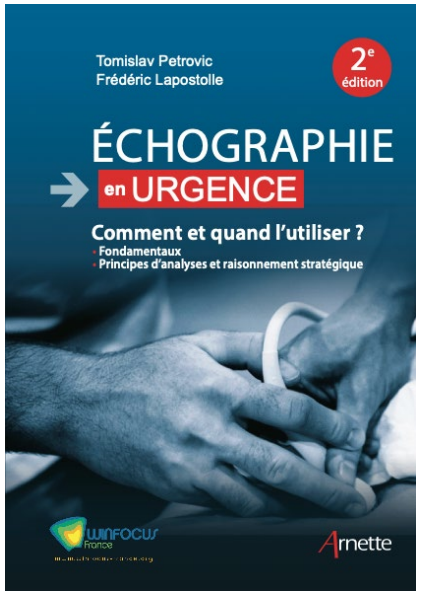
Disclosures

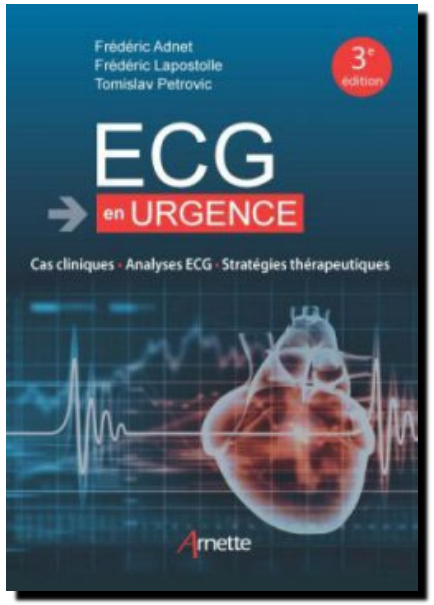
Conferences : Astra-Zeneca, Boehringer-Ingelheim, Mundipharma, Novartis, Nova-Biomedical, Serb, Teleflex

Investigator – Researsh : Astra-Zeneca, Boehringer-Ingelheim, Mundipharma, Novartis, Teleflex

FORMATION SANTÉ EDUPRAT

SFMU Société Française de Médecine d'Urgence





CARDIO RUN 2023

15ème CONGRÈS DE PATHOLOGIE CARDIO-VASCULAIRE

27-28-29 SEPTEMBRE 2023

Hôtel Saint Alexis ILE DE LA RÉUNION France

Frédéric Lapostolle

Urgences - SAMU 93, UF Recherche

Hôpital Avicenne, Bobigny & Université Paris 13


EUROPEAN
SOCIETY OF
CARDIOLOGY

ESC European Society of Cardiology

European Heart Journal (2017) **00**, 1–66
doi:10.1093/eurheartj/ehx393

ESC GUIDELINES

2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC)

Conflit d'intérêt

Borja Ibáñez Cabeza

4302 | Contact | Publons | ORCID | ScopusID

Translational Laboratory for Cardiovascular Imaging and Therapy

Borja Ibáñez holds a degree in medicine from the Universidad Complutense de Madrid and PhD from the Universidad Autónoma de Madrid. He completed his clinical fellowship in cardiology at the Fundacion Jimenez Diaz Hospital in Madrid, during which he became interested in clinical research, working mainly with invasive imaging techniques for the study of the atherothrombotic disease. After completing his training in clinical cardiology, he made a training period of three years in basic research at Mount Sinai in New York. His doctoral thesis focused on the study of the ability of HDL-cholesterol to stabilize atheroma plaques and their assessment using non-invasive imaging tools. Since returning to Spain, he combines his scientific activity in the CNIC with clinical activity in the Fundación Jimenez Diaz University hospital. His passion is the study of myocardial diseases, with a clear translational vocation. His research ranges from the study of the mechanisms responsible for the development of myocardial diseases, to clinical trials to test therapies identified by his group in preclinical studies. His clinical activity consists mainly in coronary interventions of patients suffering an acute myocardial infarction. To perform this translational research, he uses noninvasive imaging technology, mainly magnetic resonance, also including the development of new imaging algorithms to improve the use both on research and clinical levels.

Stefan James

Uppsala University Hospital, Uppsala, Sweden

Biography

Dr Stefan James is Professor of Cardiology at Uppsala University and Scientific Director of Uppsala Clinical Research Center. He is a Senior Interventional Cardiologist at Uppsala University Hospital Sweden. He graduated from Uppsala University Medical School and completed specialist training in Uppsala. He has previously held positions at the Karolinska Hospital, the University Hospital Örebro and Duke Clinical Research Institute, Duke University.

ESC European Society of Cardiology

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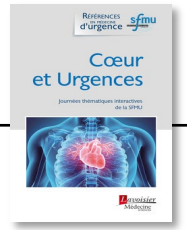
Authors/Task Force Members: Borja Ibanez* (Chairperson) (Spain), Stefan James* (Chairperson) (Sweden), Stefan Agewall (Norway), Manuel J. Antunes (Portugal), Chiara Bucciarelli-Ducci (UK), Héctor Bueno (Spain), Alida L. P. Caforio (Italy), Filippo Crea (Italy), John A. Goudevenos (Greece), Sigrun Halvorsen (Norway), Gerhard Hindricks (Germany), Adnan Kastrati (Germany), Mattie J. Lenzen (The Netherlands), Eva Prescott (Denmark), Marco Roffi (Switzerland), Marco Valgimigli (Switzerland), Christoph Varenhorst (Sweden), Pascal Vranckx (Belgium), Petr Widimský (Czech Republic)

Filière de soins

Education | Appel précoce SAMU-Centre 15 | Régulation de qualité | Médicalisation SMUR | Stratégie de reperfusion | Traitements adjuvants | Salle de KT USIC



Lapostolle, SFMU, 2019

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Endorsed by cardiac societies

Armenian Cardiologists Association , Austrian Society of Cardiology , Belgian Society of Cardiology , Belorussian Scientific Society of Cardiologists , Association of Cardiologists of Bosnia & Herzegovina , Bulgarian Society of Cardiology , Croatian Cardiac Society , Czech Society of Cardiology , Danish Society of Cardiology , Egyptian Society of Cardiology , Estonian Society of Cardiology , Finnish Cardiac Society , French Society of Cardiology , Georgian Society of Cardiology , German Cardiac Society , Hellenic Society of Cardiology , Hungarian Society of Cardiology , Italian Federation of Cardiology , Association of Cardiologists of Kazakhstan , Latvian Society of Cardiology , Lithuanian Society of Cardiology , Maltese Cardiac Society , Moroccan Society of Cardiology , Norwegian Society of Cardiology , Polish Cardiac Society , Portuguese Society of Cardiology , Romanian Society of Cardiology , Russian Society of Cardiology , San Marino Society of Cardiology , Cardiology Society of Serbia , Slovak Society of Cardiology , Spanish Society of Cardiology , Swedish Society of Cardiology , Swiss Society of Cardiology , Turkish Society of Cardiology

ESC Committee for Practice Guidelines (CPG) and National Cardiac Societies document reviewers: listed in the Appendix.

ESC entities having participated in the development of this document:
Associations: Acute Cardiovascular Care Association (ACCA), European Association of Preventive Cardiology (EAPC), European Association of Cardiovascular Imaging (EACVI), European Association of Percutaneous Cardiovascular Interventions (EAPCI), European Heart Rhythm Association (EHRA), Heart Failure Association (HFA).
Councils: Council on Cardiovascular Nursing and Allied Professions (CCNAP), Council for Cardiology Practice (CCP).
Working Groups: Cardiovascular Pharmacotherapy, Cardiovascular Surgery, Coronary Pathophysiology and Microcirculation, Myocardial and Pericardial Diseases, Thrombosis.

Physiopathologie

Physiopathologie

EXPERIMENTAL STUDIES ON THE EFFECT OF TEMPORARY OCCLUSION OF CORONARY ARTERIES

II. The Production of Myocardial Infarction

Herrman L. Blumgart, M.D., D. Rourke Gilligan, M.S., and Monroe J. Schlesinger, M.D.
Boston, Mass.

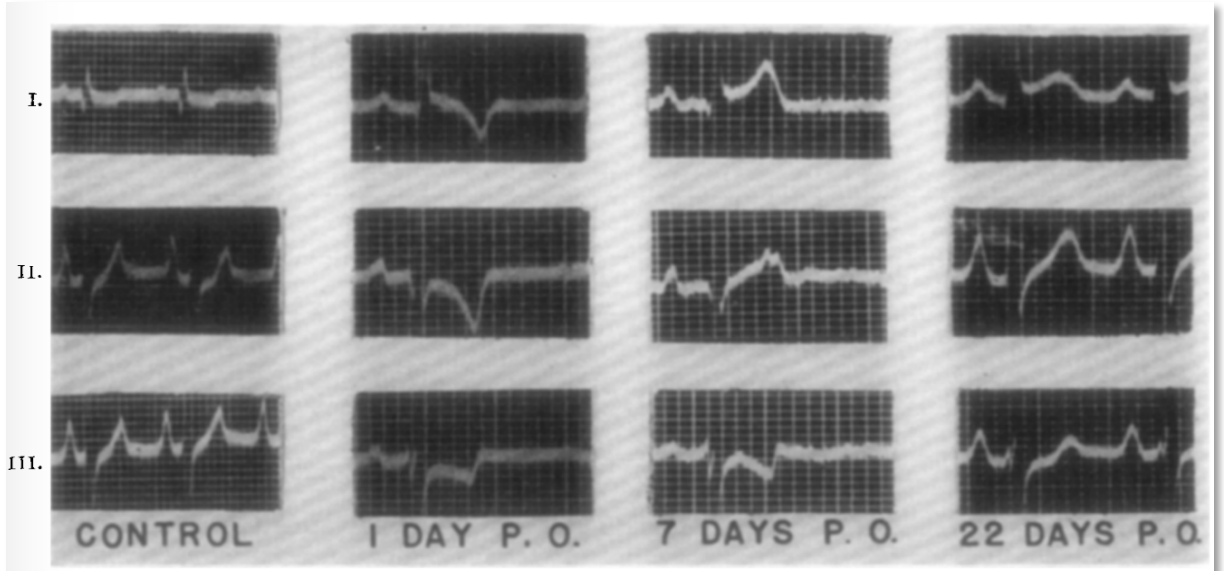


Fig. 1.—Dog 7. Electrocardiograms taken before, and one, seven, and twenty-two days after, a twenty-minute occlusion of a branch of the left anterior descending coronary artery.

Effects of Temporary Coronary Arterial Occlusion on Dogs

Dog No.	Artery Occluded	Duration of Occlusion (Min.)	Persistent Electrocardiographic Abnormalities*	Duration of Electrocardiographic Abnormalities (Days)	Sacrifice of Animal (Time Postoperatively)	Myocardial Lesions: Gross Evidences‡	Myocardial Lesions: Microscopic Evidences
Animals Sacrificed 4 to 40 Days Postoperatively							
14	LC	5	+	4	4 days†	0	
15	LC	10	0		34 days	0	0
17	LC	10	0		40 days	0	0
13	LC	10	+	11	11 days	0	0
7	LAD(B)	20	+	22	22 days	0	0
19	LC	20	+	12	34 days	0	+
21	LC	20	+	2¶	4 days†	0	
22	LC	25	+	10	22 days	+	+
23	LC	30	0		22 days	+	+
3	LAD	30	0		8 days	0	0
9	LAD(B)	30	+	14	14 days	+	+
26	R(B)	35	+	7	13 days	0	+
8	LAD(B)	40	+	18	18 days	+	+
29	LC	45	0		7 days	++	+
27	LC	45	+	10	13 days	++	+
53	LC	45	0		14 days	0	0
54	LC	45	+	14	17 days	++	+
55	LC	45	+	16	16 days	++	+
Sacrificed 4.5 to 28 Hours Postoperatively							
51	LC	15	0		20 hours	Edema	0
52	LC	15	+		28 hours	Edema	0
58	LC	20	0		24 hours	0	0
61	LC	20	0		26 hours	0	+
62	LC	30			4.5 hours	0	0
63	LC	15			5 hours	0	0
69	LC	45			4.5 hours	0	0
70	LC	45			4.5 hours	0	0

Physiopathologie

The Wavefront Phenomenon of Ischemic Cell Death

1. Myocardial Infarct Size vs Duration of Coronary Occlusion in Dogs

KEITH A. REIMER, M.D., PH.D., JAMES E. LOWE, M.D.,
MARGARET M. RASMUSSEN, M.D., PH.D., AND ROBERT B. JENNINGS, M.D.

