Anginozni bol

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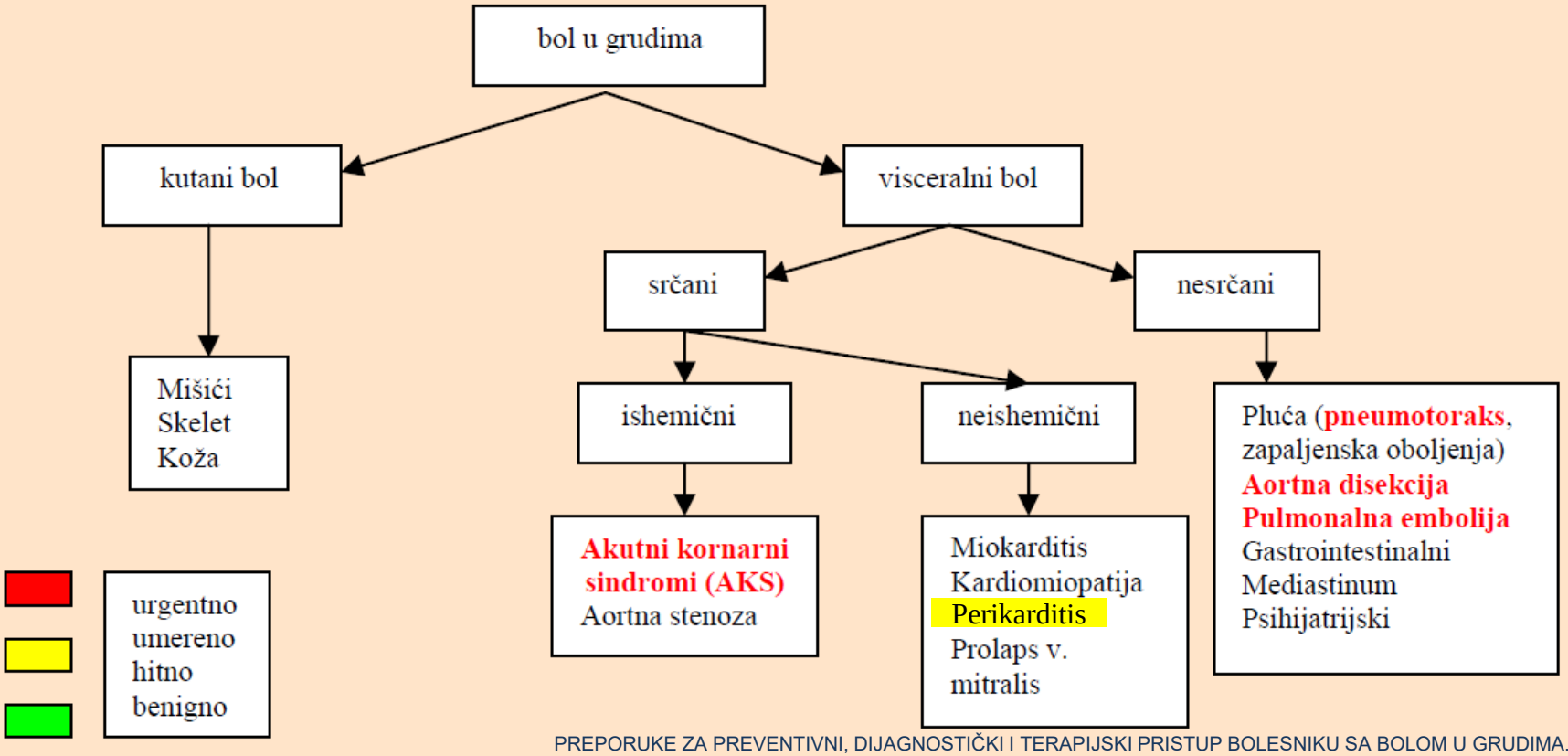
BOL U GRUDIMA

Preventivni, dijagnosticki i terapijski pristup bolesniku sa bolom u grudima

Diferencijalna dijagnoza bola u grudima



PREPORUKE ZA PREVENTIVNI, DIJAGNOSTIČKI I TERAPIJSKI PRISTUP BOLESNIKU SA BOLOM U GRUDIMA.
Radna grupa za kardiovaskularne bolesti: Miodrag Ostojić sa saradnicima, 2002.

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ANGINA PEKTORIS

- Klinički sindrom koji karakteriše osjećaj stezanja, pritiska, pečenja ili težine (angina) u grudima (pectoris) **uzrokovan prolaznom ishemijom miokarda**

- Stabilna AP
- Nestabilna AP
- Prinzmetalova (variant, vazospatična) AP
- Asimptomatska ishemija - silent ishemija
- Sindrom X

