CURSO
actualización de urgencias

Para residentes

Formato sesiones

HEART SCORE

Enrique González Revuelta
Luis Miguel Maestro

SERVICIO DE URGENCIAS CAULE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

CURSO
actualización
de urgencias
1ª
edición
HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

¿Qué es HEART SCORE?

2/34

INTRODUCCIÓN

¿QUÉ ES HEART-SCORE?

¿QUÉ VALIDEZ DIAGNÓSTICA TIENE?

COMPARACIÓN CON OTRAS ESCALAS

¿CUMPLE CON LOS OBJETIVOS?

CURSO
actualización de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

INTRODUCCIÓN

3/34

¿SOMOS CAPACES DE DESCARTAR SIEMPRE UN ORIGEN CORONARIO ANTE UN DOLOR TORÁCICO?

2%

"We found a **low rate of missed diagnoses** of acute myocardial infarction in the emergency department"

"In this study, **5.8 percent of the black patients** with acute myocardial infarction were not hospitalized, as compared with **1.2 percent of the white** patients with infarction"

TABLE 2. FACTORS ASSOCIATED WITH FAILURE TO HOSPITALIZE PATIENTS WITH ACUTE CARDIAC ISCHEMIA WHO PRESENTED TO THE EMERGENCY DEPARTMENT, ACCORDING TO MULTIVARIABLE MODELS.*

FACTOR	ODDS RATIO FOR DISCHARGE (95% CI)	P VALUE
All patients (n=1855)†		
Chief symptom of shortness of breath	2.7 (1.1–6.5)	0.02
Male sex ≥55 yr	3.7 (0.8–16.2)‡	0.08
Female sex <55 yr	6.7 (1.4–32.5)‡	0.02
Female sex ≥55 yr	1.9 (0.4–9.1)‡	0.40
Nonwhite race	2.2 (1.1–4.3)	0.03
Normal ECG	3.3 (1.7–6.3)	<0.001
Patients with acute myocardial infarction (n=889)§		
Nonwhite race	4.5 (1.8–11.8)	0.002
Normal ECG	7.7 (2.9–20.2)	<0.001

Pope JH, et al. Missed diagnoses of acute cardiac ischemia in the emergency department. N Engl J Med. 2000 Apr 20;342(16):1163-70

ALGORITM 0h/1h

ESC European Society of Cardiology

European Heart Journal (2021) 42, 1289 – 1367
doi:10.1093/eurheartj/ehaa575

ESC GUIDELINES

2020 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation

TPN-US

AL MENOS UNO

DOLOR TORÁCICO

Risk of	Low risk	Intermediate risk	High risk
MI at index visit	<0.3%	≈10%	>65%
30-day MACE	<0.5%	15 – 20%	>70%

1. Symptoms of myocardial ischaemia.
2. New ischaemic ECG changes.
3. Development of pathological Q waves on ECG.
4. Imaging evidence of loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemic aetiology.
5. Intracoronary thrombus detected on angiography or autopsy

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

INTRODUCCIÓN

6/34

Una alteración en una o ambas de estas pruebas determinaría un riesgo elevado y haría necesario el ingreso del paciente.

Sin embargo, en aquellos pacientes **con ambas pruebas normales**, el **riesgo de enfermedad coronaria se encuentra entre un 1% y un 4%.**

Mark DG, et al.Performance of Coronary Risk Scores Among Patients With Chest Pain in the Emergency Department. J Am Coll Cardiol. 2018 Feb 13;71(6):606-616.

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial
Universitario de León | Sacyl | Junta de
Castilla y León

¿Qué es HEART SCORE?

7/34

¿QUÉ ES LA ESCALA HEART?

CURSO
actualización de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

8/34

¿Qué es HEART SCORE?

Determinación del riesgo de SCASEST en **estadios iniciales** con escasa sospecha por presentar perfiles de bajo riesgo.

H	E	A	R	T
HISTORY	ECG	AGE	RISK FACTORS	TPN

CURSO
actualización
de urgencias
1ª edición
HEART SCORE

9/34

¿Qué es HEART SCORE?

Table 1. Composition of the HEART score for chest pain patients in the emergency room.

HEART score for chest pain patients		Score
History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST depression	2
	Nonspecific repolarisation disturbance	1
	Normal	0
Age	≤65 year	2
	45-65 year	1
	<45 year	0
Risk factors	≥3 risk factors or history of atherosclerotic disease	2
	1 or 2 risk factors	1
	No risk factors known	0
Troponin	>2x normal limit	2
	1-2x normal limit	1
	≤normal limit	0
		Total

Diabetes
Tabaquismo
Hipertensión
Hipercolesterolemia
Historia familiar de cardiopatía isquémica
Obesidad
Historia de arteriosclerosis (IAM previo, Revascularización coronaria, ACV o Enf. Arterial periférica)

Six AJ, et al. Chest pain in the emergency room: value of the HEART score. Neth Heart J. 2008 Jun;16(6):191-6

DOLOR TORÁCICO 122

SEGUIMIENTO 600días

29 ENDPOINTs
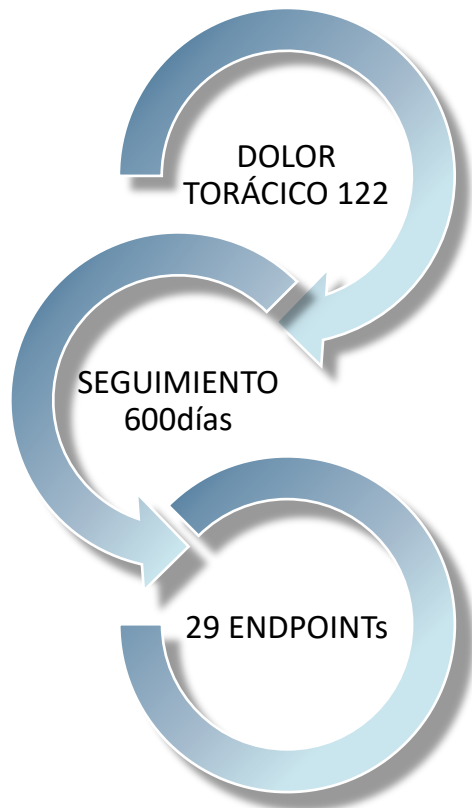
IAM 16(13,3); *IAM 16: 14 de ellos TPN altas a la llegada, 1 ingreso a los 2 días, 1 a los 10 días