Circulation, 1977

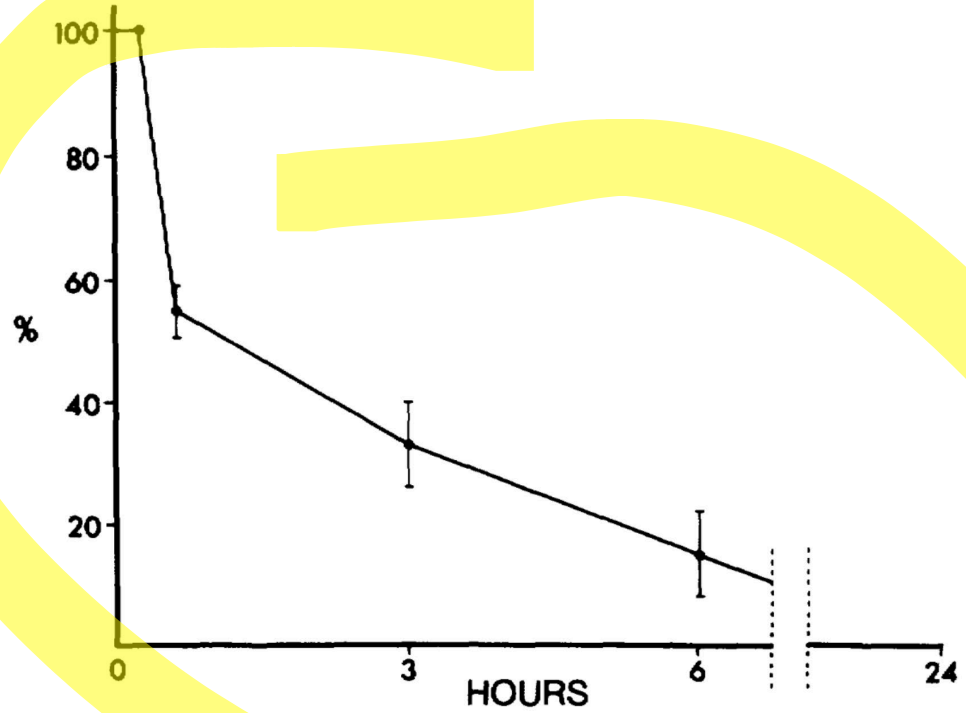
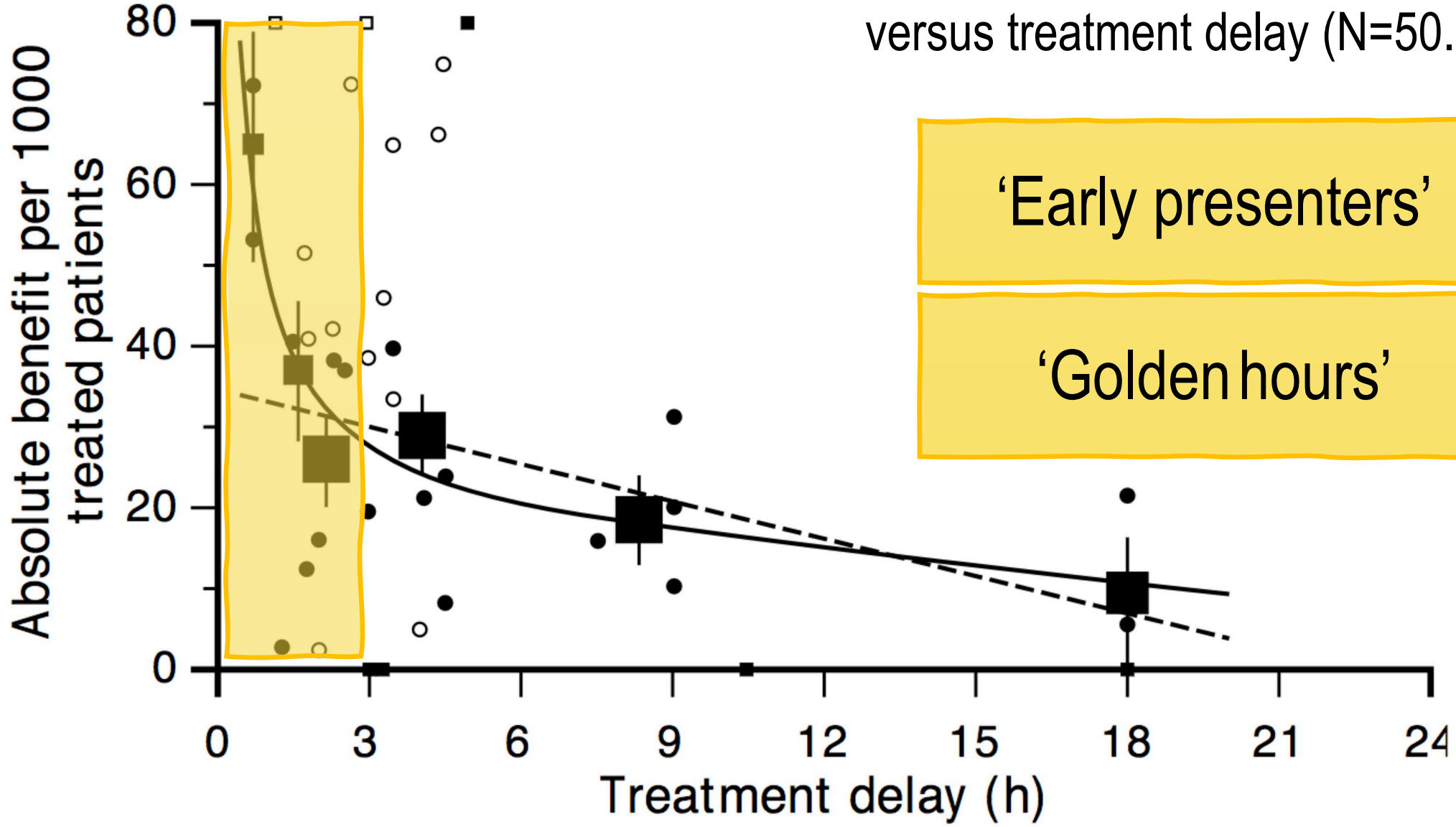


FIGURE 11. *Proportion of ischemic muscle which is viable and potentially salvageable as a function of time after coronary occlusion. Data are plotted as a percent of 24 hour infarct size.*

Absolute 35-day mortality reduction versus treatment delay (N=50.246)



‘Early presenters’

‘Golden hours’

Boersma, *Lancet*, 1996

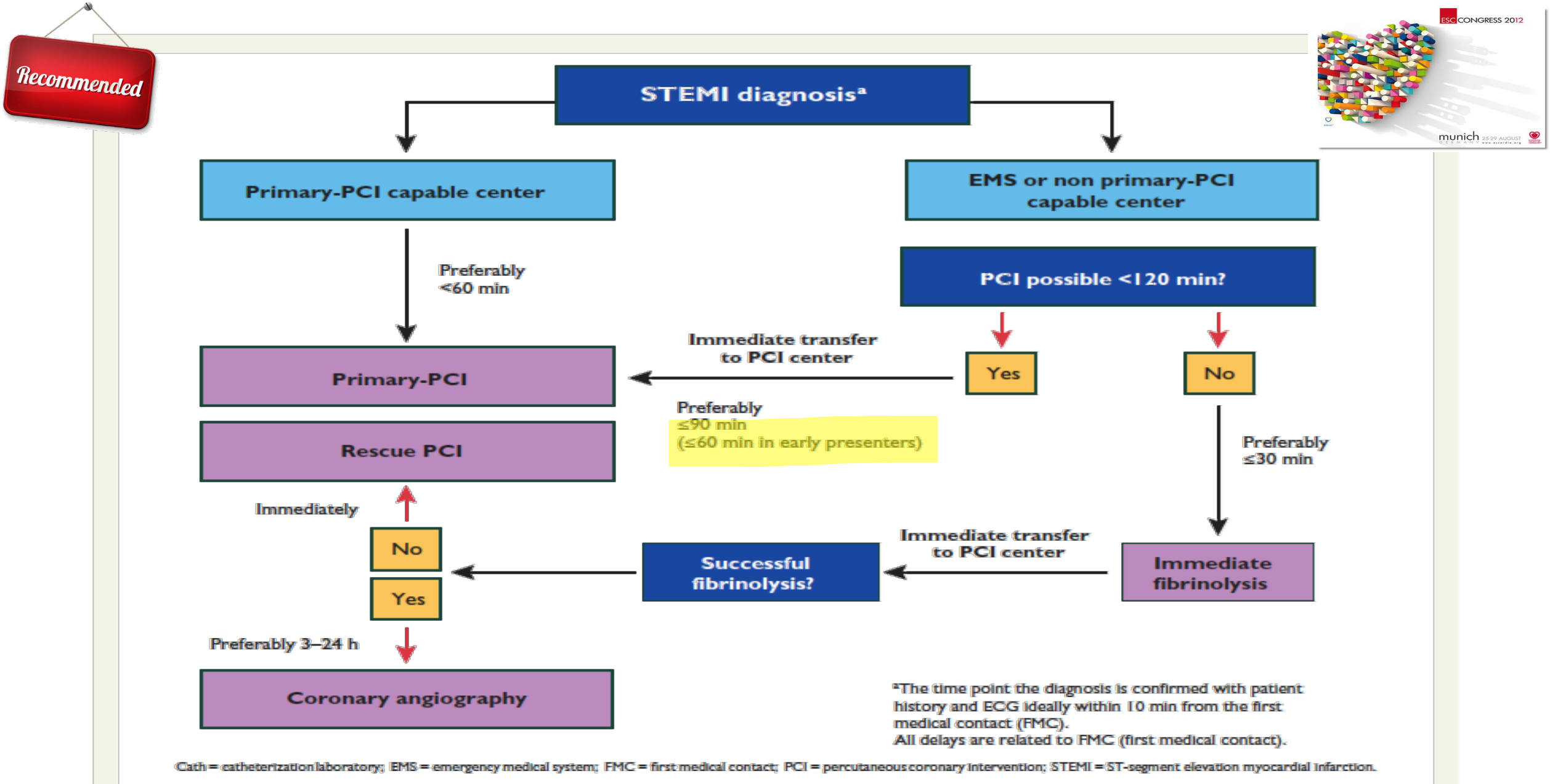


Figure 2 Prehospital and in-hospital management, and reperfusion strategies within 24 h of FMC (adapted from Wijns *et al.*).[4]

Steg, *Eur Heart J*, 2012

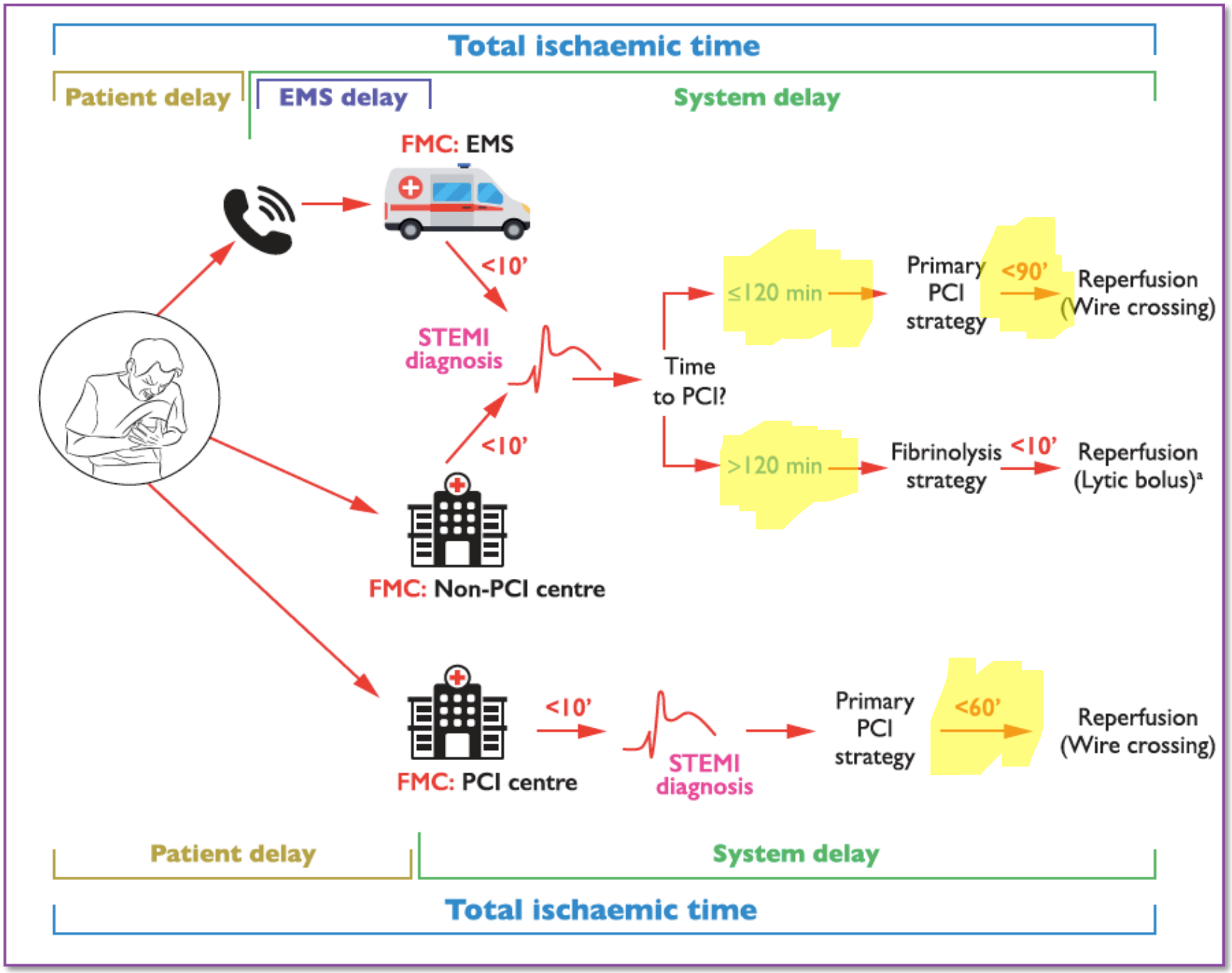


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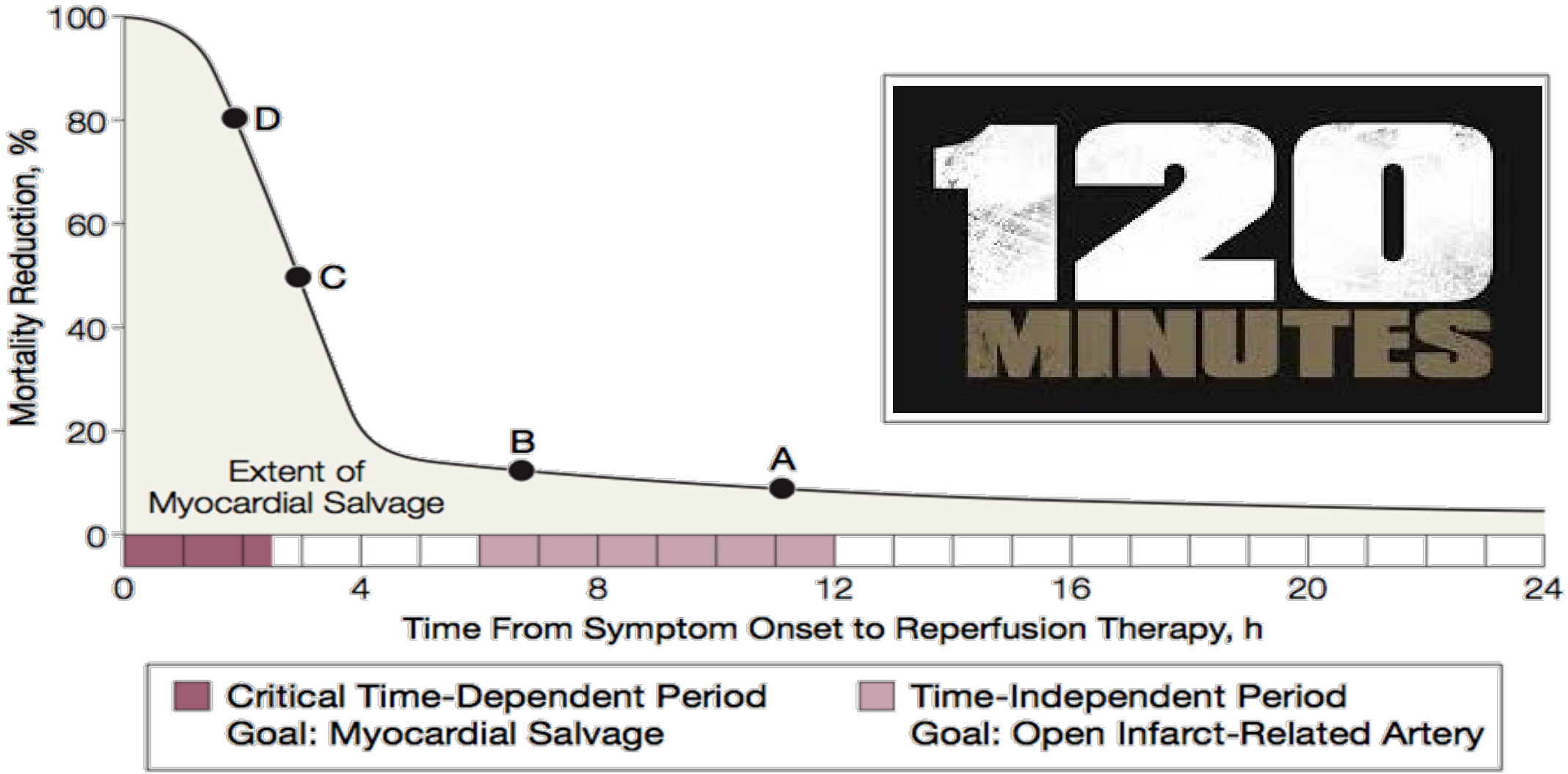
Figure. Hypothetical Construct of the Relationship Among the Duration of Symptoms of Acute MI Before Reperfusion Therapy, Mortality Reduction, and Extent of Myocardial Salvage



