XII congresso nazionale

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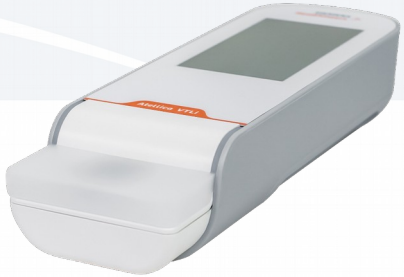
RICCIONE 13-15 MAGGIO 2022

# HEART POCT

## Dosaggio di Troponine ad elevavata sensibilità in un setting preospedaliero

Dott.ssa Margherita Scorpiniti, UOC 118 Arezzo



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# HEART POCT


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SOCIETÀ ITALIANA MEDICINA D'EMERGENZA-URGENZA
SIMEU

# IL DOLORE TORACICO

Nella pratica attuale *:

- circa la metà dei pazienti che presentano dolore toracico viene dimesso con diagnosi di causa non cardiaca del dolore
- dei pazienti ricoverati solo il 25% ha una diagnosi finale di SCA
- circa il 2% dei pazienti con dolore toracico con SCA viene erroneamente dimesso.

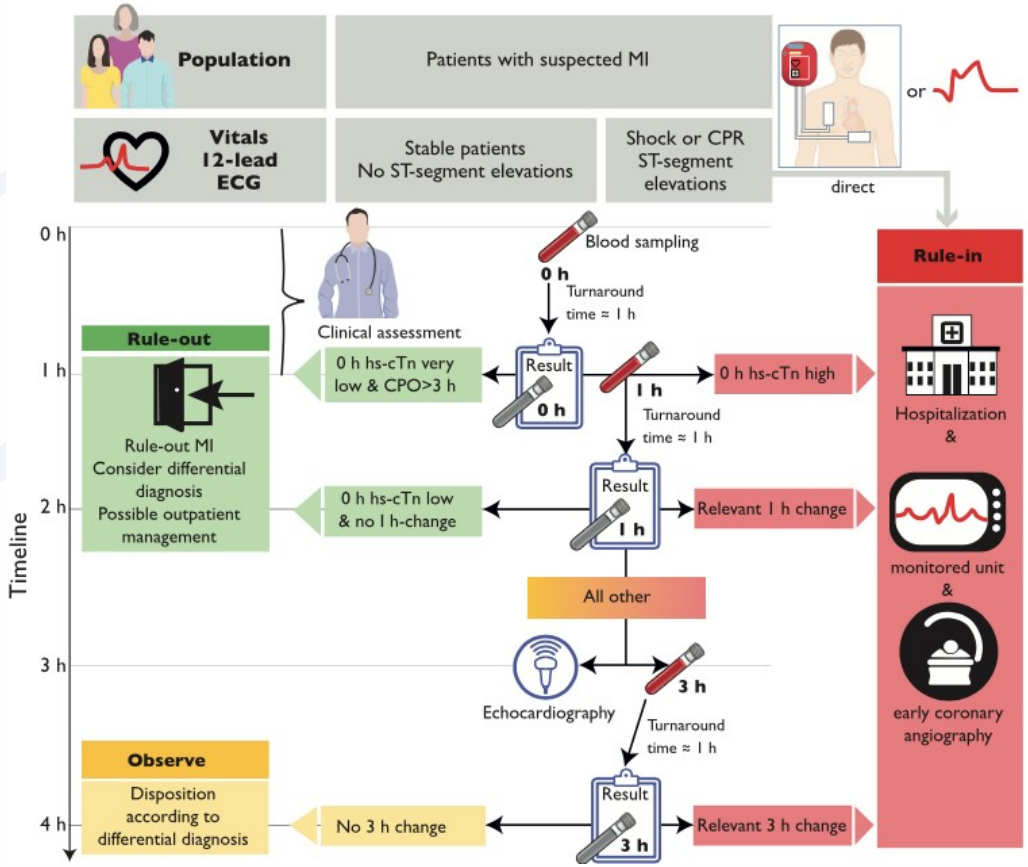


*Stepinska J, Lettino M, Ahrens I, Bueno H, Garcia-Castrillo L, Khoury A, Lancellotti P, Mueller C, Muenzel T, Oleksiak A, Petrino R, Guimenez MR, Zahger D, Vrints CJ, Halvorsen S, de Maria E, Lip GY, Rossini R, Claeys M, Huber K. Diagnosis and risk stratification of chest pain patients in the emergency department: focus on acute coronary syndromes. A position paper of the Acute Cardiovascular Care Association. Eur Heart J Acute Cardiovasc Care. 2020 Feb;9(1):76-89.