PCI 14(11,6); Bypass 6 (5%) Revascularización: PCI 14, Bypass 6. de los 77 hospitalizados PCI 12 y 6 Bypass. De los 43 de alta 2 requirieron PCI

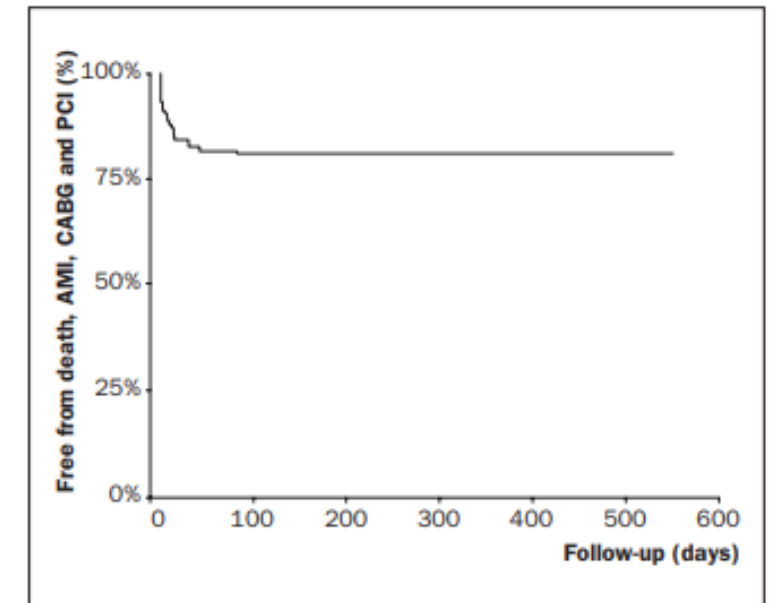Muerte 2(1,6); Mortalidad: 2 casos ingresados a los 14 y 11 días con HEART 8.

Figure 1. Acute myocardial infarction, PCI and CABG free survival.

CURSO
actualización de urgencias
1ª edición

HEART SCORE

¿Qué es HEART SCORE?

11/34

Six AJ, et al. Chest pain in the emergency room: value of the HEART score. Neth Heart J. 2008 Jun;16(6):191-6
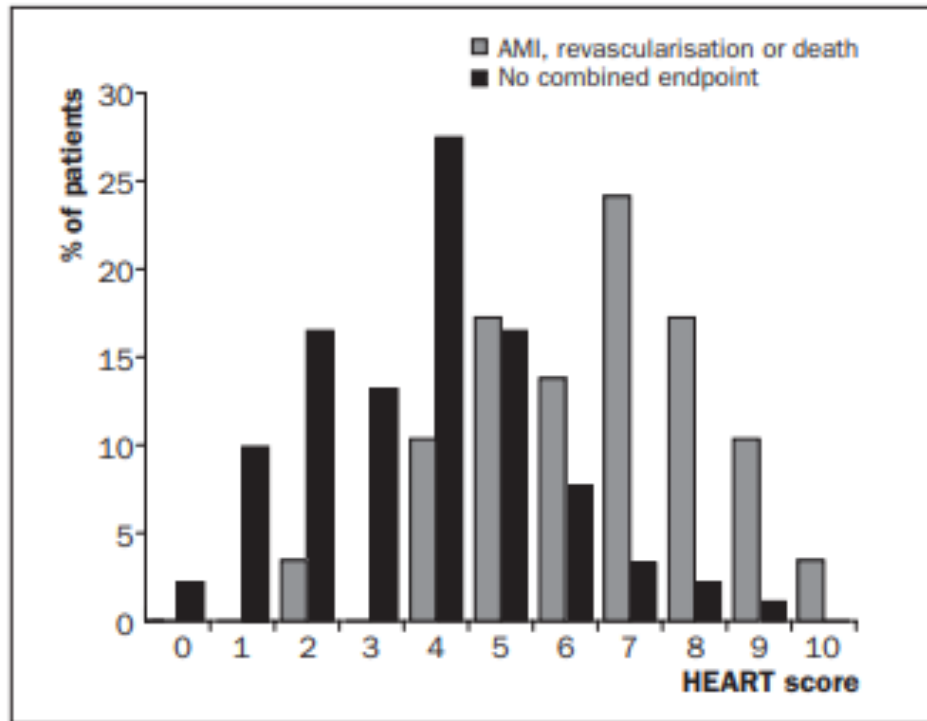