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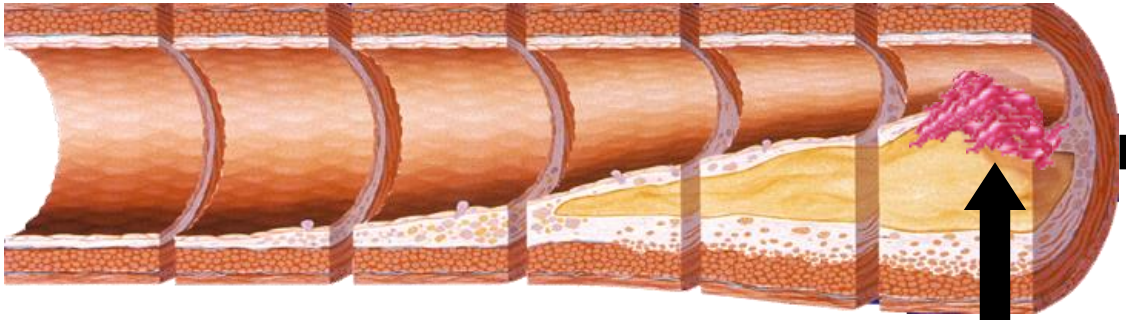
ATEROTROMBOZA

generalizovan i progresivan proces



Nestabilna angina
IM (STEMI ili NSTEMI)
ACS

Ateroskleroza → Aterotromboza

Stabilna angina pektoris

Adapted from Stary HC et al. *Circulation*. 1995; 92: 1355–74, and Fuster V *et al*. *Vasc Med*. 1998; 3: 231–9.

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ANGINA PEKTORIS

Spazam

Prinzmetalova AP

Ateroskleroza

Stabilna AP
(fiksna stenoza)

Aterotromboza

Nestabilna AP

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STABILNA ANGINA PEKTORIS

- Bolovi u grudima su provocirani naporom, prilikom uzbudjenja, nakon obilnog obroka i pri izlasku na hladnoću
- Traju nekoliko minuta, rijetko do 10-15 minuta, prestaju naglo kada se ukloni napor odnosno drugi činioci koji su provocirali anginu, smanjuju se na Nitroglicerin

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William Heberden 1770.god

- " Postoji tegoba u grudnom košu..... i sasvim je odgovarajuće da nosi naziv angina pectoris.... dobijaju je.... naročito kada se šetaju poslije jela, sa bolnim i veoma neprijatnim osjećajem u grudnom košu, sa osjećajem da će se umrijeti ako se ona pojača ili nastavi. U trenutku kada zastanu, sve ove nelagodnosti iščezavaju. **Os sterni** je obično središte ove bolesti. Katkad je udružena sa pojavom bola u srednjem dijelu lijeve ruke".

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ANGINA PEKTORIS

Funkcionalna klasifikacija bolesnika sa anginom pektoris (Kanadsko kardiološko društvo 1976.)

I Uobičajene aktivnosti ne izazivaju anginu pektoris. Angina prisutna uz jako, brzo ili prolongirano opterećenje.

II Lagano ograničenje uobičajenih fizičkih aktivnosti. Angina se javlja uz brzo hodanje, penjanje uzbrdo, nakon jela, na hladnoći, nakon buđenja, nakon emocionalnog stresa, penjanje više od 2 sprata normalnim ritmom

III Znatno ograničenje uobičajenih fizičkih aktivnosti. Hodanje po ravnom 1-2 bloka i penjanje stepenicama više od 1 sprata dovode do angine

IV Anginozni bol prisutan u mirovanju

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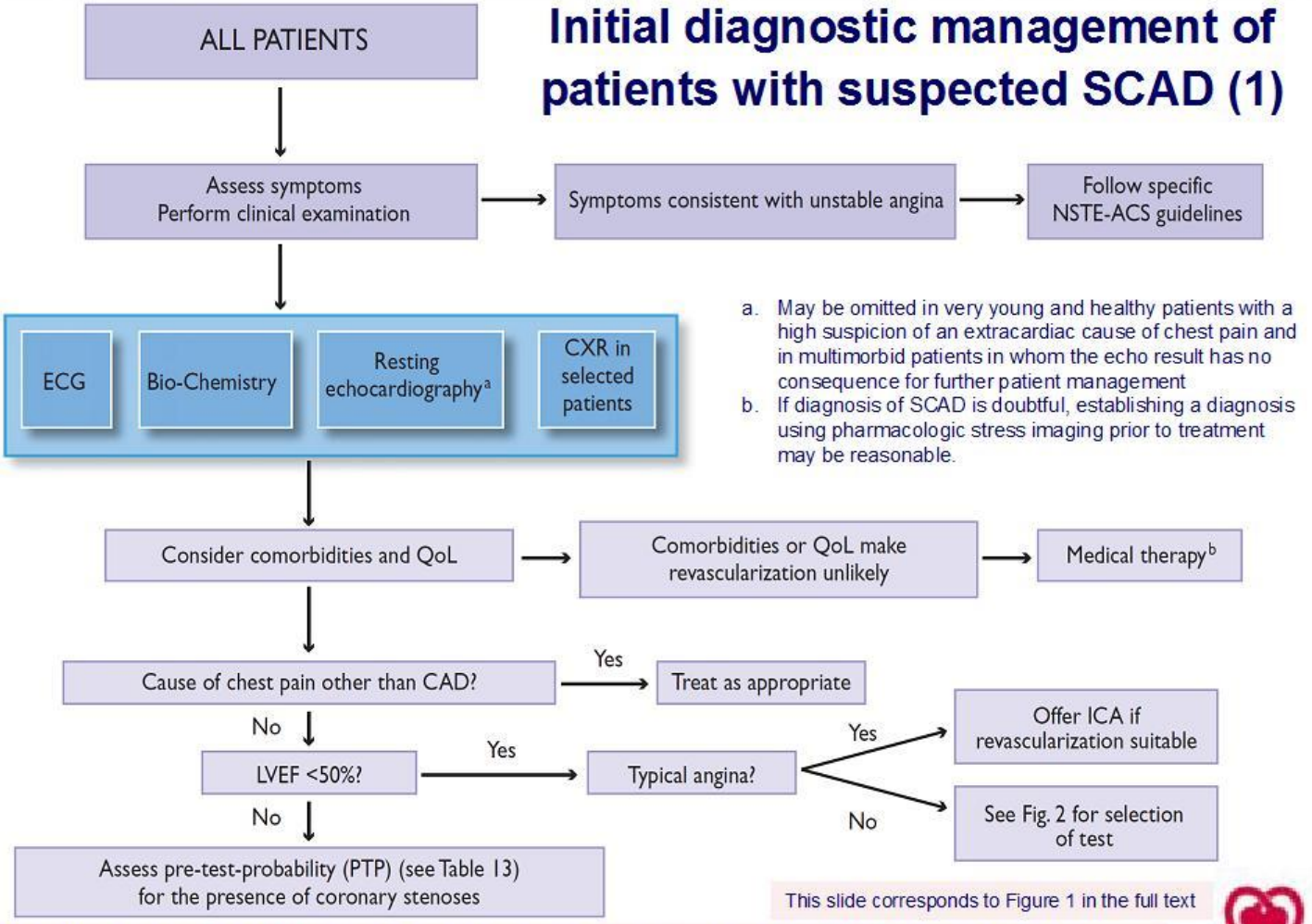
Initial diagnostic management of patients with suspected SCAD (1)