ESC European Society of Cardiology
European Heart Journal (2020) 00, 1–79
doi:10.1093/eurheartj/ehaa575

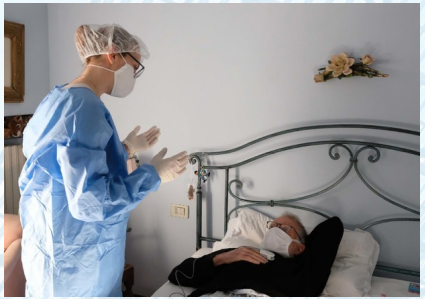
ESC GUIDELINES

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



# HEART POCT

Ma se la troponina la misurassimo a casa?



# Letteratura POCT

Practice review

OPEN ACCESS

Point-of-care testing with high-sensitivity cardiac troponin assays: the challenges and opportunities

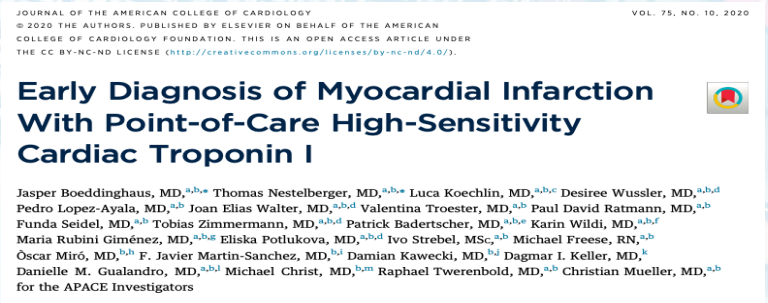
Louise Cullen [1], Paul O Collinson [2], Evangelos Giannitsis[3]

**Clinical Chemistry** 65:12
1592–1601 (2019)

Point-of-Care Testing

Diagnostic Evaluation of a High-Sensitivity Troponin I Point-of-Care Assay

Nils A. Sörensen,[1,2*] Johannes T. Neumann,[1,2] Francisco Ojeda,[1] Evangelos Giannitsis,[3] Eberhard Spanuth,[4] Stefan Blankenberg,[1,2] Dirk Westermann,[1,2†] and Tanja Zeller[1,2†]



JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 75, NO. 10, 2020



Early Diagnosis of Myocardial Infarction With Point-of-Care High-Sensitivity Cardiac Troponin I

Jasper Boeddinghaus, MD,[a,b,*] Thomas Nestelberger, MD,[a,b,*] Luca Koechlin, MD,[a,b,c] Desiree Wussler, MD,[a,b,d] Pedro Lopez-Ayala, MD,[a,b] Joan Elias Walter, MD,[a,b,d] Valentina Troester, MD,[a,b] Paul David Ratmann, MD,[a,b] Funda Seidel, MD,[a,b] Tobias Zimmermann, MD,[a,b,d] Patrick Badertscher, MD,[a,b,e] Karin Wildi, MD,[a,b,f] Maria Rubini Giménez, MD,[a,b,g] Eliska Potlukova, MD,[a,b,d] Ivo Strebel, MSc,[a,b] Michael Freese, RN,[a,b] Òscar Miró, MD,[b,h] F. Javier Martin-Sanchez, MD,[b,i] Damian Kawecki, MD,[b,i] Dagmar I. Keller, MD,[k] Danielle M. Gualandro, MD,[a,b,l] Michael Christ, MD,[b,m] Raphael Twerenbold, MD,[a,b] Christian Mueller, MD,[a,b] for the APACE Investigators

- Rapida esecuzione
- Buona fattibilità
- Accuratezza diagnostica (protocollo 0-1h)