Figure 2. Percentages of patients in each HEART score in groups with and without the combined endpoint of AMI, revascularisation
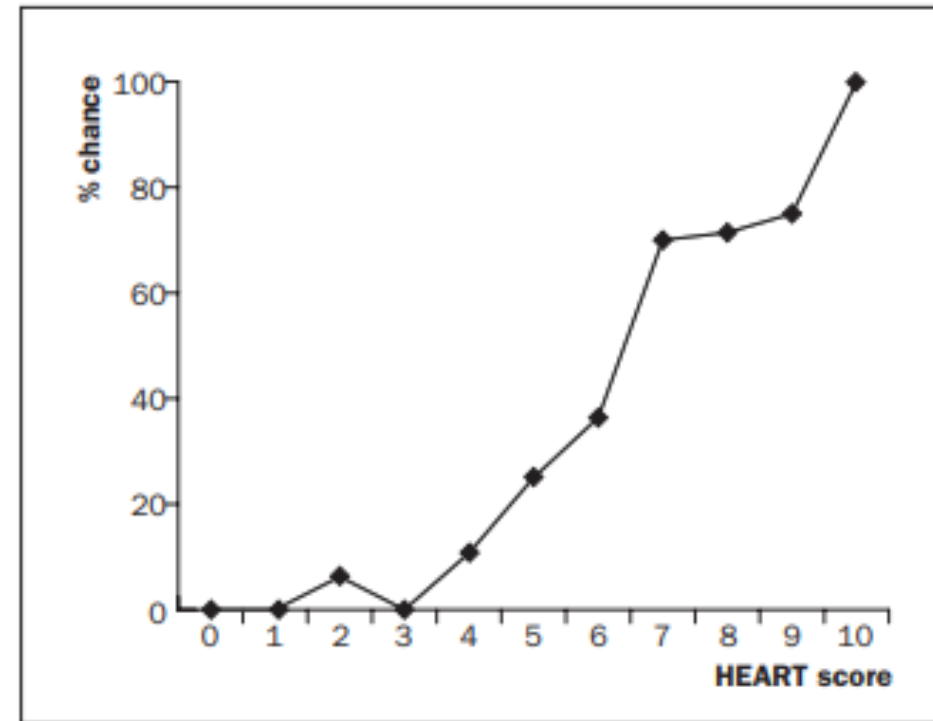
Figure 3. Chances of reaching the combined endpoint in each HEART category.

Six AJ, et al. Chest pain in the emergency room: value of the HEART score. Neth Heart J. 2008 Jun;16(6):191-6

Table 3. Numbers of patients in each element of the HEART score in groups with or without endpoints.

	No endpoint reached n=91			One or more endpoints reached n=29			P value
Points	0	1	2	0	1	2	
History	44	37	10	5	10	14	<0.0001
ECG	60	23	8	8	4	17	<0.0001
Age	13	36	42	4	7	18	0.2847
Risk factors	15	44	32	3	9	17	0.0827
Troponin	82	4	5	15	1	13	<0.0001
HEART score (average ± SD)	3.71±1.83			6.51±1.84			<0.0001

CURSO
actualización de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

¿Qué es HEART SCORE?

13/34

Six AJ, et al. Chest pain in the emergency room: value of the HEART score. Neth Heart J. 2008 Jun;16(6):191-6

Cuantificación *del dolortorácico, Comunicación (útil en valores extremos).*

HEART >7: 72,7% endpoint: *necesidad de valorar estrategias invasivas con multicéntricos*
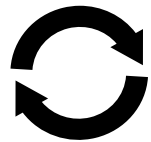
4

7

HEART 4-6: 20,3% endpoint: *Observación tratado como SCA, seriación TPN, test ejercicio, " detección avanzada de isquemia".*

Otras escalas, GRACE; TIMI, PURSUIT: *para riesgos altos, sin interes para riesgos moderados o bajos. TIMI dicotomicas, ignora regiones grises*

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León
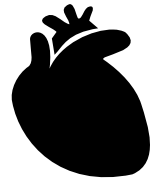
¿Qué es HEART SCORE?

14/34

Salimi A, et al. The potential of HEART score to detect the severity of coronary artery disease according to SYNTAX score. Sci Rep. 2023 May 4;13(1):7228

Pacientes con coronariografía.
SYNTAX SCORE ≥ 23 se considera de alto riesgo de enfermedad coronaria oclusiva.

Clasificaron a los pacientes **por riesgo**; low risk (HS ≤ 3), moderate risk (3 ≤ HS > 7), and high risk (HS ≥ 7)

quantity values of SS and HS by Pearson correlation and the result was significant (r-coefficient 0.493).

HS with a cut-off value of 6 is 52% sensitive and 74.67% specific for predicting high SS (≥ 23).,

Different Analyses of association between HEART and SYNTAX scores.

	Pearson correlation coefficient		Independent T-tests	One-way ANOVA
	r-coefficient	P-value	P-value	P-value
Association between quantity values of HEART and SYNTAX scores	0.493	< 0.001	–	–
Association between quantity value of HEART score and sub-groups of SYNTAX score	–	–	< 0.001	–
Association between quantity value of SYNTAX and sub-groups of HEART score	–	–	–	< 0.001

Receiver operating characteristic (ROC) curve analysis for SYNTAX score (≥ 23) prediction.

Intermediate and high SYNTAX score	AUC (95% CI)	Cut-off value	P value	Sensitivity (%)	Specificity (%)
Age	0.706 (0.651–0.757)	55 years	< 0.001	88.00	45.33
HEART score	0.671 (0.615–0.724)	6	< 0.001	52.00	74.67

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

OTROS SCOREs

15/34

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

Mahler SA, et al.. The HEART Pathway randomized trial: identifying emergency department patients with acute chest pain for early discharge. Circ Cardiovasc Qual Outcomes. 2015 Mar;8(2):195-203.