Gersh, *JAMA*, 2005

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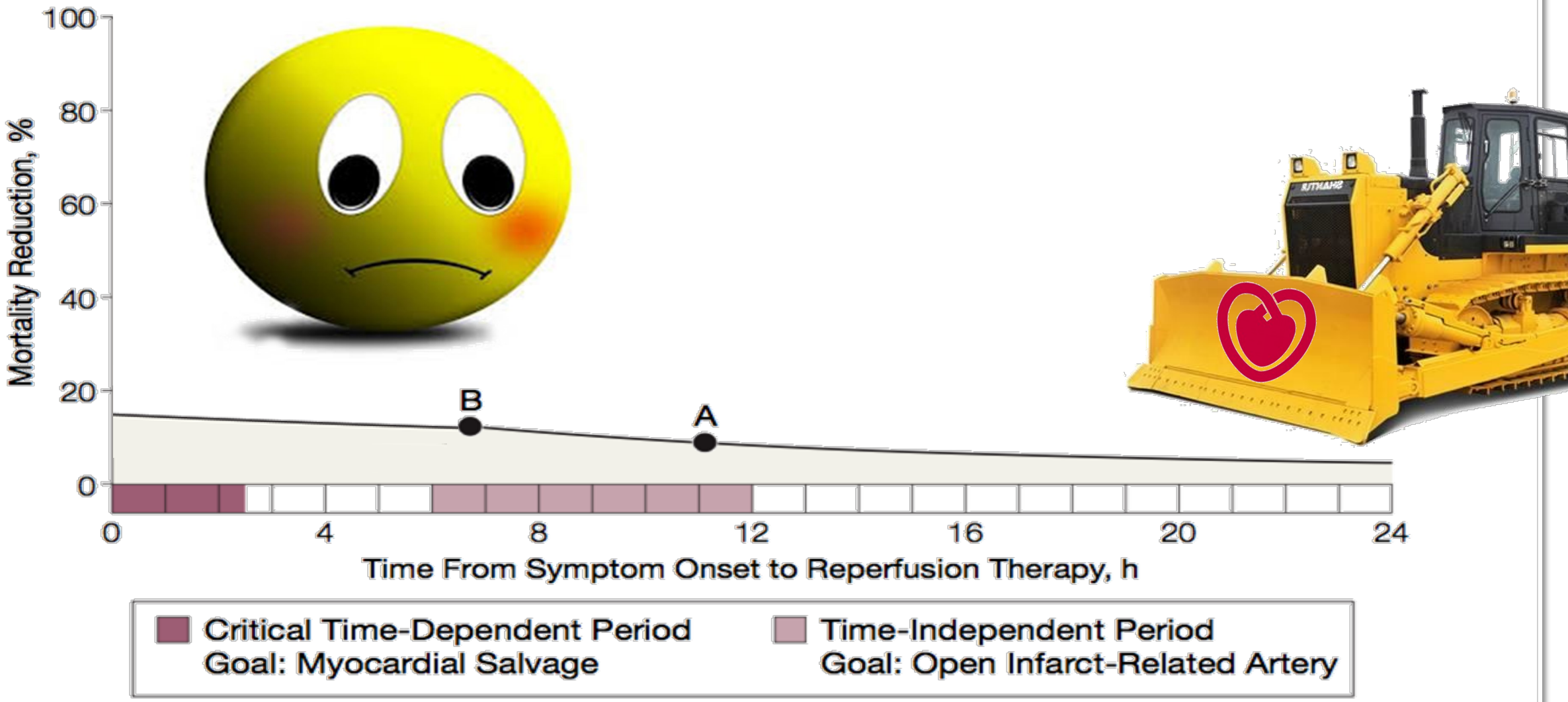
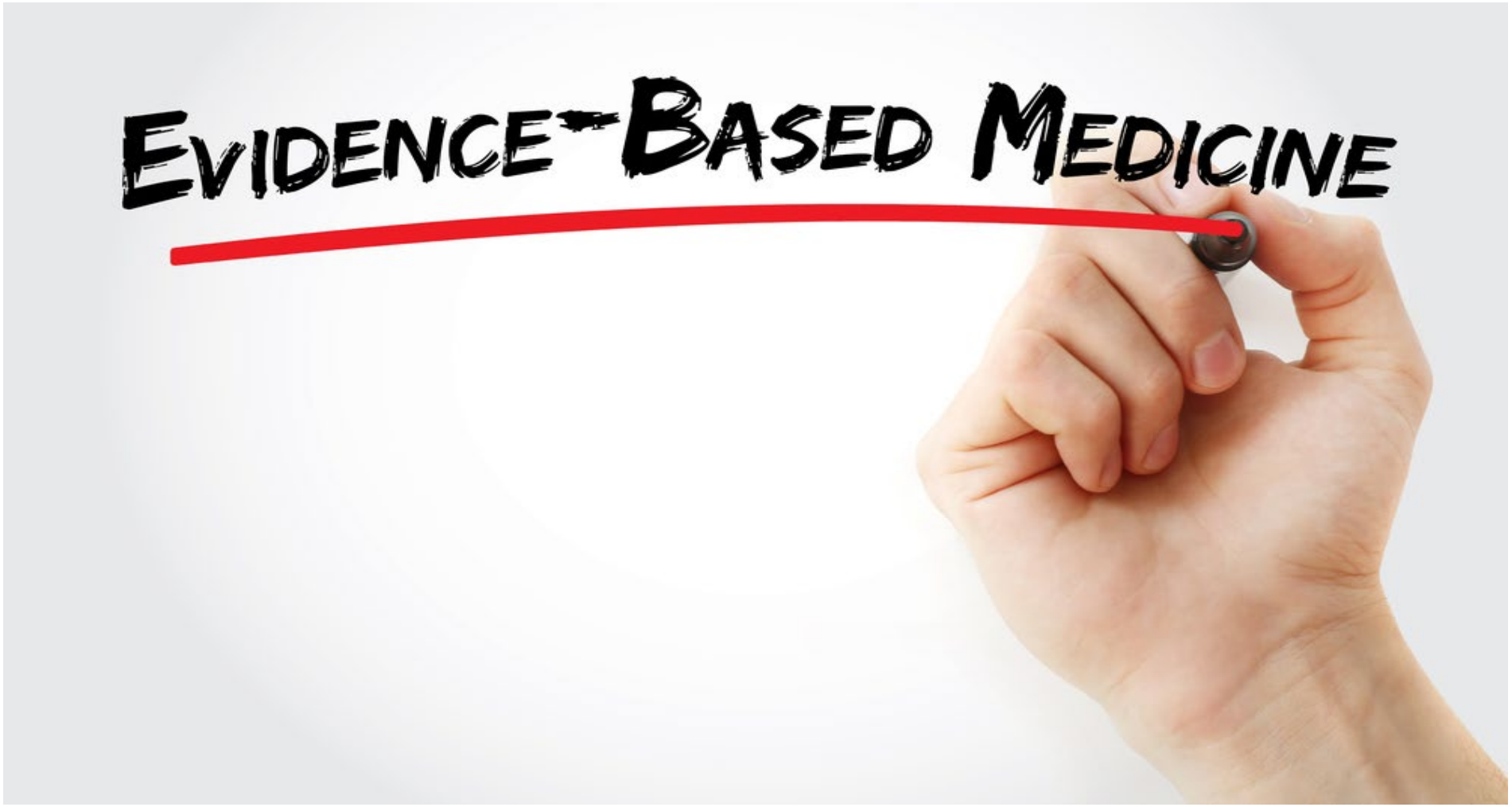


Gersh, *JAMA*, 2005

outcomes. This Task Force recognizes the lack of contemporaneous data to set the limit to choose PCI over fibrinolysis. For simplicity, an absolute time from STEMI diagnosis to PCI-mediated reperfusion [i.e. wire crossing of the infarct-related artery (IRA)] rather than a relative PCI-related delay over fibrinolysis has been chosen. This limit is set to 120 min. Given the maximum limit of 10 min from STEMI diagnosis to bolus of fibrinolytics (see below), the 120 min absolute time would correspond to a PCI-related delay in the range of 110–120 min, being in the range of the times identified in old studies and registries as the limit delay to choose PCI.[107,117–120]

Evidence Based Medicine - EBM



Niveau de recommandations

Classe I	‘’il est recommandé / il est indiqué”
Classe IIa	‘’doit être considéré”
Classe IIb	‘’peut être considéré”

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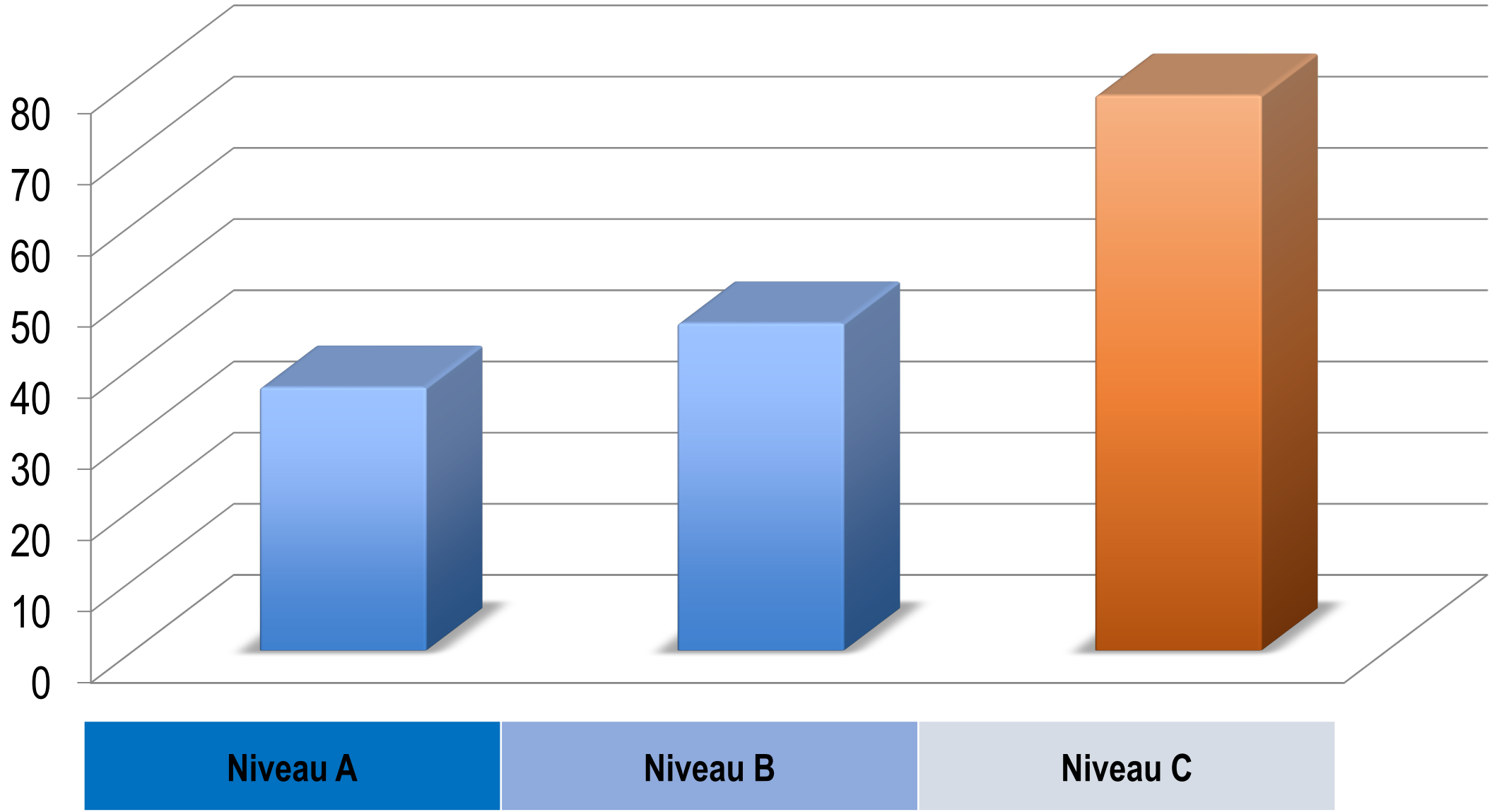
Classe IIb	‘’peut être considéré”

Niveau de preuves

Niveau A	Données issues de multiples essais cliniques randomisés ou méta-analyses
Niveau B	Données issues d’un seul essai clinique randomisé ou de grandes études non randomisées
Niveau C	Consensus d’experts et/ou petites études, études rétrospectives, registres

161 recommandations



Anticoagulant therapy		
Anticoagulation is recommended for all patients in addition to antiplatelet therapy during primary PCI.	I	C
In patients with heparin-induced thrombocytopenia, bivalirudin is recommended as the anticoagulant agent during primary PCI.	I	C
Routine use of enoxaparin i.v. should be considered.[200–202]	IIa	A
Routine use of bivalirudin should be considered.[209,215]	IIa	A
Fondaparinux is not recommended for primary PCI.[199]	III	B