a. May be omitted in very young and healthy patients with a high suspicion of an extracardiac cause of chest pain and in multimorbid patients in whom the echo result has no consequence for further patient management
b. If diagnosis of SCAD is doubtful, establishing a diagnosis using pharmacologic stress imaging prior to treatment may be reasonable.

This slide corresponds to Figure 1 in the full text

[a]May be omitted in very young and healthy patients with a high suspicion of an extracardiac cause of chest pain and in multimorbid patients in whom the echo result has no consequence for further patient management. [b]If diagnosis of SCAD is doubtful, establishing a diagnosis using pharmacological stress imaging prior to treatment may be reasonable.

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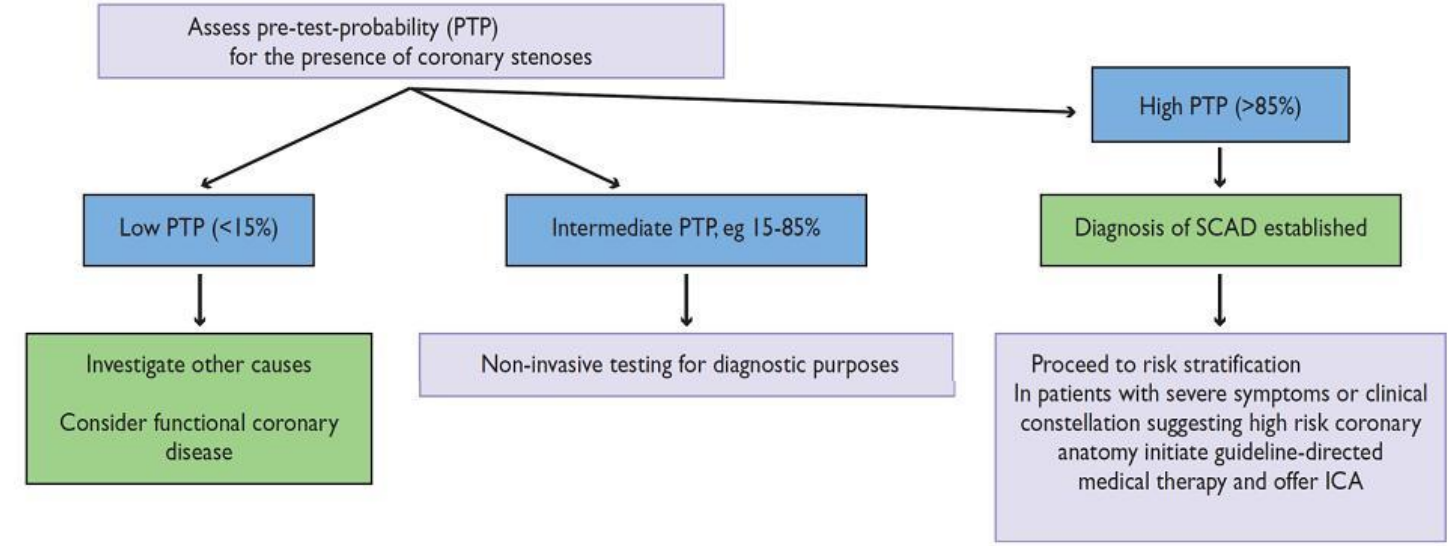
Initial diagnostic management of patients with suspected SCAD (2)



This slide corresponds to Figure 1 in the full text
ICA = invasive coronary angiography.