2015-ECA
HEART + 0h/3h

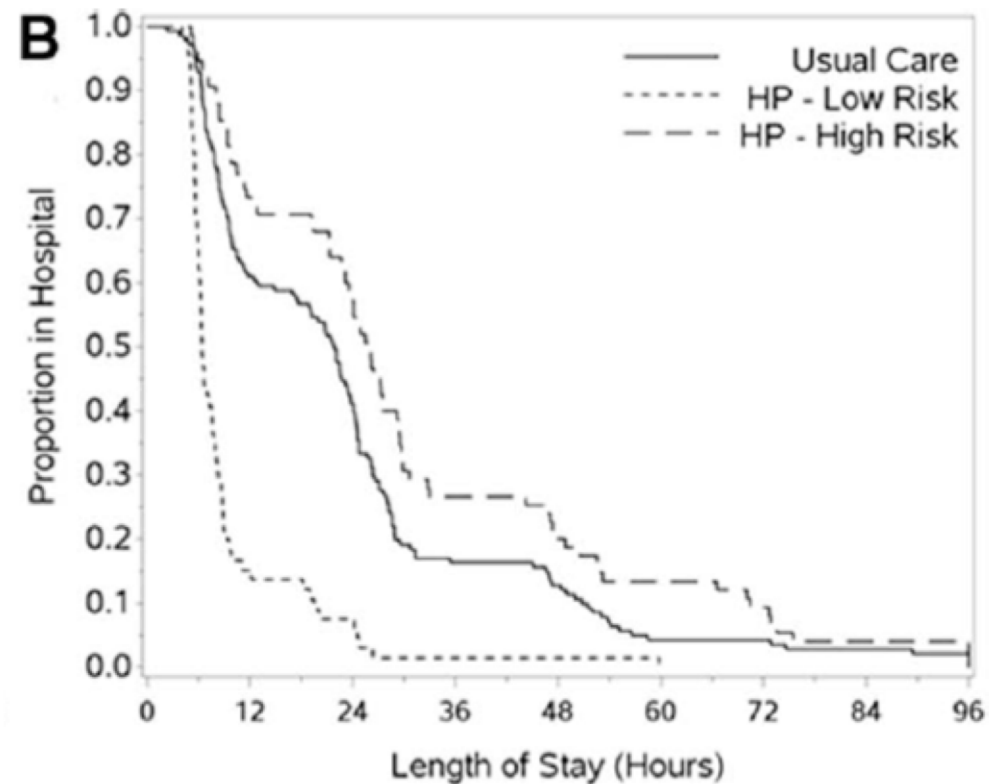n = 282
Dolores torácicos

21,3% Aumento de **altas tempranas**

12h Disminuyó la **estancia mediana** en urgencias

12,1% Disminuyó **pruebas cardiacas** objetivas a los 30 días

B — Proportion in Hospital vs Length of Stay (Hours): Usual Care, HP - Low Risk, HP - High Risk

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

PRECISIÓN DX

16/34

¿QUÉ VALIDEZ DIAGNÓSTICA TIENE LA ESCALA HEART?

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

PRECISIÓN DX

17/34

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

Fernando SM, et al. Prognostic Accuracy of the HEART Score for Prediction of Major Adverse Cardiac Events in Patients Presenting With Chest Pain: A Systematic Review and Meta-analysis. Acad Emerg Med. 2019 Feb;26(2):140-151.

2019-30 studies

n = 44,202

40% Europa

H E A R T   S C O R E

≥4 — Sn 96% / Sp 45%

≥7 — Sn 40% / Sp 95%

Table 2
Summary Estimates of the Performance of the HEART Score and TIMI Score

	No. of Cohorts (No. of Patients)	Sensitivity, % (95% CI)	Specificity, % (95% CI)	Diagnostic OR (95% CI)	Positive Likelihood Ratio (95% CI)	Negative Likelihood Ratio (95% CI)
MACE						
HEART score ≥ 4	29 (44,202)	95.9 (93.3 to 97.5)	44.6 (38.8 to 50.5)	18.68 (12.44 to 28.06)	1.73 (1.57 to 1.90)	0.09 (0.06 to 0.14)
HEART score ≥ 7	21 (38,475)	39.5 (31.6 to 48.1)	95.0 (92.6 to 96.6)	12.40 (9.28 to 16.56)	7.89 (5.95 to 10.47)	0.64 (0.56 to 0.72)
TIMI score ≥ 2	8 (26,397)	87.8 (80.2 to 92.8)	48.1 (38.9 to 57.5)	6.68 (4.50 to 9.90)	1.69 (1.47 to 1.94)	0.25 (0.17 to 0.37)
TIMI score ≥ 6	3 (18,895)	2.8 (0.8 to 9.6)	99.6 (98.5 to 99.9)	6.69 (3.58 to 12.50)	6.53 (3.53 to 12.08)	0.98 (0.95 to 1.01)
Death						
HEART score ≥ 4	7 (9,338)	95.0 (87.2 to 98.2)	34.2 (28.7 to 40.2)	9.97 (3.64 to 27.33)	1.45 (1.32 to 1.58)	0.14 (0.06 to 0.38)
HEART score ≥ 7	5 (8,092)	48.4 (31.7 to 65.4)	91.9 (88.4 to 94.3)	10.56 (5.80 to 19.24)	5.94 (4.17 to 8.45)	0.56 (0.41 to 0.78)
MI						
HEART score ≥ 4	9 (13,032)	97.5 (93.7 to 99.0)	40.5 (33.6 to 47.9)	26.34 (10.55 to 65.76)	1.64 (1.46 to 1.84)	0.06 (0.03 to 0.15)
HEART score ≥ 7	5 (9,407)	42.5 (28.9 to 57.3)	96.9 (94.5 to 98.3)	22.88 (18.93 to 27.66)	13.58 (10.33 to 17.85)	0.59 (0.47 to 0.75)
Coronary revascularization						
HEART score ≥ 4	6 (8,391)	89.7 (87.2 to 91.8)	41.8 (39.4 to 44.2)	6.27 (4.83 to 8.14)	1.54 (1.47 to 1.62)	0.25 (0.20 to 0.31)
HEART score ≥ 7	5 (8,092)	30.0 (20.2 to 42.1)	94.5 (91.2 to 96.6)	7.33 (4.19 to 12.84)	5.43 (3.40 to 8.66)	0.74 (0.64 to 0.86)

MACE = major adverse cardiac events; MI = myocardial infarction; TIMI = Thrombolysis in Myocardial Infarction.