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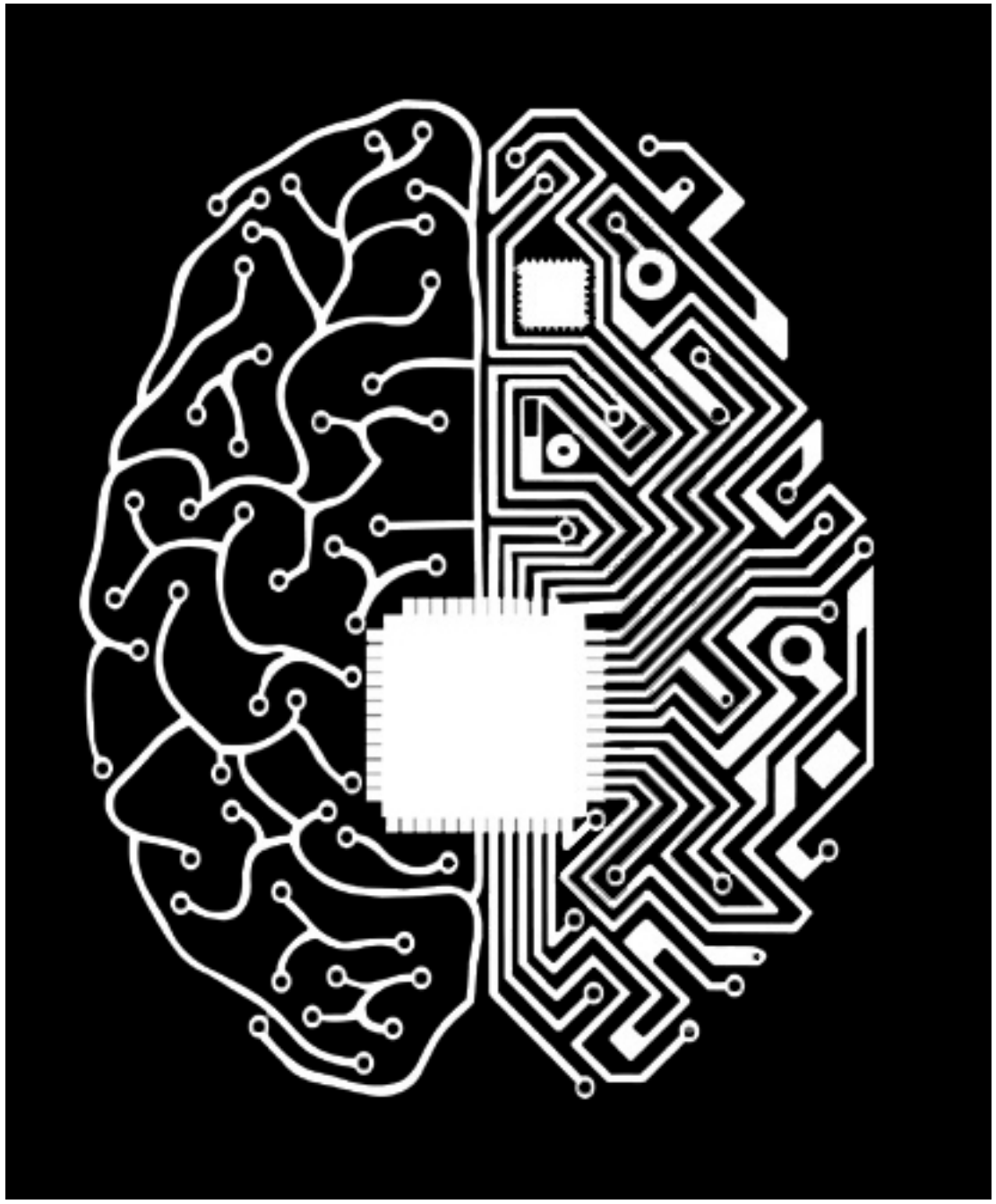

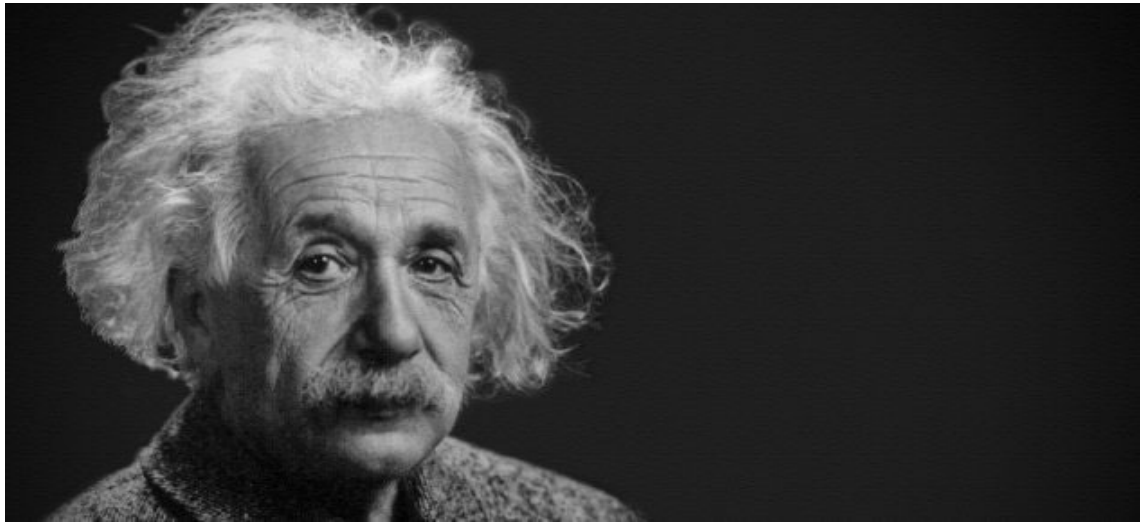

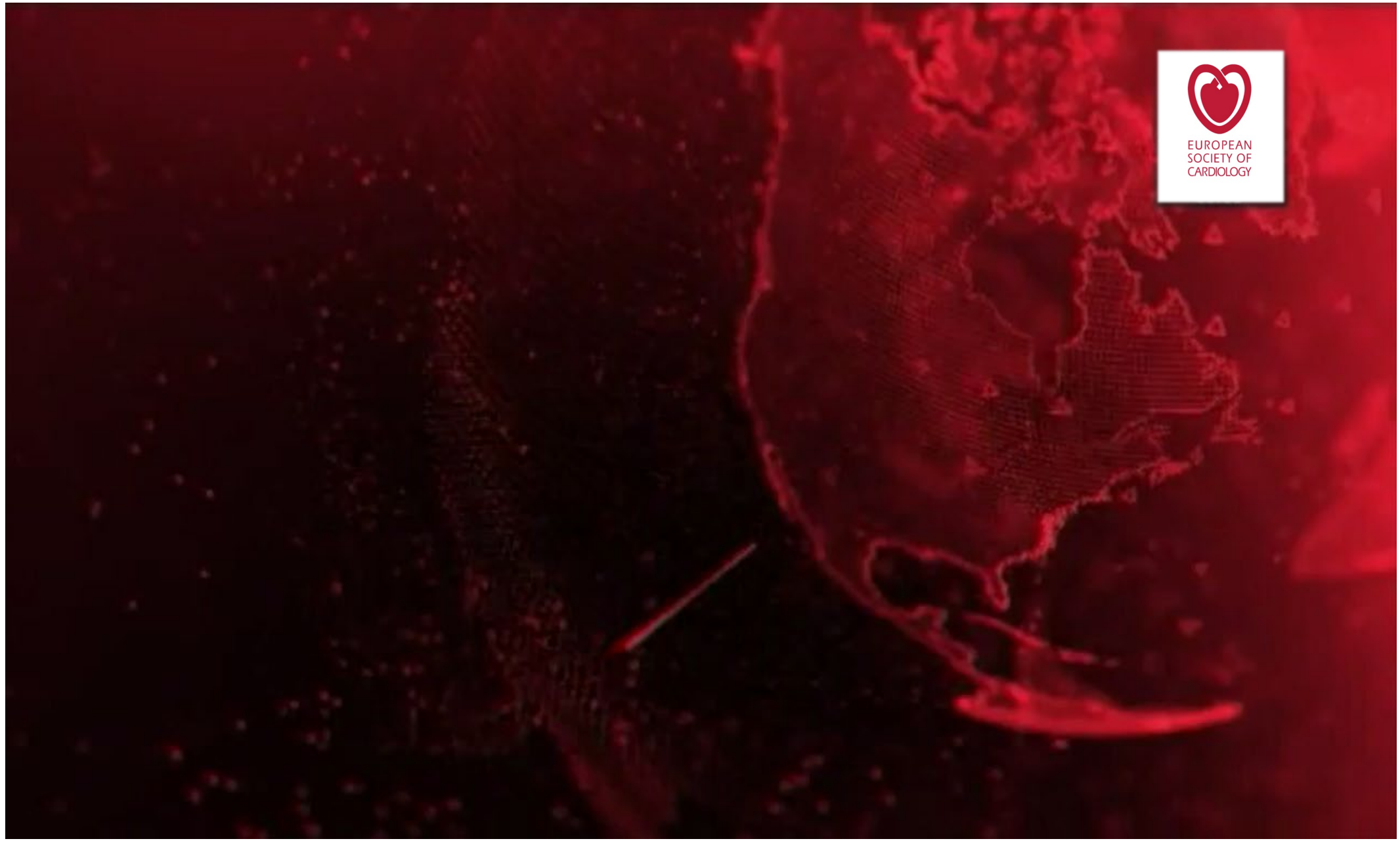
EUROPEAN
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2023 ESC Guidelines for the Management of Acute Coronary Syndromes

Speaker: Robert Byrne (Mater Private Hospital - Dublin, Ireland) robebyrne

Speaker: Borja Ibanez (National Centre for Cardiovascular Research CNIC AND Fundacion Jimenez Diaz Hospital - Madrid, Spain) Borjaibanez1

Time: 09:30

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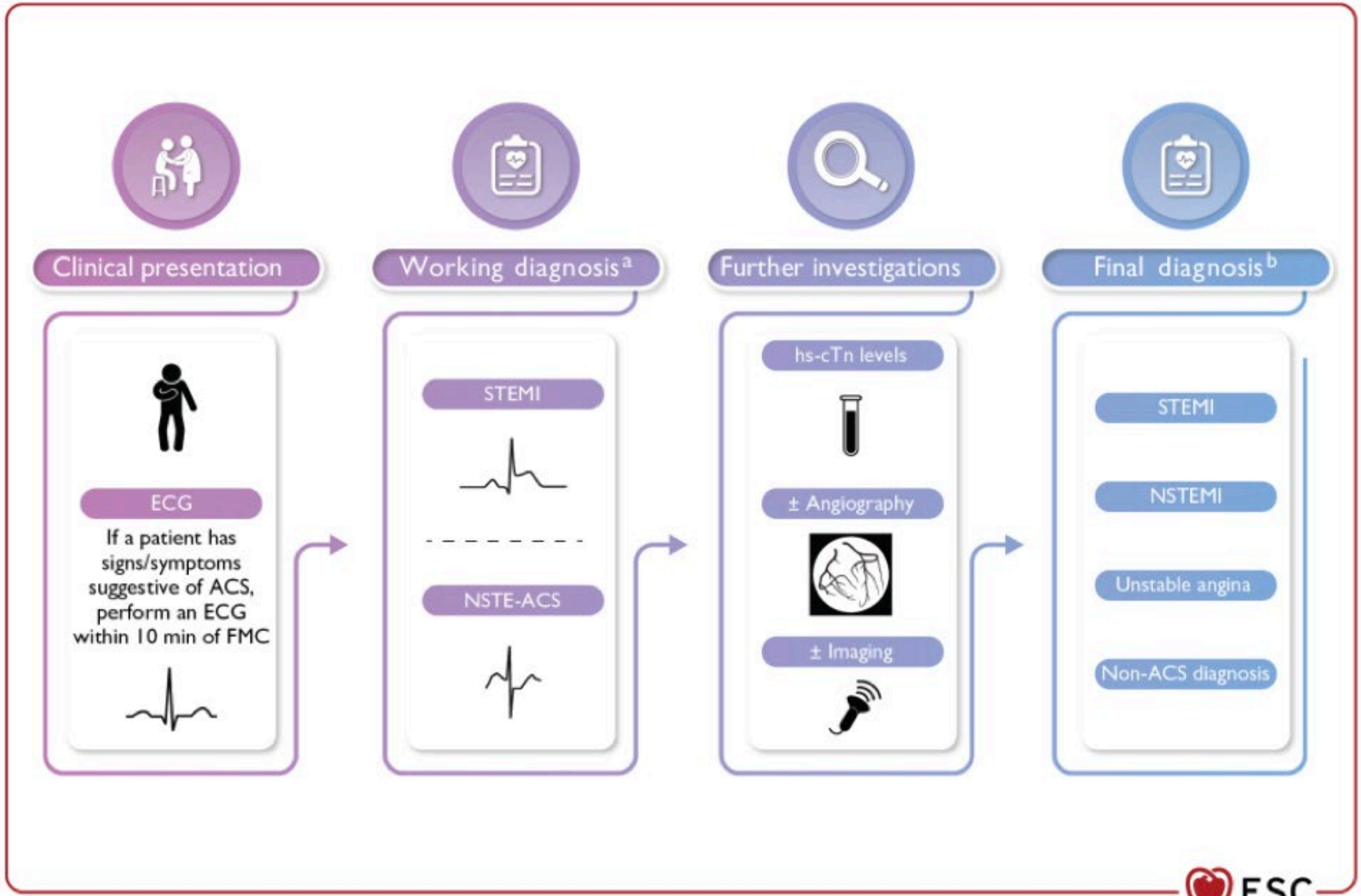

Clinical presentation
ECG
If a patient has signs/symptoms suggestive of ACS, perform an ECG within 10 min of FMC
Working diagnosis[a]
STEMI
NSTE-ACS
Further investigations
hs-cTn levels
± Angiography
± Imaging
Final diagnosis[b]
STEMI
NSTEMI
Unstable angina
Non-ACS diagnosis
ESC

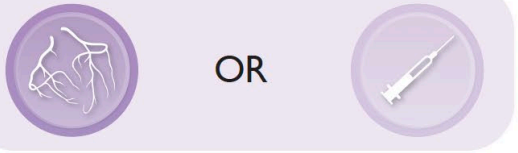
ACS encompasses a spectrum

Unstable angina | NSTEMI | STEMI

1 Think 'A.C.S.' at initial assessment

2 Think invasive management

STEMI



Primary PCI OR Fibrinolysis (If timely primary PCI not feasible)

Very high-risk NSTE-ACS

Immediate angiography ± PCI

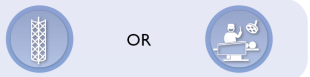
High-risk NSTE-ACS

Early (<24 h) angiography should be considered

NSTE-ACS

4 Think revascularization

Based on clinical status, co-morbidities, and disease complexity



PCI OR CABG

Aim for complete revascularization

Consider adjunctive tests to guide revascularization

Intravascular imaging | Intravascular physiology

5 Think secondary prevention

Antithrombotic therapy | Lipid lowering therapy | Smoking cessation | Cardiac rehabilitation | Risk factor management | Psychosocial considerations

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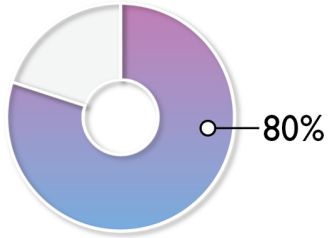
Chest pain
or pressure



of women and men with ACS
present with chest pain or pressure

Diaphoresis

Epigastric pain/
Indigestion

Shoulder/
Arm pain

Other symptoms, like diaphoresis, indigestion/epigastric pain and shoulder/arm pain occur commonly in both women and men with ACS

Dizziness

Nausea/
Vomiting

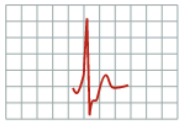
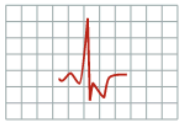
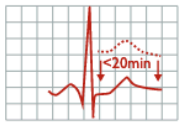
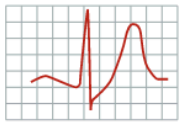
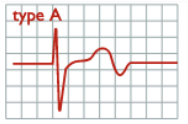
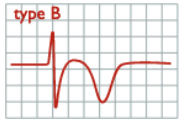
Jaw/Neck
pain