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Eur Heart J 2013;34:2949–3003. doi:10.1093/eurheartj/eht296

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AKUTNI KORONARNI SINDROM

Anginozni bol koji se javlja sve učestalije, dužeg je trajanja, jačeg intenziteta, odnosno anginozni bol koji se javlja u miru, iznenada

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ANGINOZNI BOL - AKS

Moguća lokalizacija bola u grudima kod infarkta miokarda

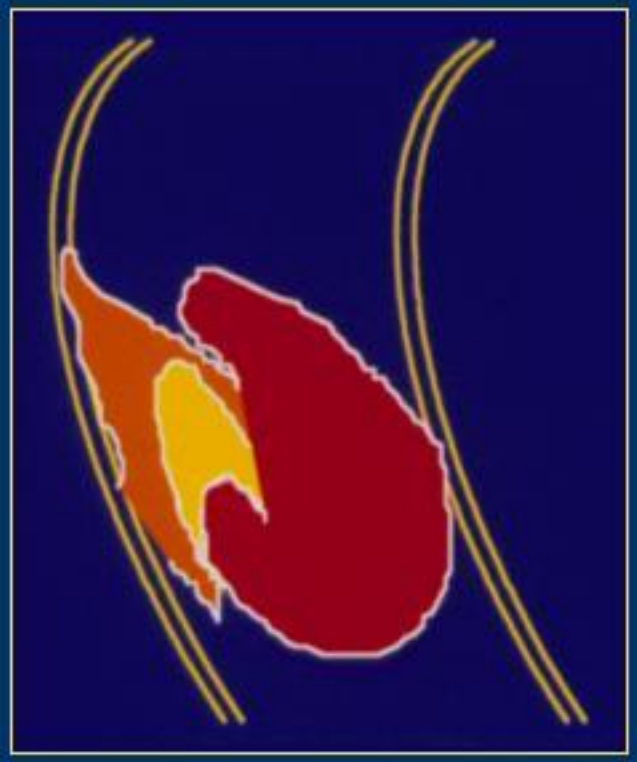
- Bol je obično, ali ne uvijek, jak, (“nepodnošljiv”, ”surov”, “stiskajući”) i može biti praćen mučninom, povraćanjem i preznojavanjem
- Bol najčešće počinje u središnjem dijelu grudnog koša i širi se, ali se može javiti bilo gdje u obilježenom području, uključujući i donju vilicu
- Bol se inicijalno može pojačavati i smanjivati, za razliku od disekcije, kod koje bol naglo nastaje i najjačeg je intenziteta na svom početku
- Potpuni prolazak bola u roku od nekoliko minuta nakon primjene nitrata, čini STEMI malo vjerovatnim

AKUTNI KORONARNI SINDROM

Simultana i dinamična tromboza i liza

Tromboza

Tromboliza



Oštećeni plak

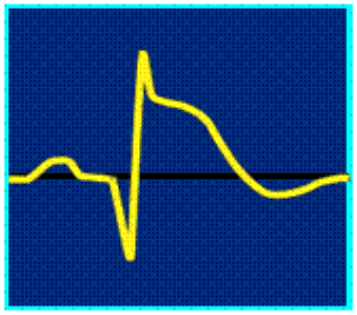
Okluzivni tromb

Rezultat zavisi od:

dinamičke ravnoteže izmedju prokoagulantnih & antikoagulantnih faktora, kao i od profibrinolitičkih & antifibrinolitičkih faktora + supstrata & reologije

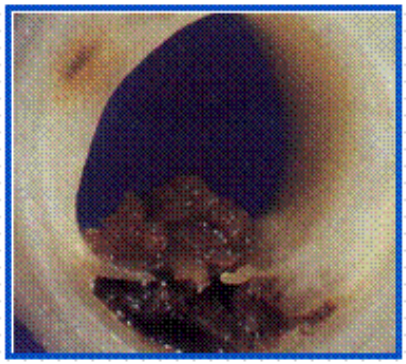
ACS with persistent ST-segment elevation

Adapted from Michael Davies

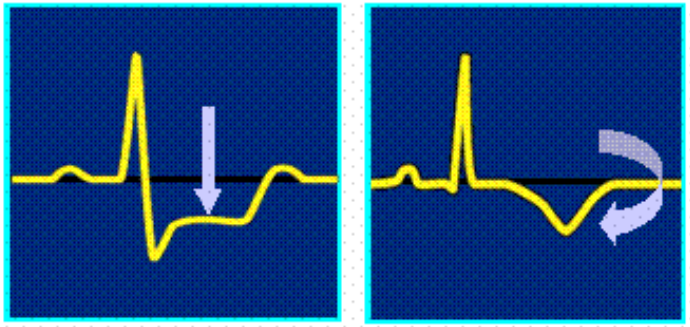


Troponin elevated

ACS without persistent ST-segment elevation



Adapted from Michael Davies



Troponins elevated or not

ESC Guidelines for the Management of NSTE-ACS (18)