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# Letteratura POCT

Practice review

OPEN ACCESS

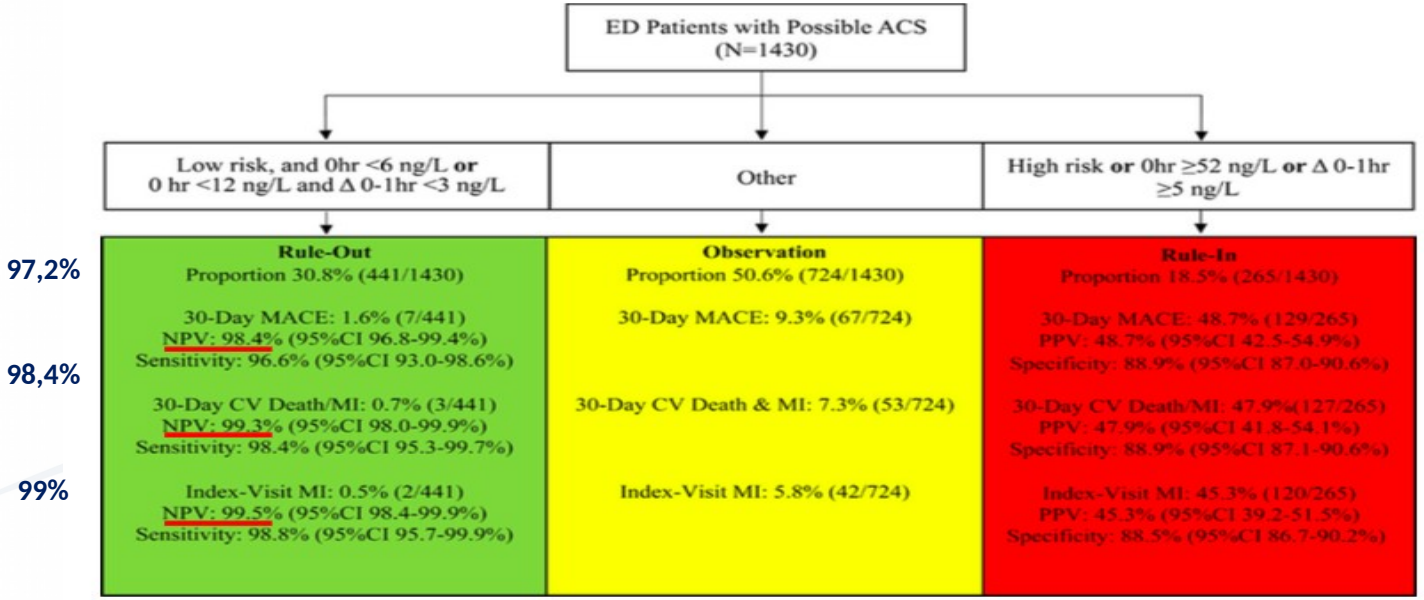
## Point-of-care testing with high-sensitivity cardiac troponin assays: the challenges and opportunities

Louise Cullen ,[1] Paul O Collinson ,[2] Evangelos Giannitsis[3]

assays may not have a significant impact on ED efficiency. The literature to date illustrates that it is not the provision of rapid cTn results alone that is important but their inclusion within a clinical decision-making pathway.[32] Widespread adoption of

# “High Sensitivity Cardiac Troponin T in a Multisite United States Cohort”

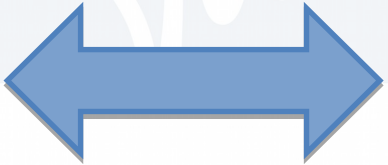
Benjamin M. Gerretsen, MD REBEL EM Medical Category: **CIRCULATION,** March 2021

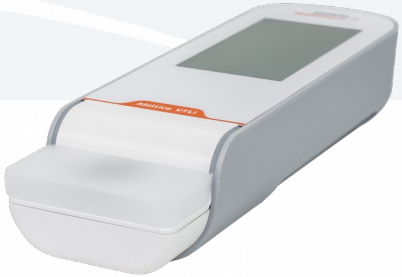



1462 pt: The 0/1-h high-sensitivity troponin algorithm combined with the HEART score

# HEART POCT

## Una proposta di studio clinico





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# HEART

## HEART score for chest pain patients

| | | | |
|---|---|---|---|
| History (Anamnesis) | Highly suspicious | 2 | |
| | Moderately suspicious | 1 | |
| | Slightly suspicious | 0 | |
| ECG | Significant ST-deviation | 2 | |
| | Non-specific repolarisation disturbance / LBBB / PM | 1 | |
| | Normal | 0 | |
| Age | ≥ 65 years | 2 | |
| | 45 – 65 years | 1 | |
| | ≤ 45 years | 0 | |
| Risk factors | ≥ 3 risk factors *or* history of atherosclerotic disease | 2 | |
| | 1 or 2 risk factors | 1 | |
| | No risk factors known | 0 | |
| Troponin | ≥ 3x normal limit | 2 | |
| | 1-3x normal limit | 1 | |
| | ≤ normal limit | 0 | |
| | | **Total** | |