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

18/34

PRECISIÓN DX BAJO RIESGO

¿Y EN LOS DE BAJO RIESGO?

CURSO
actualización de urgencias
1ª edición

HEART SCORE

PRECISIÓN DX BAJO RIESGO

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

19/34

Laureano-Phillips J, et al.. HEART Score Risk Stratification of Low-Risk Chest Pain Patients in the Emergency Department: A Systematic Review and Meta-Analysis. Ann Emerg Med. 2019 Aug;74(2):187-203.

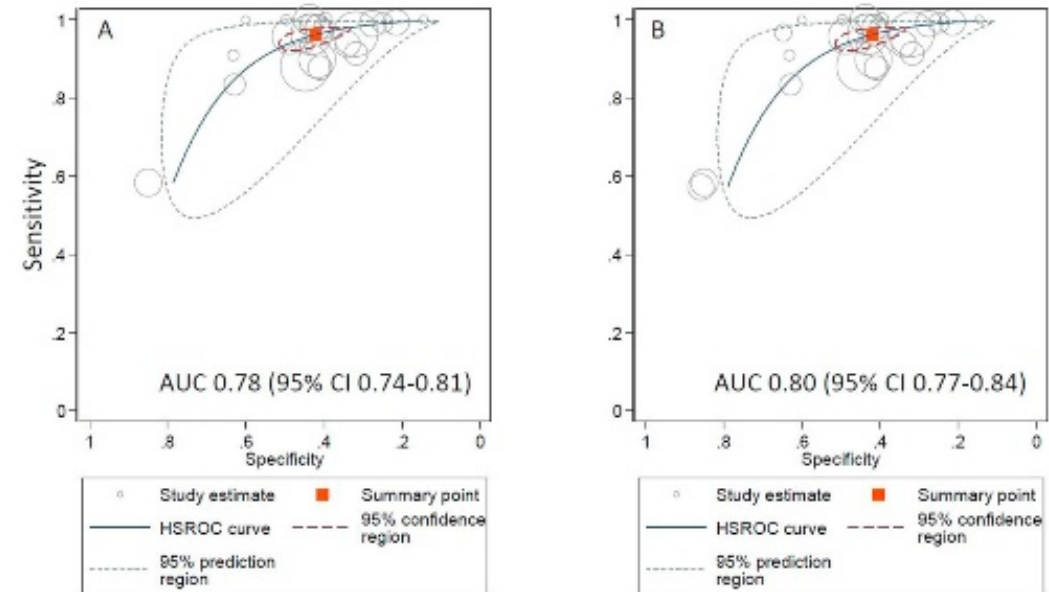2019 - 25 studies

n = 25.266
HS<4 = 9.919

0,96 Sn

0,99 VPN

0,09 LR-

AUC 0.78 (95% CI 0.74-0.81)

AUC 0.80 (95% CI 0.77-0.84)

Figure E2. Hierarchical summary receiver operating characteristic curve of low-risk HEART scores predicting MACE outcomes among chest pain patients. Panel A: Short-Term MACE outcomes (including 23 studies; Panel B: All-Timeframe MACE outcomes (inclusing total 25 studies).

CURSO
actualización
de urgencias
1ª edición
HEART SCORE

PRECISIÓN DX BAJO RIESGO

20/34

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

Laureano-Phillips J, et al.. HEART Score Risk Stratification of Low-Risk Chest Pain Patients in the Emergency Department: A Systematic Review and Meta-Analysis. Ann Emerg Med. 2019 Aug;74(2):187-203.

Table 3. A comparison of major adverse cardiac event occurrence among subgroups.

Overall and Subgroup	Occurrence of MACEs, %	
	Low-Risk Group	High-Risk Group
Overall short-term MACE*	2.1 (182/8,832)	21.9 (3,290/15,038)
Overall long-term MACE*	1.1 (23/2,012)	23.7 (449/1,894)
Overall all-timeframe MACE*	1.9 (189/9,919)	21.7 (3,327/15,347)
Subgroup analysis		
Geographic locations		
North America (short term)	0.7 (13/1,745)	17.8 (456/2,566)
North America (all-timeframe MACE)	0.7 (19/2,585)	17.1 (464/2,712)
Europe (short-term MACE)	2.5 (105/4,230)	24.3 (1,771/7,276)
Europe (all-timeframe MACE)	2.4 (106/4,477)	24.2 (1,800/7,439)
Asia-Pacific (short-term and all-timeframe MACE)	2.6 (63/2,440)	21.4 (1,058/4,948)
HEART criteria		
Traditional HEART criteria (short-term MACE)	2.4 (174/7,175)	22.3 (3,068/13,738)
Traditional HEART criteria (all-timeframe MACE)	2.4 (175/7,422)	22.3 (3,097/13,901)
Modified HEART criteria (short-term MACE)	0.8 (21/2,590)	20.5 (596/2,906)
Modified HEART criteria (all-timeframe MACE)	0.8 (28/3,675)	19.7 (633/3,217)
Troponin reagent		
Conventional troponin (short-term MACE)	1.8 (93/5,093)	21.9 (2,039/9,301)
Conventional troponin (all-timeframe MACE)	1.6 (100/6,180)	21.6 (2,076/9,610)
High-sensitivity troponin (short-term and all-timeframe MACE)	0.8 (12/1,539)	17.1 (396/2,316)
Mixed troponin† (short-term and all-timeframe MACE)	3.5 (77/2,200)	25.0 (855/3,421)

*Short term refers to patients with either 30-day or 6-week follow-up after the index ED visits; long term refers to at least more than 3-month follow-up after the index ED visits. All timeframe is defined as all 23 short-term MACE studies, in addition to 2 long-term ones (Melki[27] and Wang[25]).
†These studies used mixed troponin reagents for the HEART calculation, which occurred in multicenter studies, and were unable to be further divided into either conventional or high-sensitivity troponin groups, or the studies did not specify the type of troponin reagents used.