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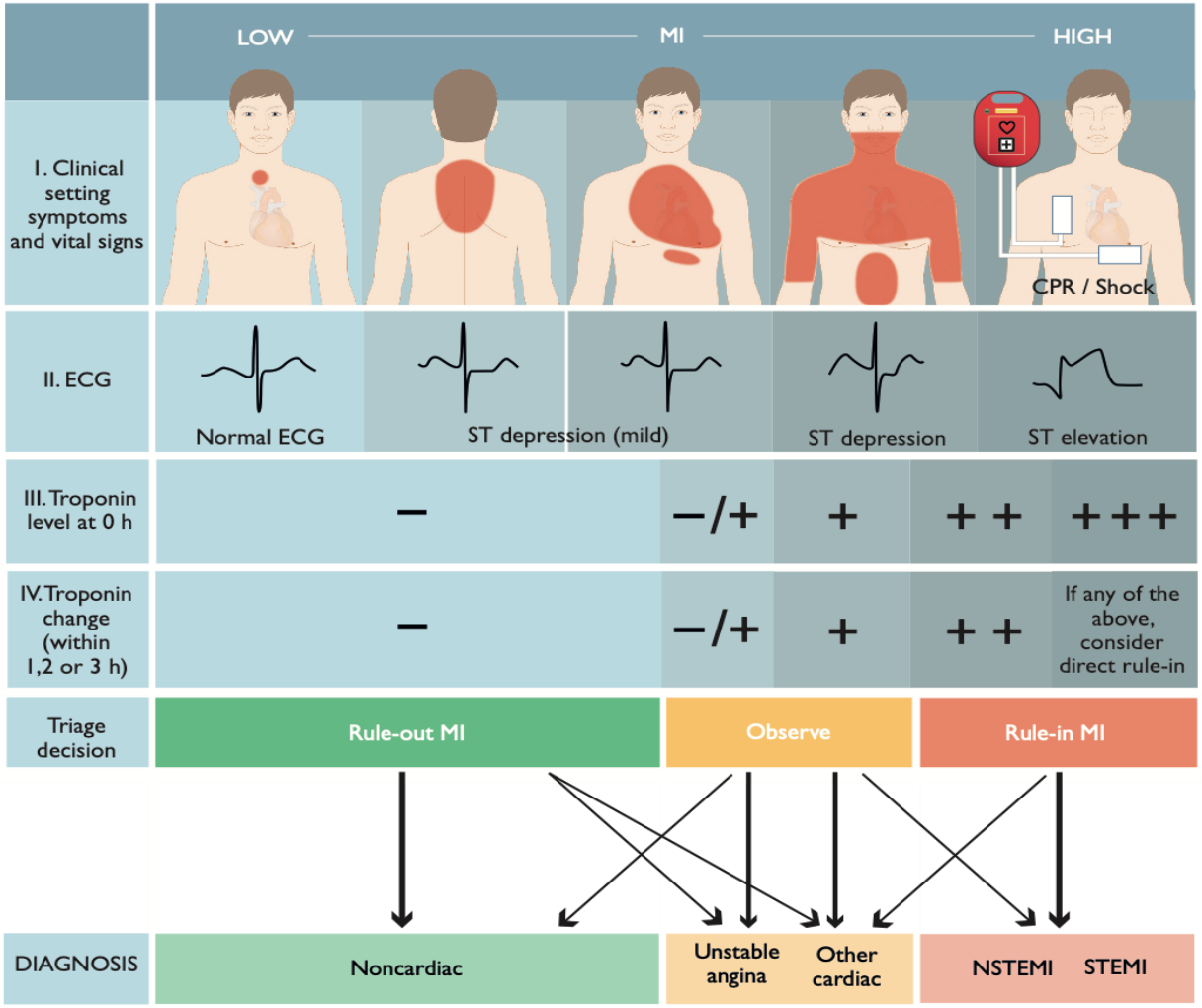

Figure 1
Diagnostic algorithm and triage in acute coronary syndrome.

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2020 ESC Guidelines for the management of acute coronary syndromes in patients presenting w
persistent ST-segment elevation (European Heart Journal 2020 - doi/10.1093/eurheartj/eh

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AKS – PROGNOSTIČKI SPEKTAR

Nestabilna angina pektoris

- Novonastale anginozne tegobe u naporu
- Anginozne tegobe pri sve manjem naporu
- Bol u grudima u miru bez EKG promjena
- Bol u grudima u miru sa EKG promjenama

Infarkt miokarda bez elevacije ST segmenta (NSTEMI)

Infarkt miokarda sa elevacijom ST segmenta (STEMI)

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Kliničke implikacije testova za analizu visoko senzitivnog troponina (hs cTn)

Uporedjujući ga sa standardnim troponinom, test za analizu visoko senzitivnog troponina (hs troponin):