**Risk factors for atherosclerotic disease:**

| | |
|---|---|
| Hypercholesterolemia | Cigarette smoking |
| Hypertension | Positive family history |
| Diabetes Mellitus | Obesity (BMI>30) |

# ATELLICA VTLi

## Siemens


| Tipo di Device | Analizzatore | 99th Percentile (µg/L unless noted) | % CV at 99th Percentile | Percentuale dei normali misurati ≥ LoD | Tempo per il risultato | Campione |
|---|---|---|---|---|---|---|
| Sistemi palmari | Abbott i-STAT | Overall: 0.08 | 16.5% | - | 10 minuti | vWB/PL 17 µL |
| | Roche cobas h 232 - TnT | - | - | - | 12 minuti | vWB/PL 150 µL |
| | **Siemens ATELLICA VTLi hs-cTnI** | **Overall: 22.9 ng/L F: 18.5 ng/L M: 27.1 ng/L** | **6.5% (plasma) 6.1% (WB) at 22.9 ng/L** | **Overall: 84% F: 80% M: 87%** | **8 minuti** | **Capilllary/vWB/PL 30–100 µL** |
| Sistemi da banco | Quidel/Alere TriageTrue hs-cTnI | Overall: 20.5 ng/L F: 14.4 ng/L M: 25.7 ng/L | 5.0-5.9% at 21 ng/L (plasma) 5.9-6.5% at 22 ng/L (WB) | Overall: ≥ 50% | 20 minuti | vWB/PL 175 µL |
| | Radiometer AQT90 FLEX TnI | Overall: 0.023 | 12.3% | - | <19 minuti | vWB/PL 2000 µL |
| | Radiometer AQT90 FLEX TnT | Overall: 0.017 | 15.2% | - | <13 minuti | vWB/PL 2000 µL |
| | PATHFAST hs-cTnI (GEPA) | Overall: 27.9 ng/L F: 20.3 ng/L M: 29.7 ng/L | 6.1% | Overall: 66.3% F: 52.8% M: 78.8% | <17 minutes | vWB/Siero/PL 100 µL |