Shortness
of breath

Some symptoms may be more common in women with ACS, including:

- Dizziness/Syncope
- Nausea/Vomiting
- Jaw/Neck pain
- Shortness of breath
- Pain between the shoulder blades
- Palpitations
- Fatigue

ESC

ECG pattern	Criteria	Signifying	Figure
a Isolated T-wave inversion	T-wave inversion >1 mm in ≥5 leads including I, II, aVL, and V2–V6	Only mildly impaired prognosis	 I, II, aVL,or V2 to V6
b ST-segment depression	J point depressed by ≥0.05 mm in leads V2 and V3 or ≥1 mm in all other leads followed by a horizontal or downsloping ST-segment for ≥0.08 s in ≥1 leads (except aVR)	More severe ischaemia	 ≥ 1 leads  ≥ 1 leads
c Transient ST-segment elevation	ST segment elevation in ≥2 contiguous leads of ≥2.5 mm in men <40 years, ≥2 mm in men ≥ 40 years, or ≥1.5 mm in women regardless of age in leads V2–V3 and/or ≥1 mm in the other leads lasting <20 min	Only mildly impaired prognosis	 ≥ 2 contiguous leads
d De Winter ST-T	1–3 mm upsloping ST-segment depression at the J point in leads V1–V6 that continue into tall, positive, and symmetrical T waves	Proximal LAD occlusion/ severe stenosis	 V1–V6
e Wellens sign	Isoelectric or minimally elevated J point (<1 mm) + biphasic T wave in leads V2 and V3 (type A) or symmetric and deeply inverted T waves in leads V2 and V3, occasionally in leads V1, V4, V5, and V6 (type B)	Proximal LAD occlusion/ severe stenosis	 (V1-)V2-V3(-V4)  (V1-)V2-V3(-V4)

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Developed by the task force on the management of acute coronary syndromes of the European Society of Cardiology (ESC)

ESC National Cardiac Societies actively involved in the review process of the 2023 ESC Guidelines for the management of acute cor- onary syndromes:

Algeria: Algerian Society of Cardiology, Mohammed El Amine Bouzid; **Armenia:** Armenian Cardiologists Association, Hamlet Hayrapetyan; **Austria:** Austrian Society of Cardiology, Bernhard Metzler; **Belgium:** Belgian Society of Cardiology, Patrizio Lancellotti; **Bosnia and Herzegovina:** Association of Cardiologists of Bosnia and Herzegovina, Mugdim Bajrić; **Bulgaria:** Bulgarian Society of Cardiology, Kiril Karamfiloff; **Cyprus:** Cyprus Society of Cardiology, Andreas Mitsis; **Czechia:** Czech Society of Cardiology, Petr Ostadal; **Denmark:** Danish Society of Cardiology, Rikke Sørensen; **Egypt:** Egyptian Society of Cardiology, Tamer Elwasify; **Estonia:** Estonian Society of Cardiology, Toomas Marandi; **Finland:** Finnish Cardiac Society, Essi Ryödi; **France:** French Society of Cardiology, Jean-Philippe Collet; **Georgia:** Georgian Society of Cardiology, Archil Chukhrukidze; **Germany:** German Cardiac Society, Julinda Mehilli; **Greece:** Hellenic Society of Cardiology, Periklis Davlouros; **Hungary:** Hungarian Society of Cardiology, Dávid Becker; **Iceland:** Icelandic Society of Cardiology, Ingibjörg Jóna Guðmundsdóttir; **Ireland:** Irish Cardiac Society, James Crowley; **Israel:** Israel Heart Society, Yigal Abramowitz; **Italy:** Italian Federation of Cardiology, Ciro Indolfi; **Kazakhstan:** Association of Cardiologists of Kazakhstan, Orazbek Sakhov; **Kosovo (Republic of):** Kosovo Society of Cardiology, Shpend Elezi; **Kyrgyzstan:** Kyrgyz Society of Cardiology, Medet Beishenkulov; **Latvia:** Latvian Society of Cardiology, Andrejs Erglis; **Lebanon:** Lebanese Society of Cardiology, Nicolas Moussallem; **Libya:** Libyan Cardiac Society, Hisham Benlamin; **Lithuania:** Lithuanian Society of Cardiology, Olivija Dobilienė; **Luxembourg:** Luxembourg Society of Cardiology, Philippe Degrell; **Malta:** Maltese Cardiac Society, Matthew Mercieca Balbi; **Moldova (Republic of):** Moldavian Society of Cardiology, Aurel Grosu; **Morocco:** Moroccan Society of Cardiology, Zouhair Lakhal; **Netherlands**: Netherlands Society of Cardiology, Jurriën ten Berg; **North Macedonia**: The National Society of Cardiology of North Macedonia, Hristo Pejkov; **Norway:** Norwegian Society of Cardiology, Kristin Angel; **Poland:** Polish Cardiac Society, Adam Witkowski; **Portugal:** Portuguese Society of Cardiology, Manuel De Sousa Almeida; **Romania:** Romanian Society of Cardiology, Ovidiu Chioncel; **San Marino:** San Marino Society of Cardiology, Luca Bertelli; **Serbia:** Cardiology Society of Serbia, Sinisa Stojkovic; **Slovakia:** Slovak Society of Cardiology, Martin Studenčan; **Slovenia:** Slovenian Society of Cardiology, Peter Radšel; **Spain:** Spanish Society of Cardiology, Jose Luis Ferreiro; **Sweden:** Swedish Society of Cardiology, Annica Ravn-Fischer; **Switzerland:** Swiss Society of Cardiology, Lorenz Räber; **Syrian Arab Republic:** Syrian Cardiovascular Association, Mohammed Yassin Bani Marjeh; **Tunisia:** Tunisian Society of Cardiology and Cardiovascular Surgery, Majed Hassine; **Türkiye:** Turkish Society of Cardiology, Aylin Yildirir; **Ukraine:** Ukrainian Association of Cardiology, Alexander Parkhomenko; **United Kingdom of Great Britain and Northern Ireland:** British Cardiovascular Society, Adrian Paul Banning.

Associations: Association of Cardiovascular Nursing & Allied Professions (ACNAP), Association for Acute CardioVascular Care (ACVC), European Association of Cardiovascular Imaging (EACVI), European Association of Preventive Cardiology (EAPC), European Association of Percutaneous Cardiovascular Interventions (EAPCI), European Heart Rhythm Association (EHRA), and Heart Failure Association (HFA).

ESC European Society of Cardiology
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ESC GUIDELINES

2023 ESC Guidelines for the management of acute coronary syndromes

Developed by the task force on the management of acute coronary syndromes of the European Society of Cardiology (ESC)

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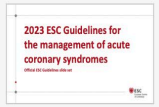

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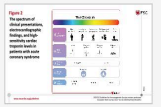

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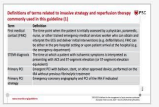

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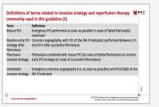

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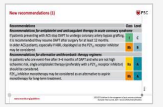

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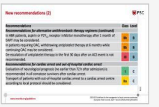

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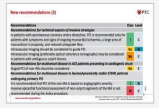

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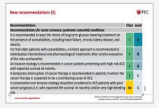

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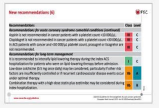

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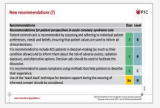

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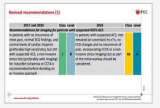

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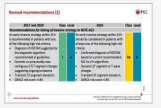

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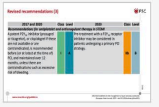

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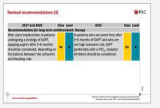

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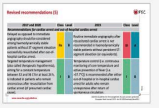

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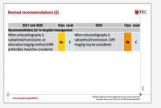

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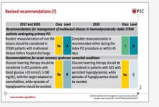

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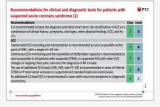

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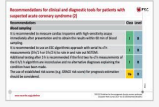

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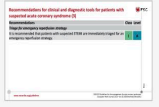

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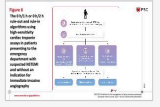

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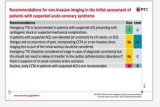

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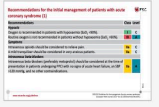

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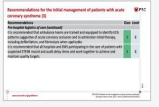

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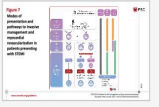

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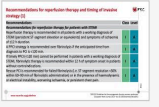

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N=190	Class I	Class II a-b	Class III
Level A			
Level B			
Level C			

N=190	Class I	Class II a-b	Class III
Level A			
Level B			
Level C			
	104	69	17

N=190	Class I	Class II a-b	Class III
Level A	33%	23%	35%
Level B	32%	38%	39%
Level C	**36%**	**39%**	**35%**
	104	69	17

	Class I	Class II a-b	Class III
Level A	34 sur 190 **18%**		
Level B			
Level C	**Les avis d'experts prédominent !**		
	104	69	17

Table 5 **Revised recommendations**

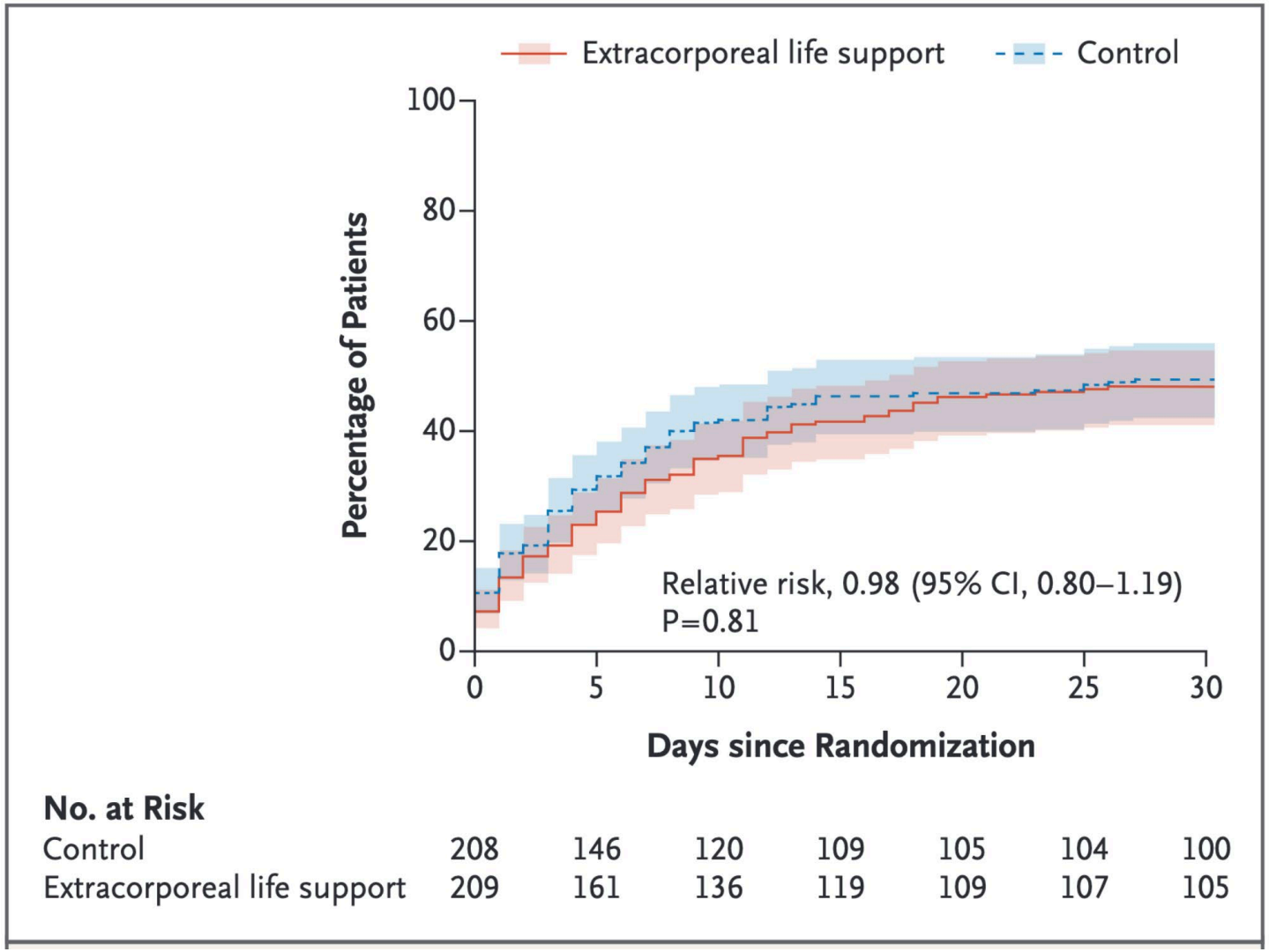
Recommendations in 2017 and 2020 versions	Class[a]	LoE[b]	Recommendations in 2023 version	Class[a]	LoE[b]
Recommendations for imaging for patients with suspected NSTE-ACS					
In patients with no recurrence of chest pain, normal ECG findings, and normal levels of cardiac troponin (preferably high sensitivity), but still with suspected ACS, a non-invasive stress test (preferably with imaging) for inducible ischaemia or CCTA is recommended before deciding on an invasive approach.	I	B	In patients with suspected ACS, non-elevated (or uncertain) hs-cTn, no ECG changes and no recurrence of pain, incorporating CCTA or a non-invasive stress imaging test as part of the initial workup should be considered.	IIa	A
Recommendations for timing of invasive strategy in NSTE-ACS					
An early invasive strategy within 24 h is recommended in patients with any of the following high-risk criteria: • Diagnosis of NSTEMI suggested by the diagnostic algorithm recommended in *Section 3* • Dynamic or presumably new contiguous ST/T-segment changes suggesting ongoing ischaemia • Transient ST-segment elevation • GRACE risk score >140.	I	A	An early invasive strategy within 24 h should be considered in patients with at least one of the following high-risk criteria: • Confirmed diagnosis of NSTEMI based on current recommended ESC hs-cTn algorithms • Dynamic ST-segment or T wave changes • Transient ST-segment elevation • GRACE risk score >140.	IIa	A
Recommendations for antiplatelet and anticoagulant therapy in STEMI					
A potent $P2Y_{12}$ inhibitor (prasugrel or ticagrelor), or clopidogrel if these are not available or are contraindicated, is recommended before (or at latest at the time of) PCI, and maintained over 12 months, unless there are contraindications such as excessive risk of bleeding.	I	A	Pre-treatment with a $P2Y_{12}$ receptor inhibitor may be considered in patients undergoing a primary PCI strategy.	IIb	B
Recommendations for long-term antithrombotic therapy					
After stent implantation in patients undergoing a strategy of DAPT, stopping aspirin after 3–6 months should be considered, depending on the balance between the ischaemic and bleeding risks.	IIa	A	In patients who are event-free after 3–6 months of DAPT and who are not high ischaemic risk, SAPT (preferably with a $P2Y_{12}$ receptor inhibitor) should be considered.	IIa	A
Recommendations for cardiac arrest and out-of-hospital cardiac arrest					
Delayed as opposed to immediate angiography should be considered among haemodynamically stable patients without ST-segment elevation successfully resuscitated after out-of-hospital cardiac arrest.	IIa	B	Routine immediate angiography after resuscitated cardiac arrest is not recommended in haemodynamically stable patients without persistent ST-segment elevation (or equivalents).	III	A
Targeted temperature management (also called therapeutic hypothermia), aiming for a constant temperature between 32 and 36 C for at least 24 h, is indicated in patients who remain unconscious after resuscitation from cardiac arrest (of presumed cardiac cause).	I	B	Temperature control (i.e. continuous monitoring of core temperature and active prevention of fever [i.e. >37.7°C]) is recommended after either out-of-hospital or in-hospital cardiac arrest for adults who remain unresponsive after return of spontaneous circulation.	I	B
Recommendations for in-hospital management					
When echocardiography is suboptimal/inconclusive, an alternative imaging method (CMR preferably) should be considered.	IIa	C	When echocardiography is suboptimal/inconclusive, CMR imaging may be considered.	IIb	C
Recommendations for management of multivessel disease in haemodynamically stable STEMI patients undergoing primary PCI					
Routine revascularization of non-IRA lesions should be considered in STEMI patients with multivessel disease before hospital discharge.	IIa	A	Complete revascularization is recommended either during the index PCI procedure or within 45 days.	I	A
Recommendations for acute coronary syndrome comorbid conditions					
Glucose-lowering therapy should be considered in ACS patients with blood glucose >10 mmol/L (>180 mg/dL), with the target adapted to comorbidities, while episodes of hypoglycaemia should be avoided.	IIa	B	Glucose-lowering therapy should be considered in patients with ACS with persistent hyperglycaemia, while episodes of hypoglycaemia should be avoided.	IIa	C

B -> A

B -> A

In patients with ACS and severe/refractory CS, short-term mechanical circulatory support may be considered.