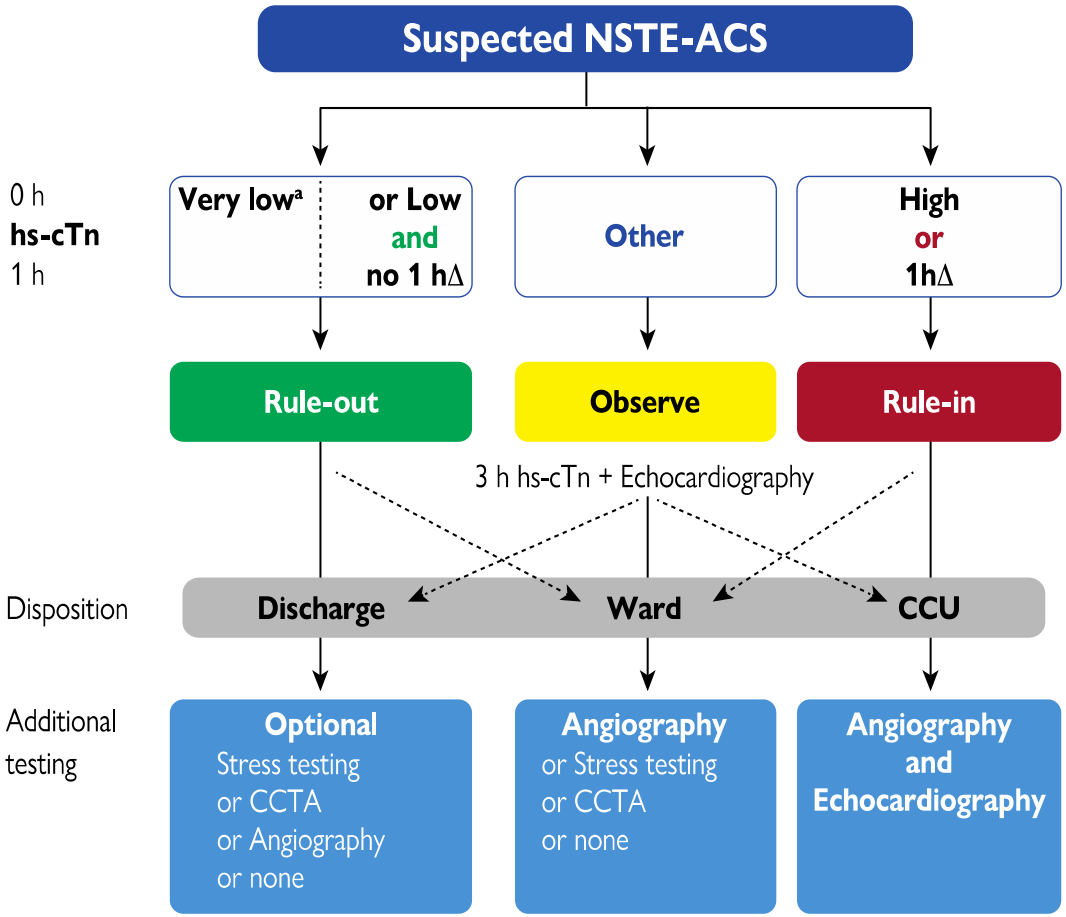
- ima veću negativnu prediktivnu vrijednost kod akutnog infarkta miokarda
- smanjuje interval "slijepog troponina", omogućavajući ranije postavljanje dijagnoze akutnog infarkta miokarda
- dovodi do oko 4% apsolutnog i 20% relativnog porasta u otkrivanju tipa 1 infarkta miokarda, a korespondira sa smanjenjem dijagnoze nestabilne angine pektoris
- Udružen je sa dvostrukim porastom u otkrivanju tipa 2 infarkta miokarda

Vrijednosti visoko senzitivnog troponina trebaju se interpretirati kao kvantitativni markeri oštećenja kardiomiocita (npr. veća vrijednost troponina ide u prilog veće vjerovatnoće za dijagnozu infarkta miokarda)

- porast preko 5 puta iznad gornje granice referentne vrijednosti ima visoku pozitivnu prediktivnu vrijednost (>90%) za dijagnozu infarkta miokarda tip 1
- trostruki porast iznad gornje granice referentne vrijednosti ima limitiranu (50-60%) pozitivnu prediktivnu vrijednost i može biti udružen sa širokim spektrom stanja
- Uobičajeno je registrovati cirkulišuće nivoe vrijednosti troponina kod zdravih ljudi

Porast i/ili pad vrijednosti troponina diferencira akutno od hroničnog oštećenja kardiomiocita (što je izraženija promjena vrijednosti, veća je vjerovatnoća za dijagnozu akutnog infarkta miokarda)

Authors/Task Force Members et al. Eur Heart J 2015;eurheartj.ehv320



ESC European Society of Cardiology

Figure 3 (1)

0 h/1 h rule-out and rule-in algorithm using high-sensitivity cardiac troponin assays in haemodynamically stable patients presenting with suspected non-ST-segment elevation acute coronary syndrome to the emergency department.

[a]Only applicable if CPO >3 h.

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2020 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation (European Heart Journal 2020 - doi/10.1093/eurheartj/ehaa575)

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Table 3 Assay specific cut-off levels in ng/l within the 0 h/1 h and 0 h/2 h algorithms (1)

ESC European Society ology

0 h/1 h algorithm	Very low	Low	No 1h Δ	High	1h Δ
hs-cTn T (Elecsys; Roche)	<5	<12	<3	≥52	≥5
hs-cTn I (Architect; Abbott)	<4	<5	<2	≥64	≥6
hs-cTn I (Centaur; Siemens)	<3	<6	<3	≥120	≥12
hs-cTn I (Access; Beckman Coulter)	<4	<5	<4	≥50	≥15
hs-cTn I (Clarity; Singulex)	<1	<2	<1	≥30	≥6
hs-cTn I (Vitros; Clinical Diagnostics)	<1	<2	<1	≥40	≥4
hs-cTn I (Pathfast; LSI Medience)	<3	<4	<3	≥90	≥20
hs-cTn I (TriageTrue; Quidel)	<4	<5	<3	≥60	≥8

These cut-offs apply irrespective of age and renal function. Optimized cut-offs for patients above 75 years of age and patients with renal dysfunction have been evaluated, but not consistently shown to provide better balance between safety and efficacy as compared to these universal cut-offs. The algorithms for additional assays are in development.
hs-cTn = high-sensitivity cardiac troponin; TBD = to be determined.