**ATELLICA VTLi**

Siemens

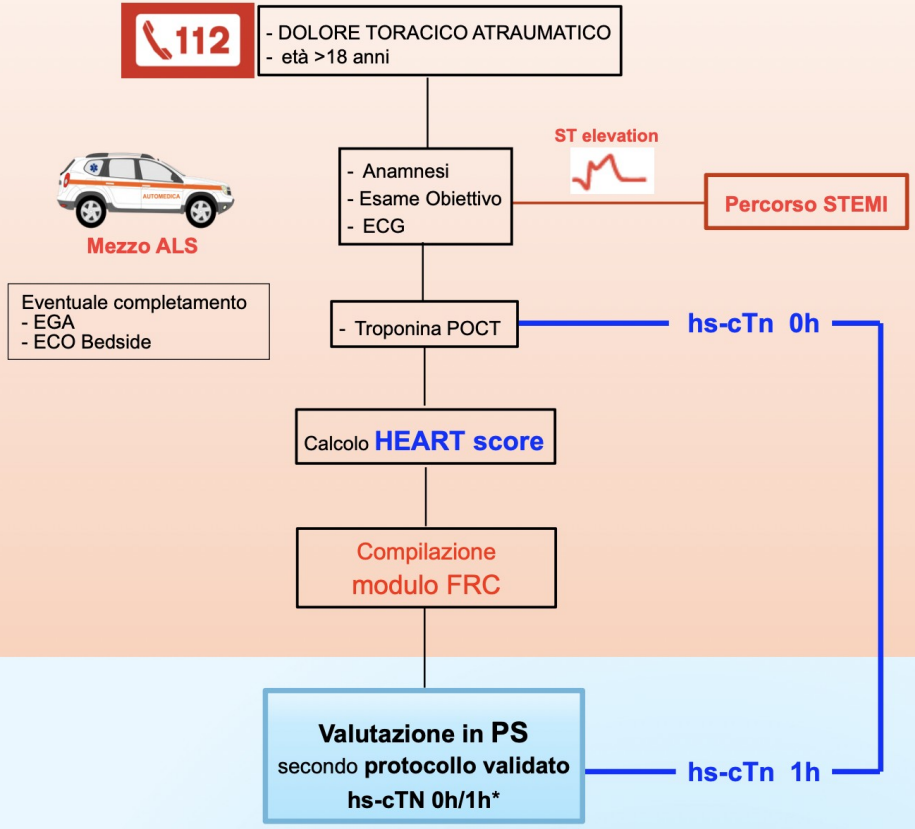
Prospective study sampling 1089 patient

| Popolazione | 99th URL (ng/L) | Timepoint | Soggetti | | Sensibilità (95% CI) | Specificità (95% CI) | PPV (95% CI) | NPV (95% CI) |
|---|---|---|---|---|---|---|---|---|
| **Generale** | 22.9 | Baseline | 998 | 91 | 64.8% (54.6–73.9%) | 85.7% (83.4–87.7%) | 29.2% (25.0–33.8%) | 96.4% (95.3–97.2%) |
| | | 2 ore | 998 | 91 | 81.3% (72.1–88.0%) | 84.6% (82.2–86.7%) | 32.5% (28.7–36.4%) | **98.0% (97.0–98.7%)** |
| **Uomini** | 27.1 | Baseline | 615 | 56 | 67.9% (54.8–78.6%) | 86.2% (83.2–88.7%) | 30.9% (25.5–36.9%) | 96.7% (95.3–97.7%) |
| | | 2 ore | 615 | 56 | 80.4% (68.2–88.7%) | 84.7% (81.7–87.3%) | 32.4% (27.6–37.5%) | 97.9% (96.5–98.8%) |
| **Donne** | 18.5 | Baseline | 383 | 35 | 65.7% (49.2–79.2%) | 85.4% (81.5–88.6%) | 29.1% (22.6–36.6%) | 96.5% (94.5–97.7%) |
| | | 2 ore | 383 | 35 | 82.9% (67.3–91.9%) | 84.3% (80.4–87.6%) | 32.6% (26.8–38.9%) | 98.2% (96.3–99.1%) |

*Diagnostic Performance of a Rapid, Novel, Whole Blood, Point of Care High-Sensitivity Cardiac Troponin I Assay for Myocardial Infarctio.*
Ian L.GunsolusaKarenSchulzbYaderSandovalcStephen W.SmithdeBrittanyLindgrenfBrynnOkesongFred S.Applehi
https://doi.org/10.1016/j.clinbiochem.2022.04.008