Table 4. A comparison of the diagnostic accuracy of low-risk HEART score predictive of major adverse cardiac event outcomes.

	Pooled Sensitivity (95% CI)	Pooled Specificity (95% CI)	Pooled PPV (95% CI)	Pooled NPV (95% CI)	Pooled LR+ (95% CI)	Pooled LR– (95% CI)
Overall short-term MACE*	0.96 (0.93–0.98)	0.42 (0.36–0.49)	0.19 (0.14–0.24)	0.99 (0.98–0.99)	1.66 (1.50–1.85)	0.09 (0.06–0.15)
Overall long-term MACE*	0.96 (0.76–0.99)	0.59 (0.41–0.74)	0.21 (0.11–0.35)	0.99 (0.97–1.00)	2.31 (1.60–3.34)	0.08 (0.01–0.40)
Overall all-timeframe MACE*	0.96 (0.93–0.98)	0.45 (0.38–0.53)	0.18 (0.14–0.23)	0.99 (0.98–0.99)	1.74 (1.54–1.98)	0.10 (0.06–0.15)
Subgroup meta-analysis						
Geographic locations						
North America (short-term MACE)	0.96 (0.87–0.99)	0.45 (0.29–0.62)	0.13 (0.08–0.21)	0.99 (0.98–1.00)	1.75 (1.32–2.34)	0.08 (0.03–0.25)
North America (all-timeframe MACE)	0.94 (0.82–0.98)	0.51 (0.33–0.70)	0.12 (0.08–0.19)	0.99 (0.99–1.00)	1.94 (1.38–2.72)	0.11 (0.04–0.29)
Europe (short-term MACE)	0.96 (0.92–0.98)	0.44 (0.40–0.48)	0.25 (0.20–0.30)	0.98 (0.96–0.99)	1.71 (1.57–1.85)	0.10 (0.06–0.18)
Europe (all-timeframe MACE)	0.96 (0.92–0.98)	0.46 (0.41–0.52)	0.24 (0.20–0.29)	0.98 (0.97–0.99)	1.78 (1.59–1.99)	0.09 (0.05–0.17)
Asia-Pacific (short-term and all-timeframe MACE)	0.97 (0.91–0.99)	0.35 (0.27–0.43)	0.22 (0.16–0.30)	0.98 (0.96–0.99)	1.48 (1.34–1.65)	0.09 (0.04–0.21)
HEART criteria						
Traditional HEART criteria (short-term MACE)	0.97 (0.94–0.98)	0.38 (0.33–0.43)	0.22 (0.18–0.27)	0.98 (0.97–0.99)	1.56 (1.45–1.68)	0.08 (0.05–0.14)
Traditional HEART criteria (all-timeframe MACE)	0.97 (0.94–0.98)	0.39 (0.34–0.45)	0.22 (0.18–0.26)	0.98 (0.98–0.99)	1.60 (1.47–1.74)	0.08 (0.05–0.14)
Modified HEART criteria (short-term MACE)	0.95 (0.88–0.98)	0.53 (0.37–0.68)	0.10 (0.05–0.19)	0.99 (0.99–1.00)	2.02 (1.51–2.69)	0.09 (0.05–0.19)
Modified HEART criteria (all-timeframe MACE)	0.93 (0.84–0.97)	0.59 (0.44–0.72)	0.10 (0.06–0.17)	0.99 (0.99–1.00)	2.27 (1.69–3.05)	0.11 (0.06–0.22)
Troponin reagent						
Conventional troponin (short-term MACE)	0.96 (0.91–0.98)	0.43 (0.34–0.53)	0.19 (0.14–0.25)	0.99 (0.98–0.99)	1.67 (1.44–1.94)	0.10 (0.06–0.18)
Conventional troponin (all-timeframe MACE)	0.95 (0.90–0.97)	0.48 (0.37–0.58)	0.18 (0.13–0.23)	0.99 (0.98–0.99)	1.81 (1.51–2.17)	0.11 (0.07–0.19)
High-sensitivity troponin (short-term and all-timeframe MACE)	0.97 (0.88–0.99)	0.45 (0.36–0.54)	0.13 (0.05–0.29)	0.99 (0.97–1.00)	1.76 (1.51–2.06)	0.07 (0.02–0.26)
Mixed troponin† (short-term and all-timeframe MACE)	0.99 (0.35–1.00)	0.36 (0.24–0.51)	0.26 (0.23–0.30)	0.97 (0.95–0.99)	1.56 (1.27–1.91)	0.02 (0.00–4.02)

*Short term refers to patients with either 30-day or 6-week follow-up after the index ED visits, long-term refers to at least more than 3-month follow-up after the index ED visits, and all timeframe is defined as analyzing data from all 25 enrolled studies, including all 23 short-term MACE studies and 2 long-term ones.
†These studies used mixed troponin reagents for the HEART calculation, which occurred in multicenter studies, and they were unable to be further divided into either conventional or high-sensitivity troponin groups.

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial
Universitario de León | Sacyl | Junta de
Castilla y León

OTROS SCOREs

21/34

¿ES MEJOR QUE OTROS SCORES?