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Table 3 Assay specific cut-off levels in ng/l within the 0 h/1 h and 0 h/2 h algorithms (2)

ESC European Society of Cardiology

0 h/2 h algorithm	Very low	Low	No 2h Δ	High	2h Δ
hs-cTn T (Elecsys; Roche)	<5	<14	<4	≥52	≥10
hs-cTn I (Architect; Abbott)	<4	<6	<2	≥64	≥15
hs-cTn I (Centaur; Siemens)	<3	<8	<7	≥120	≥20
hs-cTn I (Access; Beckman Coulter)	<4	<5	<5	≥50	≥20
hs-cTn I (Clarity; Singulex)	<1	Tbd	Tbd	≥30	Tbd
hs-cTn I (Vitros; Clinical Diagnostics)	<1	Tbd	Tbd	≥40	Tbd
hs-cTn I (Pathfast; LSI Medience)	<3	Tbd	Tbd	≥90	Tbd
hs-cTn I (TriageTrue; Quidel)	<4	Tbd	Tbd	≥60	Tbd

These cut-offs apply irrespective of age and renal function. Optimized cut-offs for patients above 75 years of age and patients with renal dysfunction have been evaluated, but not consistently shown to provide better balance between safety and efficacy as compared to these universal cut-offs. The algorithms for additional assays are in development.
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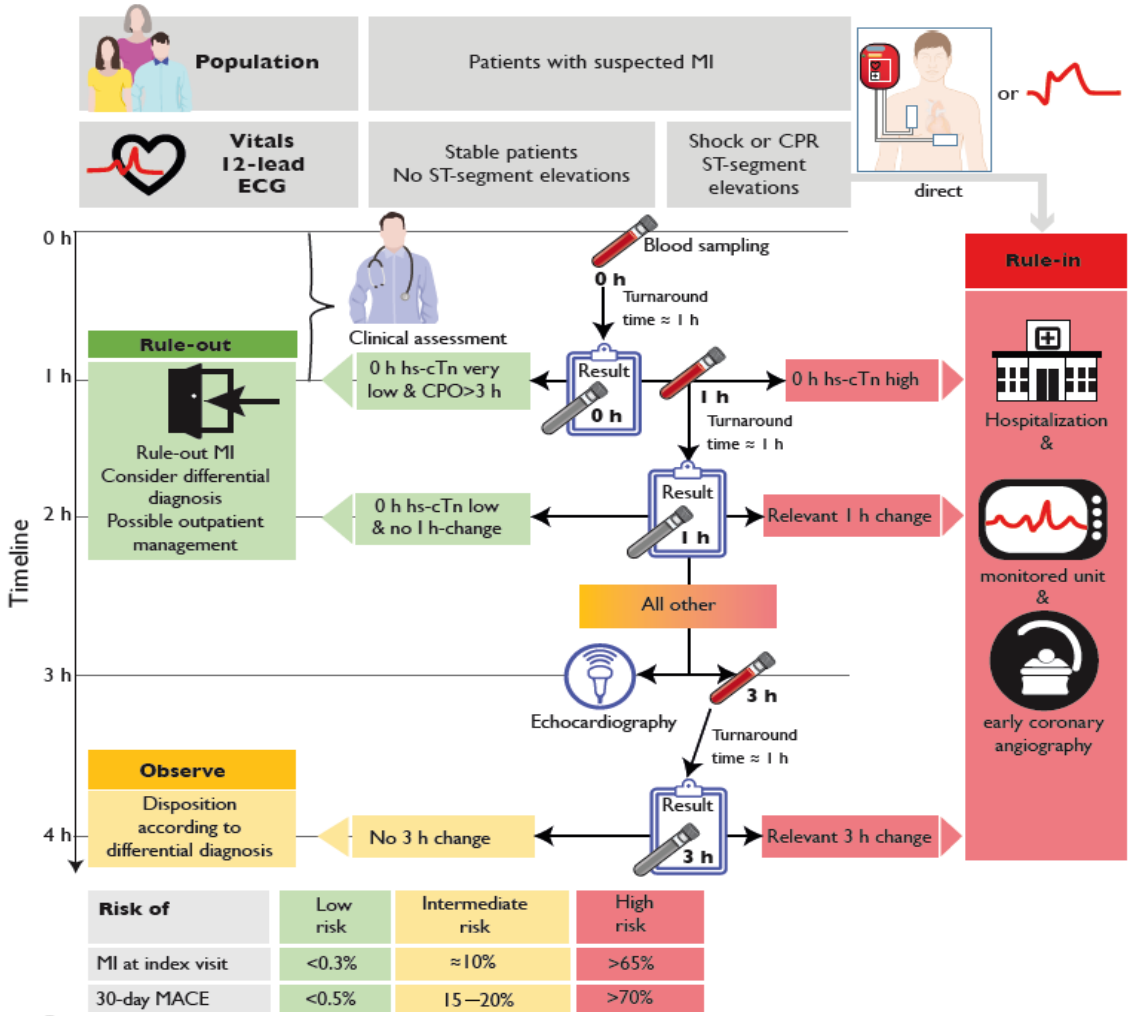