**ATELLICA VTLi**
Siemens

**Criteri inclusione**
-età >18 anni
-dolore toracico non traumatico
-consenso informato del paziente




* ESC guidelines 2020

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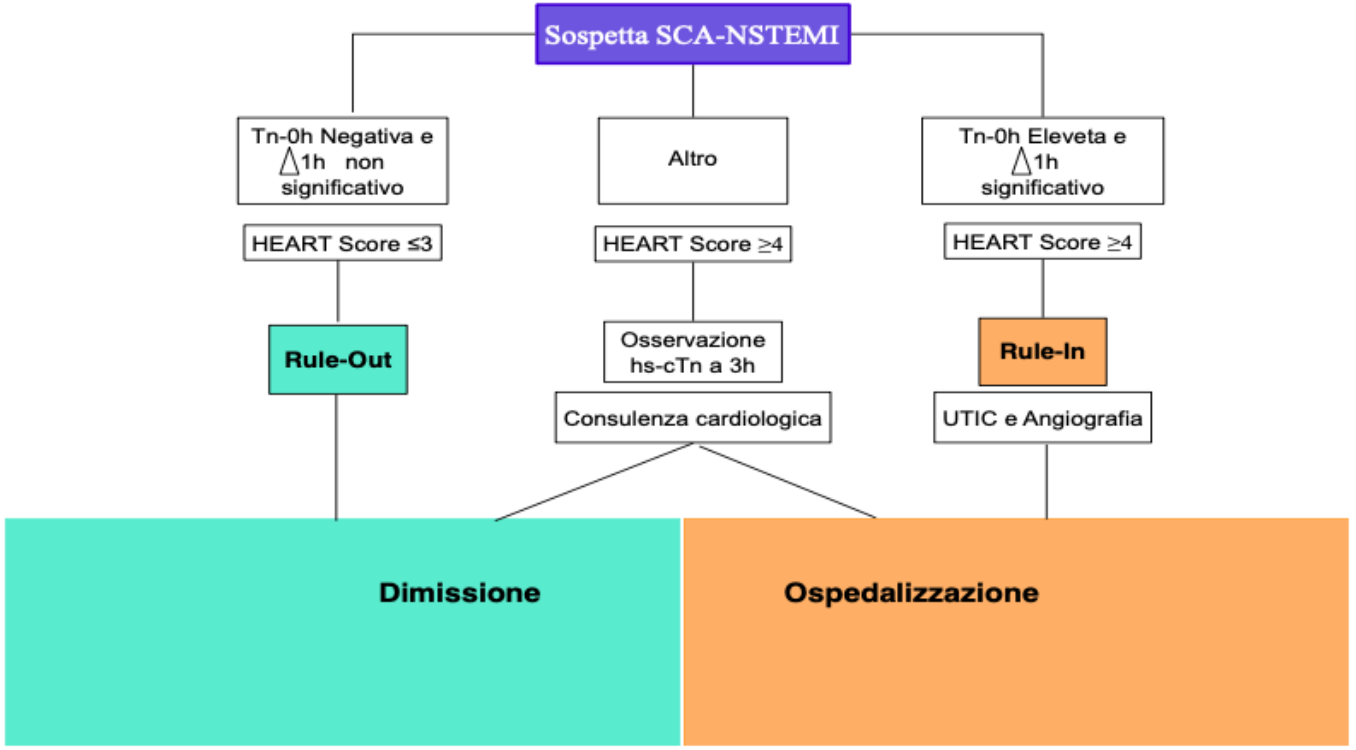
## PROTOCOLLO hs-cTN 0-1h e HEART Score



# HEART POCT

## Una proposta di studio clinico

**Outcome primario**

- Valutare la fattibilità della hs-cTn POCT in ambito pre-ospedaliero.
- Valutare la performance della hs-cTn POCT nel rule-in e rule-out di paziente con sospetta SCA tramite l'utilizzo dell'algoritmo 0/1 ora in combinazione con l'HEART score.

**Outcome secondario**

- Valutare a posteriori se con l'introduzione della hs-cTn POCT e HEART Score nel pre-ospedaliero, i pazienti identificati a basso rischio potevano essere gestiti a domicilio senza necessità di invio in PS.
- Valutare se, con l'assetto tecnologico e culturale attuale, il medico di AM può individuare cause non cardiache di dolore toracico a domicilio.

# ATELLICA VTLi

Siemens

**Punti di forza**

- Risultato in 8 min
- Accuratezza diagnostica
- Maneggevolezza
- Sangue intero capillare o venoso, plasma
- Hs-cTnI con ridotta influenza dei valori di creatinina

**Limiti**

- Durante la processazione deve rimanere su un piano fisso
- La cartuccia del reagente deve essere conservata a 2-8°C.
- Deve essere usato entro 15 minuti dall'apertura della busta
- Stoccaggio a temperatura ambiente (18-26°C) fino a 8h

Open access Protocol

BMJ Open

# Acute rule-out of non–ST-segment elevation acute coronary syndrome in the (pre)hospital setting by HEART score assessment and a single point-of-care troponin: rationale and design of the ARTICA randomised trial

Goaris W A Aarts ,[1] Cyril Camaro ,[1] Robert-Jan van Geuns,[1] Etienne Cramer,[1] Roland R J van Kimmenade,[1] P Damman,[1] Pierre M van Grunsven,[2] Eddy Adang,[3] Paul Giesen,[4] Martijn Rutten,[4] Olaf Ouwendijk,[5] Marc E R Gomes,[6] Niels van Royen[1]

Multicentrico: 800 Pz
poct+heart fattibile e accurato
Riduzione dei costi di gestione ospedaliera

ClinicoEconomics and Outcomes Research

Dovepress
open access to scientific and medical research

Open Access Full Text Article

ORIGINAL RESEARCH

# Economic evaluation of point-of-care testing in the remote primary health care setting of Australia's Northern Territory

This article was published in the following Dove Press journal:
ClinicoEconomics and Outcomes Research

**Conclusion:** This study demonstrated that POCT when used to aid decision making for acutely ill patients delivered significant cost savings for the NT health care system by preventing unnecessary emergency medical retrievals.

Territori remoti e rurali: 200 Pz

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# Grazie per l'attenzione