Poldervaart JM, et al.. Comparison of the GRACE, HEART and TIMI score to predict major adverse cardiac events in chest pain patients at the emergency department. Int J Cardiol. 2017 Jan 15;227:656-661
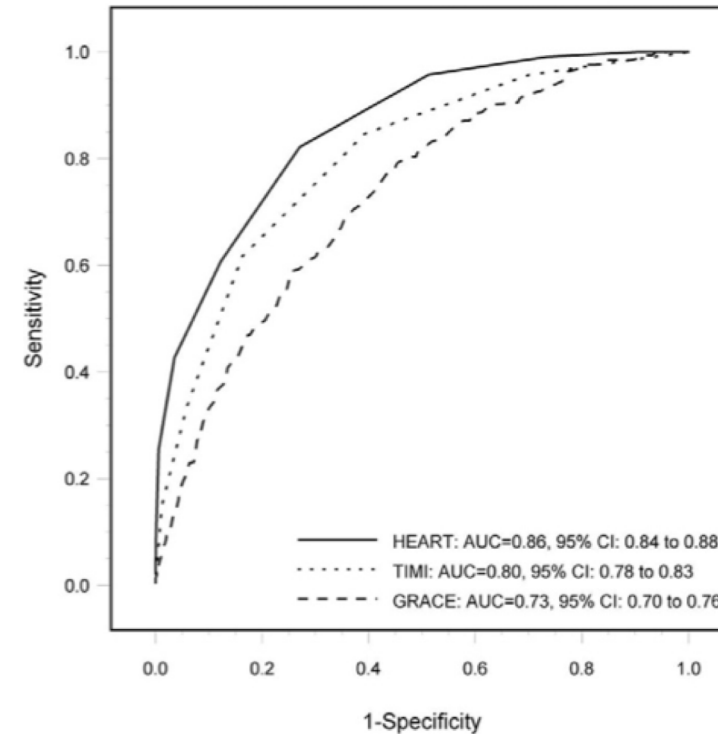
2017
HEART IMPACT TRIAL

n = 3666
Dolores
torácicos

The HEART score identified the largest number of patients (40.5%) as **low risk** **without compromising safety.**

HEART: AUC=0.86, 95% CI: 0.84 to 0.88
TIMI: AUC=0.80, 95% CI: 0.78 to 0.83
GRACE: AUC=0.73, 95% CI: 0.70 to 0.76

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

OTROS SCOREs

23/34

Laureano-Phillips J, et al.. HEART Score Risk Stratification of Low-Risk Chest Pain Patients in the Emergency Department: A Systematic Review and Meta-Analysis. Ann Emerg Med. 2019 Aug;74(2):187-203.

33 Cohort studies

n = 40.262 Dolores torácicos

HEART > GRACE

The results of indirect comparison analysis indicated that **TIMI and HEART** had relatively relative **better predictive** values **than GRACE** on subsequent MACE risk

Systematic comparisons of the sensitivity, specificity, PLR and NLR, DOR and the AUC of risk stratifying measured by TIMI, HEART and GRACE

Parameters	TIMI	HEART	GRACE	TIMI versus HEART	TIMI versus GRACE	HEART versus GRACE
Sensitivity and 95% CI	0.95 (0.91–0.98)	0.96 (0.91–0.98)	0.78 (0.64–0.87)	0.99 (0.94–1.04)	1.22 (1.04–1.43)	1.23 (1.05–1.44)
Specificity and 95% CI	0.36 (0.24–0.50)	0.50 (0.41–0.60)	0.56 (0.46–0.66)	0.72 (0.48–1.09)	0.64 (0.43–0.97)	0.89 (0.69–1.16)
PLR and 95% CI	1.49 (1.25–1.79)	1.94 (1.61–2.35)	1.77 (1.51–2.08)	0.77 (0.59–1.00)	0.84 (0.66–1.07)	1.10 (0.86–1.40)
NLR and 95% CI	0.13 (0.07–0.21)	0.08 (0.03–0.17)	0.40 (0.27–0.59)	0.46 (0.15–1.39)	0.32 (0.17–0.64)	0.20 (0.08–0.52)
DOR and 95% CI	9.18 (6.22–13.55)	17.92 (9.40–34.18)	4.00 (2.78–5.74)	0.51 (0.24–1.09)	2.29 (1.35–3.91)	4.48 (2.14–9.39)
AUC and 95% CI	0.80 (0.76–0.83)	0.80 (0.77–0.84)	0.70 (0.66–0.74)	1.00 (0.94–1.06)	1.14 (1.06–1.23)	1.14 (1.06–1.23)