Figure 4 (1) Timing of the blood draws and clinical decisions when using the European Society of Cardiology 0h / 1h algorithm

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2020 ESC Guidelines for the management of acute coronary syndromes in patients presenting
persistent ST-segment elevation (European Heart Journal 2020 - doi/10.1093/eurheartj/eh

Project number: 585927-EPP-1-2017-1-RS-EPPKA2-CBHE-JP (2017 – 3109 / 001 – 001)

Figure 4 (2) Timing of the blood draws and clinical decisions when using the European Society of Cardiology 0 h/1 h algorithm (2).

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0 h and 1 h refer to the time points at which blood is taken. The turn-around time is the time period from blood draw to reporting back the results to the clinician. It is usually about 1 h using an automated platform in the central laboratory. It includes transport of the blood tube to the lab, scanning of the probe, centrifugation, putting plasma on the automated platform, the analysis itself, and the reporting of the test result to the hospital information technology/electronic patient record. The turn-around time is identical whether using a hs-cTn assay vs. a conventional assay, as long as both are run on an automated platform. Adding the local turn-around time to the time of blood draw determines the earliest time point for clinical decision making based on hs-cTn concentrations. e.g. for the 0 h time point, time to decision is at 1 h if the local turn-around time is 1 h. For the blood drawn at 1 h, the results are reported back at 2 h (1 h + 1 h) if the local turn-around time is 1 h. Relevant 1 h changes are assay dependent and listed in *Table 3*.

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Stanja udružena sa porastom vrijednosti troponina (osim akutnog infarkta miokarda tip 1)

- tahiaritmije
- srčana insuficijencija
- hipertenzivna kriza
- kritična stanja (npr. šok, sepsa, opekotine)
- miokarditis, uključujući ekstenziju na miokard endokarditisa ili perikarditisa
- Tako-Tsubo kardiomiopatija
- strukturne srčane bolesti (npr. aortna stenoza)
- disekcija aorte
- embolija pluća, plućna hipertenzija
- bubrežna disfunkcija i udruženo srčano oboljenje
- koronarni spazam
- akutni neurološki dogadjaj (npr. moždani udar ili subarahnoidalna hemoragija)
- kontuzija srca ili kardiološke procedure (ACBG, PCI, ablacija, pejsing, kardioverzija ili endomiokardna biopsija)
- hipotireoza i hipertireoza
- infiltrativne bolesti (npr. amiloidoza, hemohromatoza, sarkoidoza, sklerodermija)
- intoksikacija miokarda ljekovima ili trovanje (npr. doksorubicin, 5-fluorouracil, herceptin, zmijski otrov)
- ekstremni fizički napori
- rabdomioliza

Authors/Task Force Members et al. Eur Heart J 2015;eurheartj.ehv320

Diferencijalna dijagnoza akutnog koronarnog sindoma (bola u grudima)

Kardiološki	Pulmološki	Gastrointestinalni	Vaskularni	Ortopedski	Drugo
Mioperikarditis Kardiomiopatije	**Plućna embolija**	Ezofagitis, refluks, spazam	**Disekcija aorte**	Muskuloskeletni poremećaji	Anksiozni poremećaji
Tahiaritmije	**Pneumotoraks**	Gastritis Ulkusna bolest	Simptomatska aneurizma aorte	Trauma grudnog koša	Herpes zoster
Akutna srčana insuficijencija	Bronhitis Upala pluća	Pankreatitis	Moždani udar	Inflamacija povrijedjenog mišića	Anemija
Hipertenzivna kriza	Pleuritis	Holecistitis		Costochondritis	
Aortna stenoza				Patologija cervikalne kičme	
Tako-Tsubo kardiomiopatija					
Koronarni spazam					
Kardiološka trauma					

Authors/Task Force Members et al. Eur Heart J 2015;eurheartj.ehv320

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NE MOŽETE PAUZIRATI SRCE

Od COVID-19 je tokom 2020. godine širom svijeta preminulo više od 1 700 000 osoba

Od srčanog udara svake godine premine više od 7 000 000 osoba

BRIGA OKO VAŠEG SRCA TREBA BITI PRIORITET
ČAK I ZA VRIJEME COVID-19 PANDEMIJE

www.cantpauseaheart.org

Project number: 585927-EPP-1-2017-1-RS-EPPKA2-CBHE-JP (2017 – 3109 / 001 – 001)

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NE MOŽETE PAUZIRATI SRCE

Vaše srce je i dalje prioritet tokom cijele pandemije. Ako mislite da imate simptome srčanog udara, potražite pomoć bez odlaganja

Ako imate hronično oboljenje srca, nemojte zanemariti uzimanje ljekova i obavljanje kontrolnih pregleda

BRIGA OKO VAŠEG SRCA TREBA BITI PRIORITET
ČAK I ZA VRIJEME COVID-19 PANDEMIJE

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