IIb **C**



ORIGINAL ARTICLE

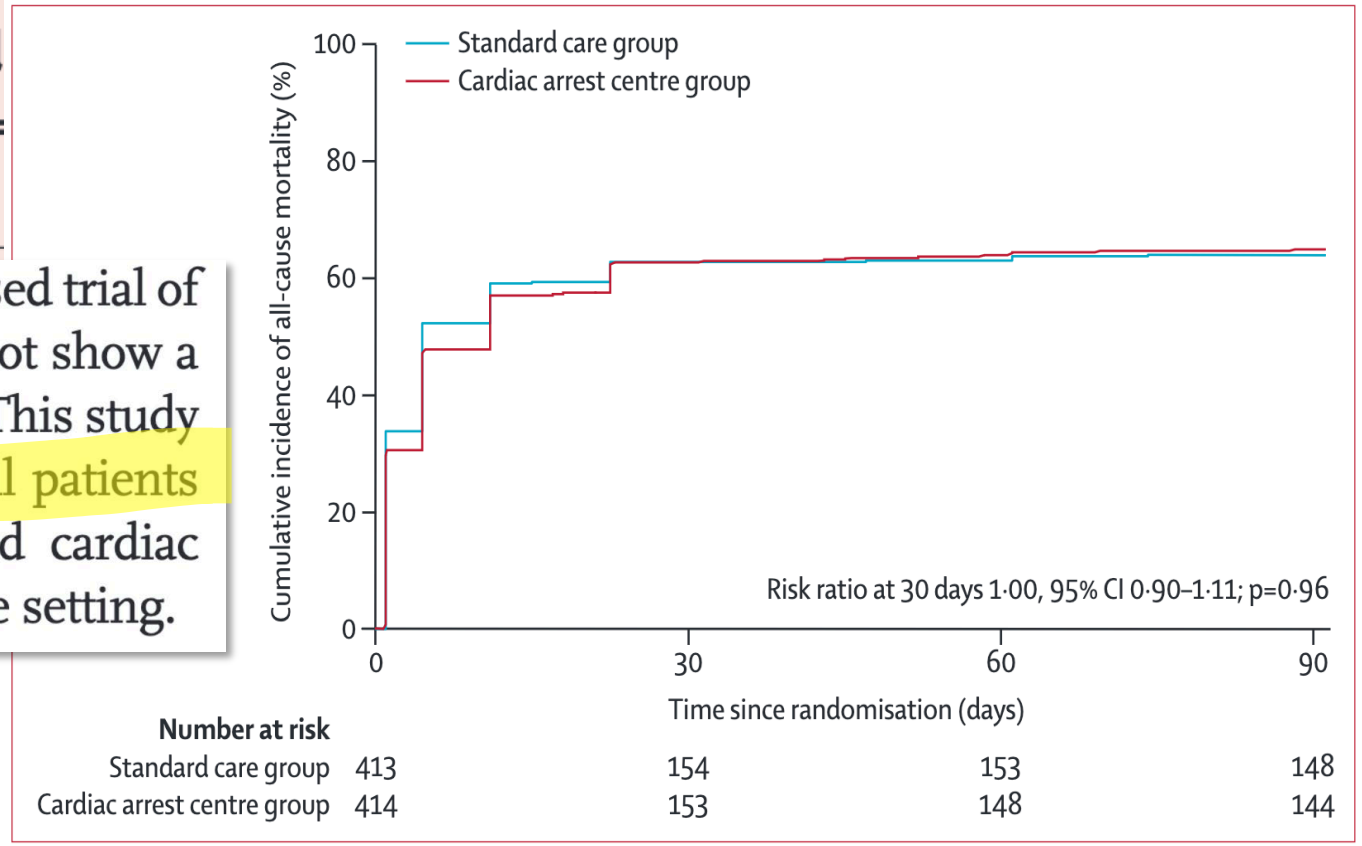
Extracorporeal Life Support in Infarct-Related Cardiogenic Shock

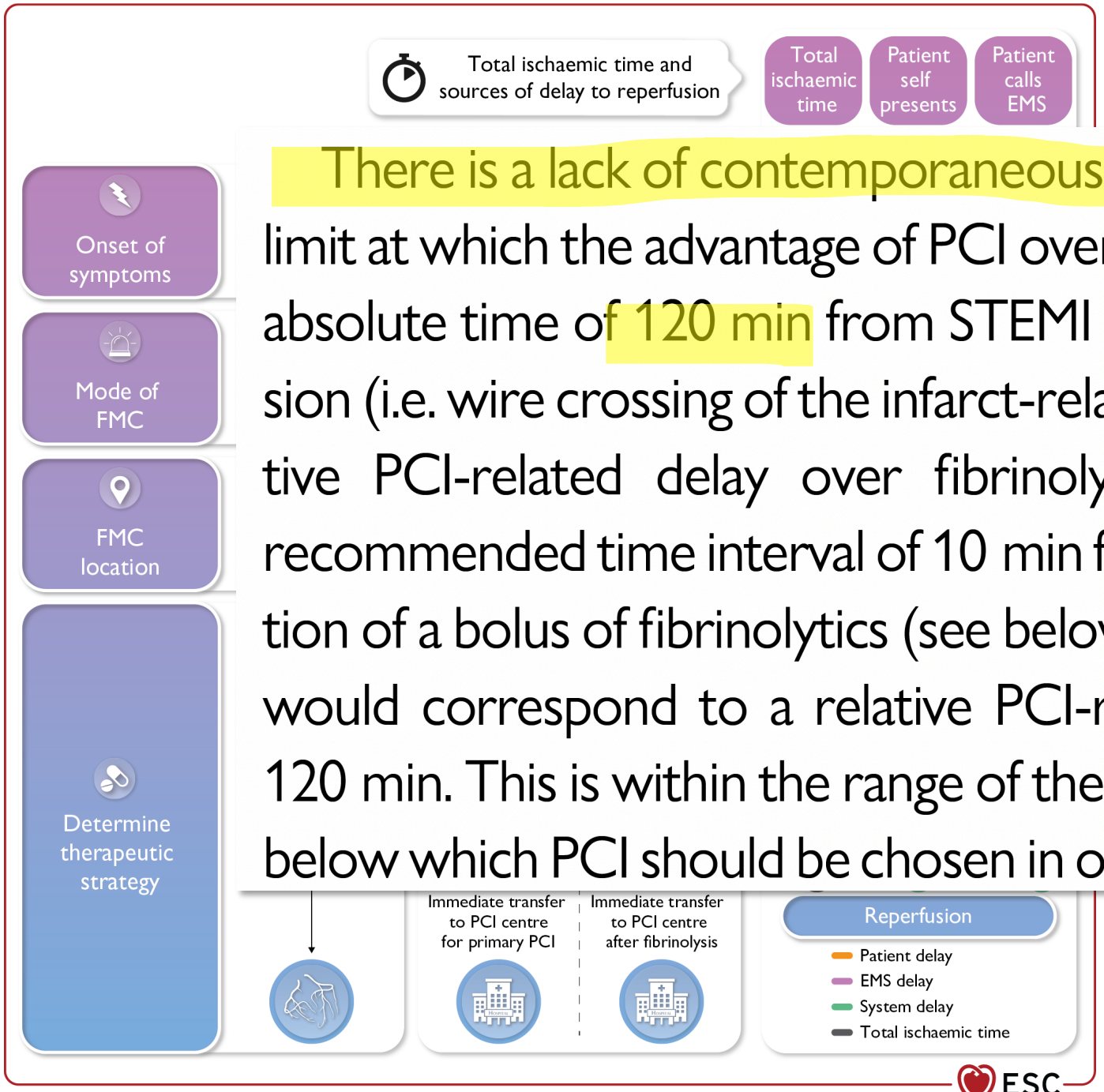
H. Thiele, U. Zeymer, I. Akin, M. Behnes, T. Rassaf, A.A. Mahabadi, R. Lehmann, I. Eitel, T. Graf, T. Seidler, A. Schuster, C. Skurk, D. Duerschmied, P. Clemmensen, M. Hennersdorf, S. Fichtlscherer, I. Voigt, M. Seyfarth, S. John, S. Ewen, A. Linke, E. Tigges, P. Nordbeck, L. Bruch, C. Jung, J. Franz, P. Lauten, T. Goslar, H.-J. Feistritzer, J. Pöss, E. Kirchhof, T. Ouarrak, S. Schneider, S. Desch, and A. Freund, for the ECLS-SHOCK Investigators*

Recommendations for cardiac arrest and out-of-hospital cardiac arrest		
Evaluation of neurological prognosis (no earlier than 72 h after admission) is recommended in all comatose survivors after cardiac arrest.	**I**	**C**
Transport of patients with out-of-hospital cardiac arrest to a cardiac arrest centre according to local protocol should be considered.	**IIa**	**C**

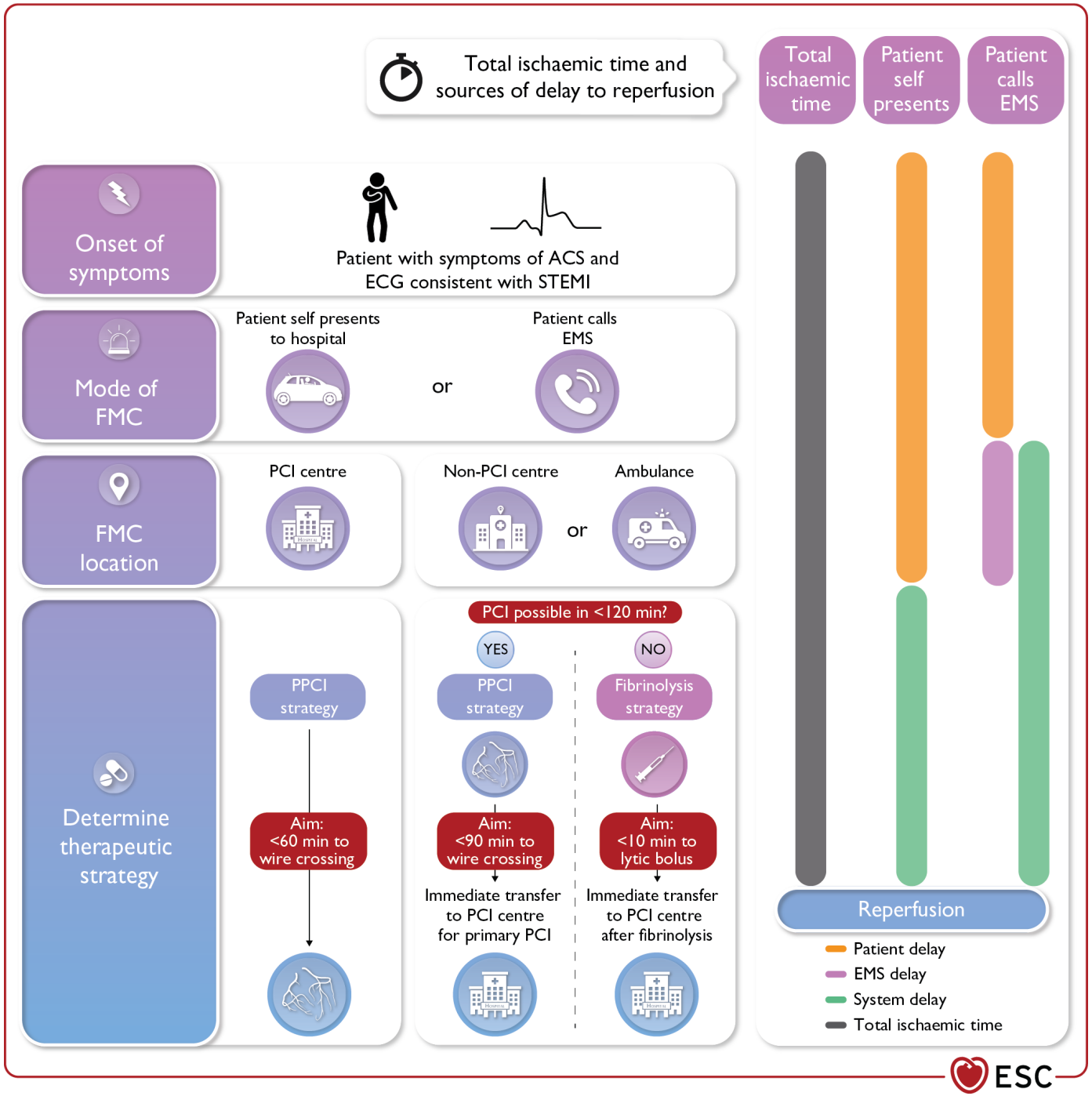
	Cardiac arrest centre group (n=414)	Standard group (n=

In conclusion, this large, multicentre, randomised trial of expedited transfer to a cardiac arrest centre did not show a survival benefit compared with standard of care. This study does not support prehospital transportation of all patients to a cardiac arrest centre following resuscitated cardiac arrest without ST elevation within this health-care setting.