CURSO
actualización de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

OTROS SCOREs

24/34

Mark Dg et al. Permanente CREST Network Investigators. Performance of Coronary Risk Scores Among Patients With Chest Pain in the Emergency Department. J Am Coll Cardiol. 2018 Feb 13;71(6):606-616.
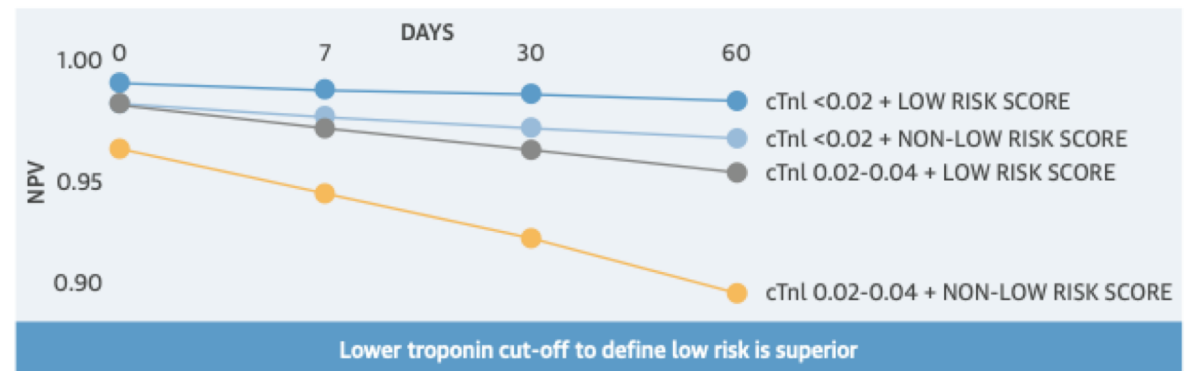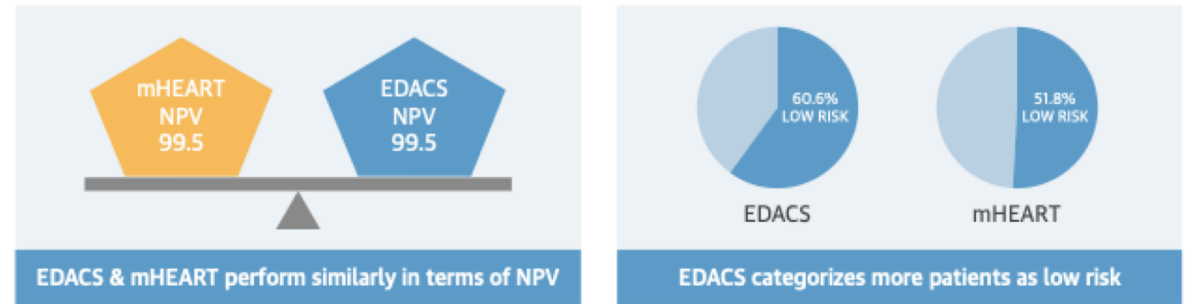
Observacional retrospectivo

118.822 Dolores torácicos

EDACS > HEART

CENTRAL ILLUSTRATION Performance of the EDACS Versus Modified HEART Score Among Emergency Department Patients With Chest Pain

mHEART NPV 99.5 — EDACS NPV 99.5

EDACS & mHEART perform similarly in terms of NPV

60.6% LOW RISK — EDACS
51.8% LOW RISK — mHEART

EDACS categorizes more patients as low risk

DAYS: 0, 7, 30, 60
NPV: 1.00, 0.95, 0.90

cTnl <0.02 + LOW RISK SCORE
cTnl <0.02 + NON-LOW RISK SCORE
cTnl 0.02-0.04 + LOW RISK SCORE
cTnl 0.02-0.04 + NON-LOW RISK SCORE

Lower troponin cut-off to define low risk is superior

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

FRECUENCIA ECM

25/34

¿PREDICE MEJOR LOS ECM TRAS EL ALTA?

Mahler SA, et al. Can the HEART score safely reduce stress testing and cardiac imaging in patients at low risk for major adverse cardiac events? Crit Pathw Cardiol. 2011 Sep;10(3):128-33.

2011 - COHORT

n = 1070
Dolores torácicos
De bajo riesgo por TIMI

0,6%

Hubo un 0,6% cd ECM entre el grupo clasificado con **HS de bajo riesgo**

82%

Reducción potencial de realización de **pruebas cardiológicas específicas** de hasta el 82% en los HS >4

CURSO
actualización de urgencias
1ª edición

HEART SCORE

FRECUENCIA ECM

27/34

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

2019-30 studies

n = 44,202

40% Europa

The HEART score has excellent performance for **prediction of MACE** (particularly mortality and MI) in chest pain patients and should be the primary clinical decision instrument used for the risk stratification of this patient population.

≥4

1,6%

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

PRECISIÓN DX BAJO RIESGO

28/34

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

2019-25 studies

n = 25.266
HS<4 = 9.919

2,1%

Hubo un 2,1% de ECM entre el grupo clasificado con **HS de bajo riesgo**

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

CONCLUSIONES

29/34

CONCLUSIONES

CURSO
actualización
de urgencias
1ª
edición

HEART SCORE

Complejo Asistencial
Universitario de León | Sacyl | Junta de
Castilla y León

CONCLUSIONES

30/34

ESCALA HEART ¿PODEMOS APLICARLA EN NUESTRO SERVICIO?

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

INTRODUCCIÓN

31/34

A FAVOR

1. Cuantifica variables clínicas. Mejorar **comunicación**

2. **HS >4**: alta precisión para predecir eventos cardiovasculares mayores (**ECM**)

3. **HS <3: VPN elevado** para descartar con seguridad SCA y ECM en 60 días.

4. Reduce la **estancia media** en 12h

5. Reduce la utilización de **pruebas específicas**

6. Aumenta con seguridad las "**Altas tempranas**"

7. Reduce las pérdidas diagnósticas de SCA por debajo del **2%?**

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

CONCLUSIONES

32/34

EN CONTRA

1. La valoración de la **Historia clínica** sigue siendo **subjetiva**.

2. Los errores diagnósticos siguen en el **2%?**

3. No conocemos si tiene mayor precisión diagnóstica que otras estrategias como la **0h/1h**

4. **Heterogeneidad** en estudios. TPN vs TPN-US en investigaciones. Poblaciones de estudio.

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

CONCLUSIONES

33/34

"Hay que tener en cuenta que **no todos los matices de la evaluación clínica pueden ser recogidos en un score** y por lo tanto la anamnesis detallada sigue siendo una herramienta clínica fundamental."

Dr. Fernández Cisnal
Cardiologo. HCUV.

CURSO
actualización
de urgencias
1ª edición

HEART SCORE

INTRODUCCIÓN

34/34

GRACIAS