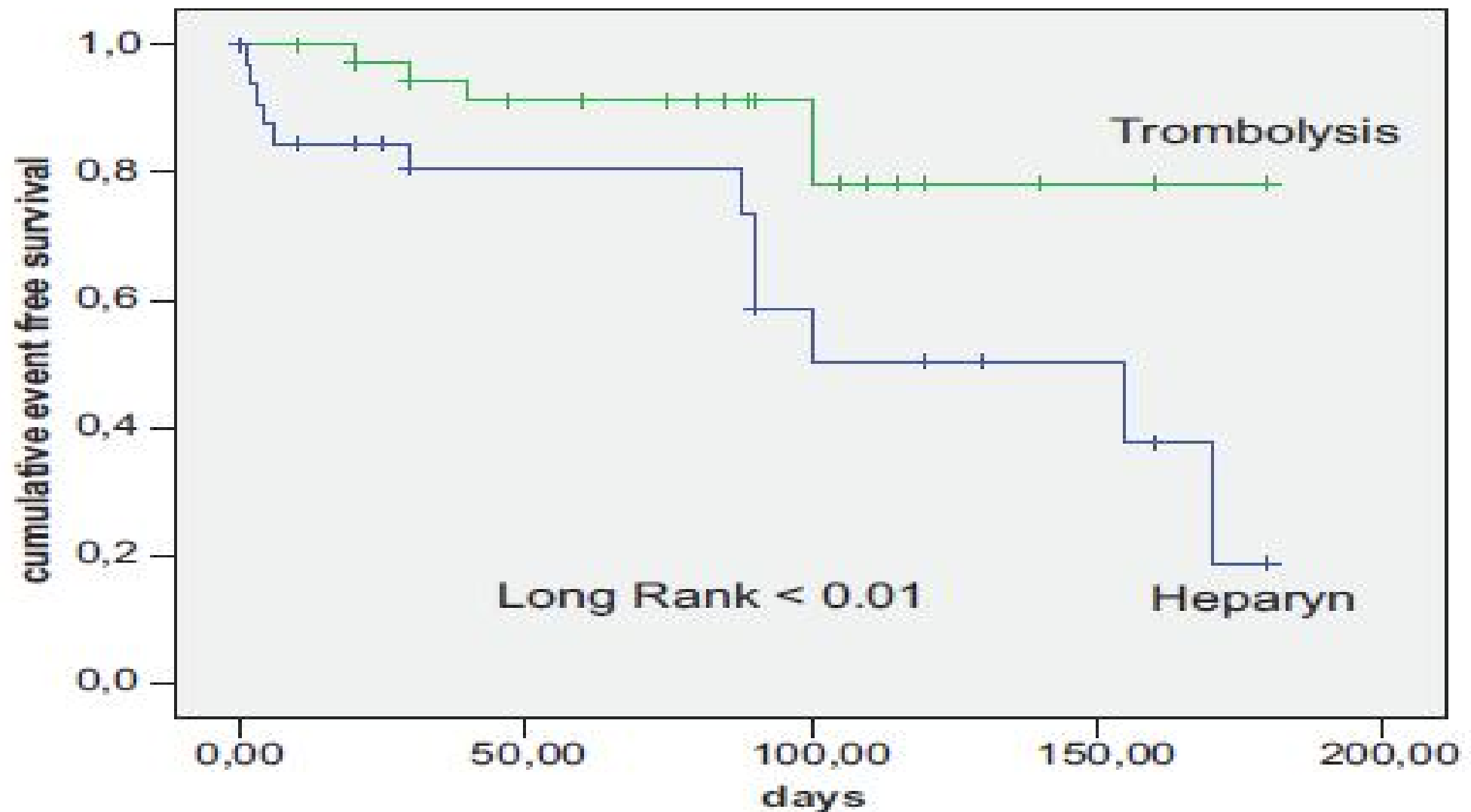


FIGURE 2. The Kaplan-Meier cumulative event curves for combined mortality and right ventricle dysfunction in the 2 groups during hospitalization and 180 days follow-up. Curves analysis show a beneficial effect of thrombolysis during the hospitalization and in the follow-up.

CHEST Supplement

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2012 SUPPLEMENT **e419S**

ANTITHROMBOTIC THERAPY AND PREVENTION OF
THROMBOSIS, 9TH ED: ACCP GUIDELINES

American College of Chest Physicians Evidence-
Based Clinical Practice Guidelines (8th Edition).



"Dr House" and co.



Thank You!

Questions?