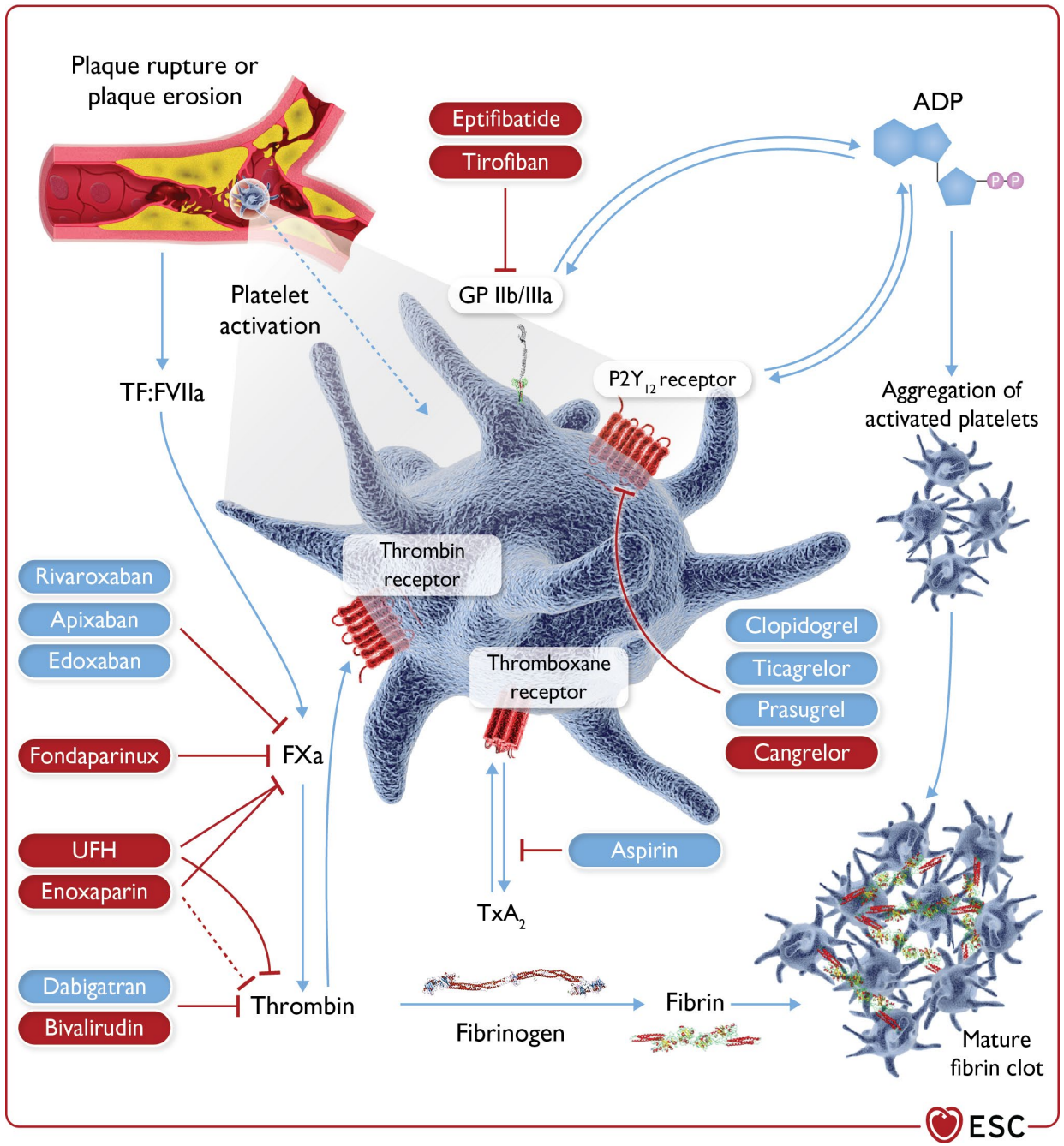




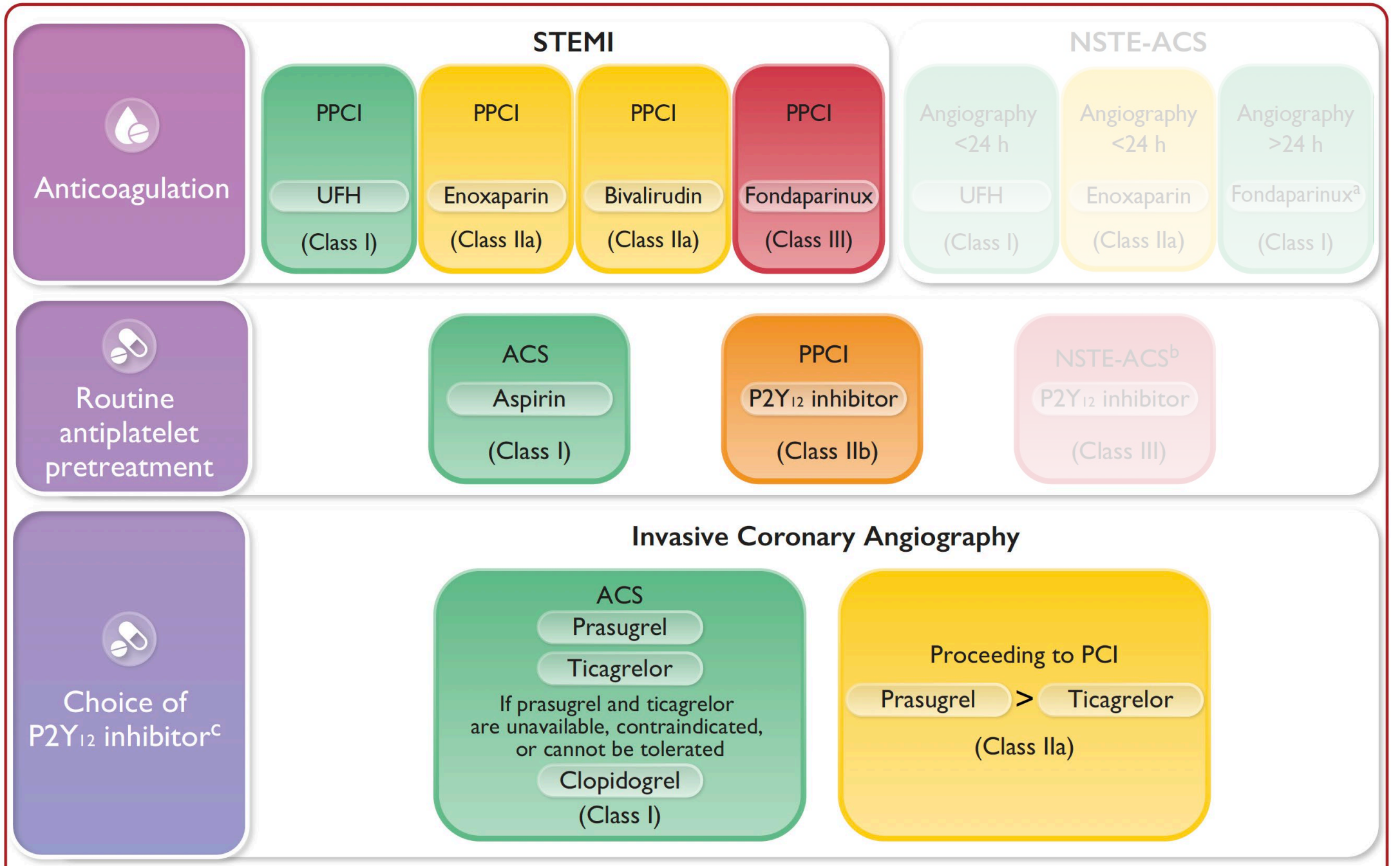
There is a lack of contemporaneous data to inform the treatment delay limit at which the advantage of PCI over fibrinolysis is lost. For simplicity, an absolute time of 120 min from STEMI diagnosis to PCI-mediated reperfusion (i.e. wire crossing of the infarct-related artery [IRA]) rather than a relative PCI-related delay over fibrinolysis has been chosen. Given the recommended time interval of 10 min from STEMI diagnosis to administration of a bolus of fibrinolytics (see below), the 120 min absolute time delay would correspond to a relative PCI-related delay in the range of 110–120 min. This is within the range of the times identified as the limit of delay below which PCI should be chosen in older studies and registries.[176,180–184]


Total ischaemic time and sources of delay to reperfusion
Total ischaemic time
Patient self presents
Patient calls EMS
Onset of symptoms
Patient with symptoms of ACS and ECG consistent with STEMI
Mode of FMC
Patient self presents to hospital
or
Patient calls EMS
FMC location
PCI centre
Non-PCI centre
or
Ambulance
Determine therapeutic strategy
PPCI strategy
Aim: <60 min to wire crossing
PCI possible in <120 min?
YES
NO
PPCI strategy
Aim: <90 min to wire crossing
Immediate transfer to PCI centre for primary PCI
Fibrinolysis strategy
Aim: <10 min to lytic bolus
Immediate transfer to PCI centre after fibrinolysis
Reperfusion
Patient delay
EMS delay
System delay
Total ischaemic time
ESC


DWW


Plaque rupture or plaque erosion
Eptifibatide
Tirofiban
ADP
GP IIb/IIIa
Platelet activation
TF:FVIIa
P2Y12 receptor
Aggregation of activated platelets
Thrombin receptor
Rivaroxaban
Apixaban
Edoxaban
Clopidogrel
Ticagrelor
Prasugrel
Cangrelor
Thromboxane receptor
Fondaparinux
FXa
UFH
Enoxaparin
Aspirin
TxA2
Dabigatran
Bivalirudin
Thrombin
Fibrinogen
Fibrin
Mature fibrin clot
ESC


SOS
EMERGENCY BOX


Anticoagulation
STEMI
PPCI
UFH
(Class I)
PPCI
Enoxaparin
(Class IIa)
PPCI
Bivalirudin
(Class IIa)
PPCI
Fondaparinux
(Class III)
NSTE-ACS
Angiography <24 h
UFH
(Class I)
Angiography <24 h
Enoxaparin
(Class IIa)
Angiography >24 h
Fondaparinux[a]
(Class I)
Routine antiplatelet pretreatment
ACS
Aspirin
(Class I)
PPCI
P2Y12 inhibitor
(Class IIb)
NSTE-ACS[b]
P2Y12 inhibitor
(Class III)
Choice of P2Y12 inhibitor[c]
Invasive Coronary Angiography
ACS
Prasugrel
Ticagrelor
If prasugrel and ticagrelor are unavailable, contraindicated, or cannot be tolerated
Clopidogrel
(Class I)
Proceeding to PCI
Prasugrel > Ticagrelor
(Class IIa)

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22%

60%

12.3.4. Older adults with frailty and multimorbidity

12.3.4.1. The older person

In the context of STEMI, PPCI has drastically improved outcomes for all ages. However, data are limited in the 'very old' cohort, with lack of formal assessment of frailty or comorbidity.[665] In the context of CS and cardiac arrest, age is an independent predictor of mortality following PCI.[666,667] In the absence of robust RCT data, PPCI should be considered for all patients with STEMI. When PPCI cannot be performed in a timely manner, fibrinolysis may be a reasonable strategy in these patients. For details regarding pharmacotherapy in older patients, please see the Supplementary data online.

Fotos FLapo

e-MUST eds de cardio d'idf

Fiche de saisie e-MUST

Evaluation en Médecine d'Urgence des Stratégies Thérapeutiques des SCA ST+<24hpris en charge (PEC) par les SAMU/ SMUR d'Ile-de-France

ars Île-de-France — Csesan

SMUR : _____ SAMU : ☐☐ Date : __/__/20__ Heure de PEC : H.☐☐h☐☐mn

N° patient donné par le SAMU ☐☐☐☐☐☐☐☐☐☐☐☐☐☐

N° de séjour donné par l'administration = NDA (N° étiquette) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Prise en charge primaire ☐

Code postal du lieu de PEC : ☐☐☐☐☐

Commune du lieu de PEC : _____

1 appel au SAMU :

-Par : Patient ou proche ☐ Généraliste ☐ Cardiologue libéral ☐ Sapeurs-pompiers ou secouristes sur place ☐ Autre ☐

-Date : __/__/ 20__ H. ☐☐h☐☐mn

-SMUR dédenché dès l'appel au SAMU: OUI ☐ ou NON ☐

Prise en charge secondaire ☐

Etablissement de soins (ES) : _____

Service : SAU ☐ UHCD ☐ Méd/Chir ☐ Réa ☐ USIC ☐ Autre ☐

Si PEC au SAU uniquement, remplir les case ci-dessous

-Avant son arrivée au SAU, le patient a appelé :

Le SAMU ☐ Les pompiers ☐ Son médecin ☐ N'a pas appelé ☐

→ Si appel au SAMU : Date : __/__/ 20__H. ☐☐h☐☐mn

-Mode d'arrivée au SAU : Propres moyens ☐ Ambulance ☐ VSAV ☐ SMUR ☐

-Arrivée au SAU : Date : __/__/ 20__H. ☐☐h☐☐mn

-ECG validant : Date : __/__/ 20__H. ☐☐h☐☐mn

-Appel au SAMU pour secondaire Date : __/__/ 20__H. ☐☐h☐☐mn

Début de la douleur thoracique Date : __/__/ 20__ H.☐☐h☐☐mn

Critères d'inclusion (délai "début de la douleur-appel au SAMU" < 24 h)

1. Douleur typique > à 20 min ☐ OU autre douleur ☐
2. ET sus-décalage ST >0,1 mV dans les dérivations frontales (DI, DII, DIII, aVL et aVF), précordiales gauches (V4 à V6) ou postérieures (V7 à V9) ou >0,2 mV dans les dérivations précordiales droites (V1 à V3), dans au moins 2 dérivations contiguës d'un territoire coronaire OU sous-décalage ST de V1 à V3 (miroir d'un sus-décalage de ST inféro-postérieur) OU BBG récent
3. ET patient non en ACR au moment de la prise en charge par le SMUR et avant l'ECG qualifiant

Patient Sexe : F ☐ ou H ☐ DDN : __/__/ ____

Antécédents et facteurs de risque

Interrogatoire impossible ☐ Coronaropathie personnelle ☐ Diabète ☐ Dyslipidémie ☐ Surpoids ☐

Aucun antécédent ☐ Coronaropathie familiale ☐ HTA ☐ Tabagisme actif ☐ Tabagisme sevré ☐

Traitement de fond par Anticoagulant : AVK ☐ ou Anticoagulant Oral Direct ☐ Antiagrégant plaquettaire: Aspirine ☐ Autre ☐

Siège de l'infarctus Antérieur et/ou latéral ☐ Inférieur ☐ Autre ☐

Éléments de gravité

Killip I ☐, II ☐, III ☐ ou IV ☐ Catécholamines ☐ Troubles rythme/conduction ☐ ROSC / - Choc élec. ☐ ICD/VC ☐

1er élément de gravité survenu : avant PEC SMUR ☐ ou pendant PEC SMUR ☐ Date __/__/ 20__ H. ☐☐h☐☐mn

Décision de désobstruction coronaire prise par le SMUR

OUI ☐ par Thrombolyse (THB) pré-hospitalière ☐ Date: __/__/ 20__ H. d'injection ☐☐h☐☐mn

Angioplastie (ATL) primaire ☐ Date: __/__/ 20__ H. accord ATL ☐☐h☐☐mn

Si TBH recommandée, existe-il un motif de non THB ?

Non ☐ ou Oui ☐ : Contre-indication à la THB ☐ Inclusion dans un essai clinique ☐ Refus du patient ☐ Autre ☐

NON ☐ car 1/ THB injectée avant la PEC SMUR ☐ Date: __/__/ 20__ H. d'injection ☐☐h☐☐mn

2/ ATL décidée avant la PEC SMUR ☐ Date: __/__/ 20__ H. accord ATL ☐☐h☐☐mn

3/ Autre ☐

Autres traitements administrés au patient (quel que soit le prescripteur)

Antalgique : Paracétamol ☐ Morphine ☐ Autre ☐ INTUBATION ☐ Délabuquant ☐

Anticoagulant : HNF ☐ HBPM ☐ Bivalirudine ☐ Autre ☐ / **Administration en** : bolus ☐ PSE ☐ SC ☐

Antiagrégant plaquettaire : Aspirine ☐ Clopidogrel ☐ Ticagrelor ☐ Prasugrel ☐ AntiGP2B3A ☐ Autre ☐

Destination du patient Décédé avant hospitalisation ☐

Établissement : _____ Département : ☐☐ Service: USIC ☐ Salle de KT ☐ Urgences ☐ Réa ☐ Autre ☐

Date: __/__/ 20__ H. d'arrivée ☐☐h☐☐mn

Traitement hospitalier (dans les 24h après la prise en charge)

Coronarographie ☐ Date: __/__/ 20__ H. ponction ☐☐h☐☐mn

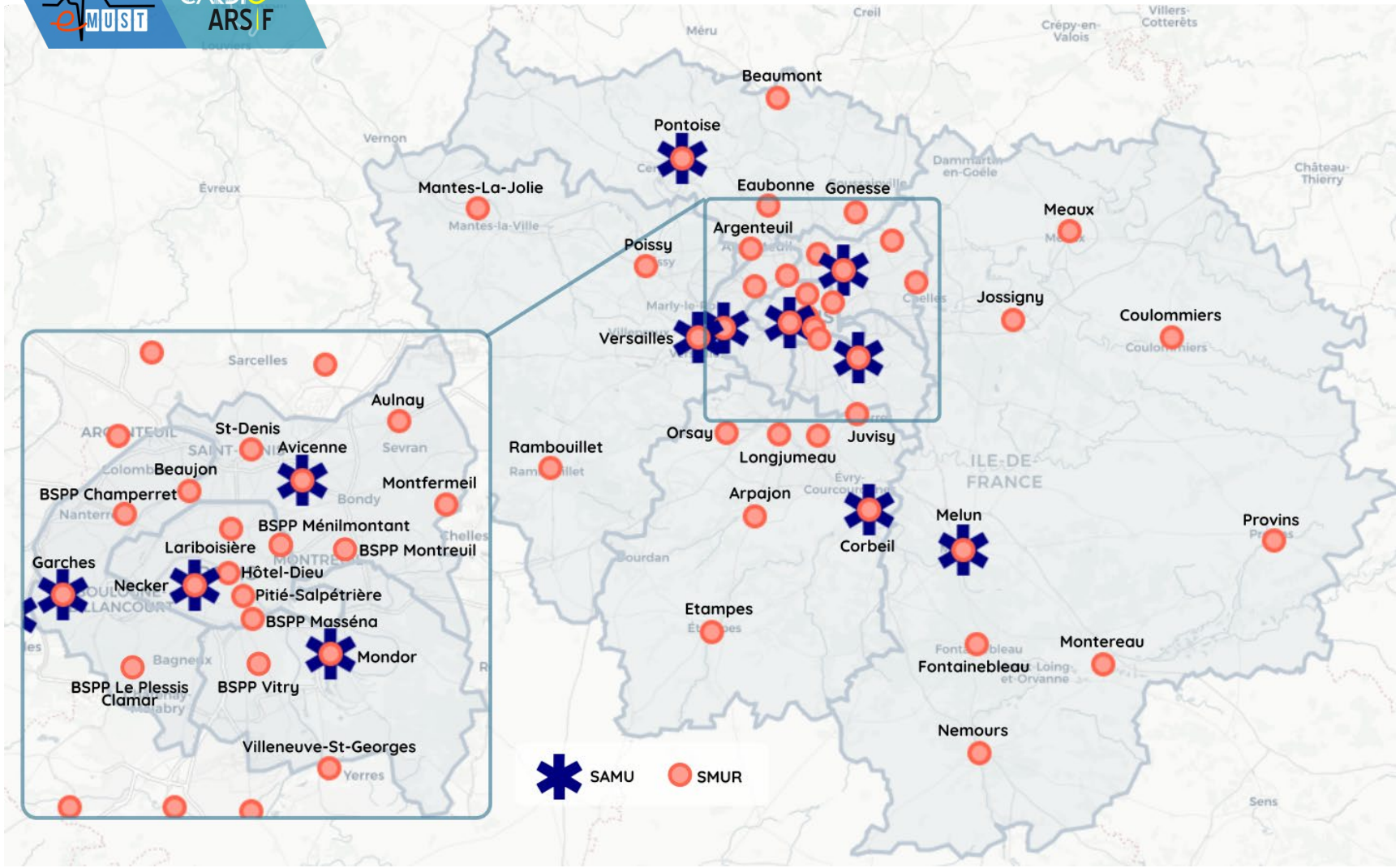
ATL ☐ Date: __/__/ 20__ H. passage guide ☐☐h☐☐mn

Echec de réouverture ☐

THB hospitalière de 1re intention ☐ Pontage aorto-coronaire (PAC) en urgence ☐ TT médical seul sans THB ni coro ni ATL ☐

Événements pendant l'hospitalisation

Décès	NON ☐ ou OUI ☐	Date: __/__/ 20__	
AVC	NON ☐ ou OUI ☐	Date: __/__/ 20__	Hémorragie ☐ Ischémie ☐ ou Inconnu ☐
ATL ou PAC en urgence	NON ☐ ou OUI ☐	Date: __/__/ 20__	
Transfusion	NON ☐ ou OUI ☐	Date: __/__/ 20__	
Autre événement	NON ☐ ou OUI ☐	Type: _____	



8 départements

12.012 km^2

1.268 communes

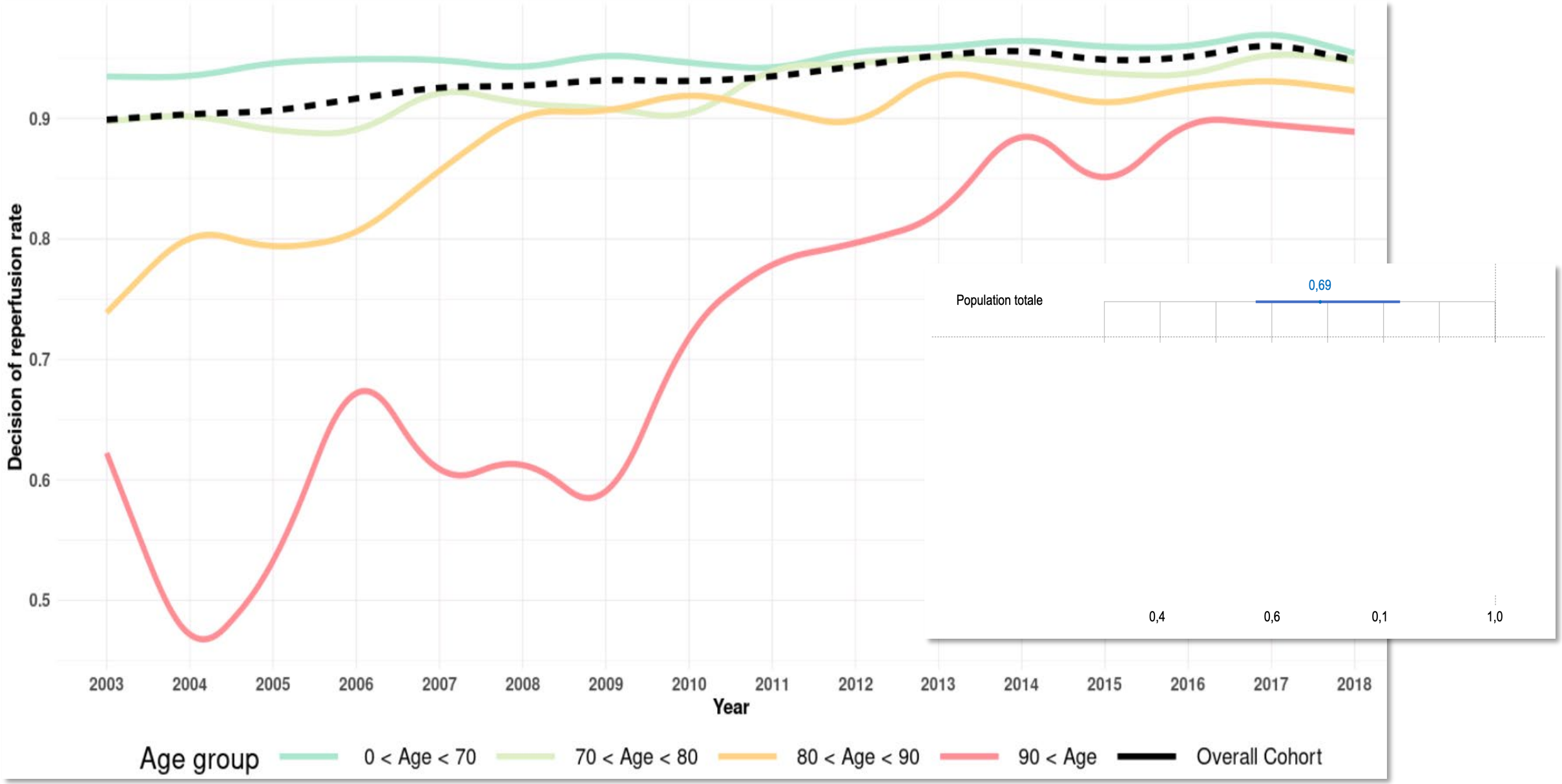
12 millions habitants

8 SAMU

40 SMUR

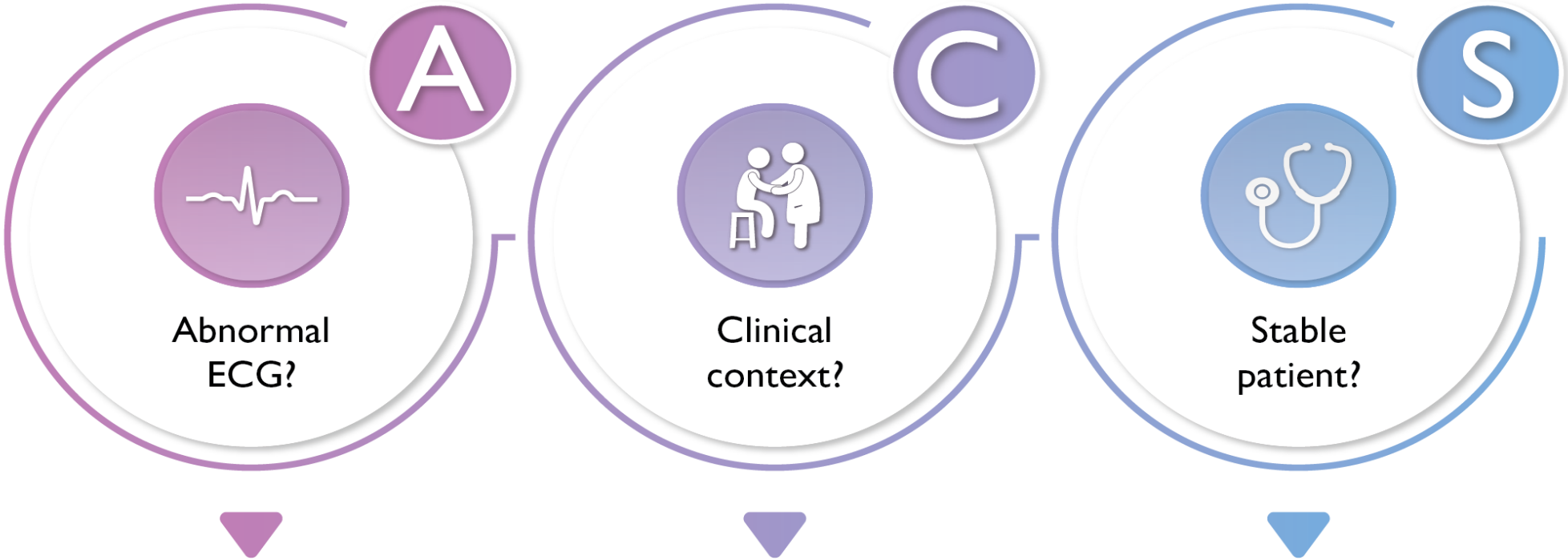
36 salles de KT

45.000 patients



N=27,294 dont 632 > 90 ans

Lapostolle, Age Aging (In Press)

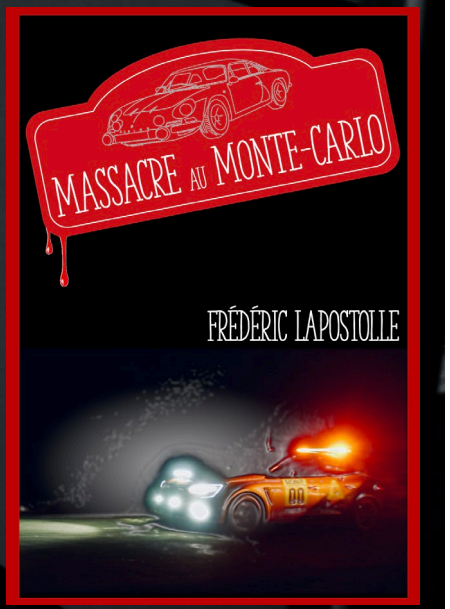

A
Abnormal ECG?
C
Clinical context?
S
Stable patient?
Perform an ECG to assess for evidence of ischaemia or other abnormalities
Consider the clinical context and available investigations
Perform an exam to assess if the patient is clinically and vitally stable


BFM TV.
FRÉDÉRIC LAPOSTOLLE Médecin urgentiste à l'hôpital Avicenne de Bobigny (Seine-Saint-Denis)
RECO DU STEMI : L'AVIS DE L'URGENTISTE


Et tu proposes quoi
à la place ?


ASK THE
EXPERT!
SOYEZ EXPERT EN CARDIOLOGIE D'URGENCE

Foto FLapo SAMU 93



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CARDIO RUN 2023

15ème CONGRÈS DE PATHOLOGIE CARDIO-VASCULAIRE

27-28-29 SEPTEMBRE 2023

Hôtel Saint Alexis ILE DE LA RÉUNION France

Frédéric Lapostolle

Urgences - SAMU 93, UF Recherche

Hôpital Avicenne, Bobigny & Université Paris 13