



Pharmacy
Emergency



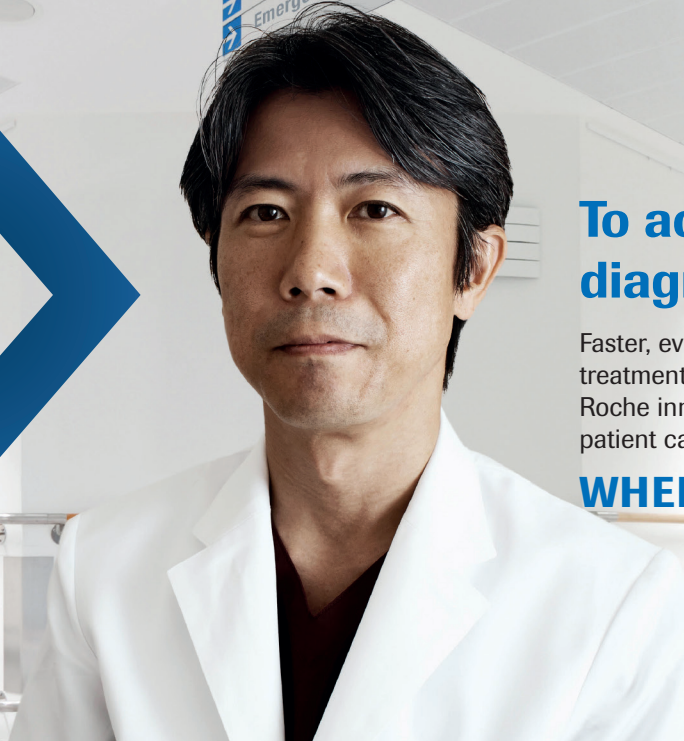
**From extended
diagnostic time**



**To accelerated
diagnosis of AMI**

Faster, evidence-based algorithms for treatment decisions. This is how Roche innovations can help transform patient care.

WHERE CARE LEADS



Three prospective interventional studies and more than 8000 patients

Validate the ESC 0/1-h cTnT-hs algorithm to rule-in or rule-out AMI

The ESC 0/1-h cTnT-hs algorithm

The European Society of Cardiology (ESC) guidelines recommend using accelerated diagnostic algorithms based on high sensitivity troponin to diagnose non-ST-segment elevation acute myocardial infarction (NSTEMI) in the emergency department (ED).¹

Three large, prospective, real-world studies (8109 patients)²⁻⁴ investigated:

- the feasibility of implementing the ESC 0/1-h cTnT-hs algorithm in the ED
- the effect on patient triage decisions and resource use
- outcomes of patients managed according to the ESC 0/1-h algorithm

Overview of the three prospective, real-world studies (n=8109)²⁻⁴

	Twerenbold R. et al. ²	Chew D.P. et al. ³	Stoyanov K.M. et al. ⁴
Patients	2296 adult ED patients with symptoms suggestive of MI	3288 adult ED patients with chest pain or suspected ACS	2525 consecutive ED patients with suspected ACS
Setting	Two large university hospitals in Switzerland and Argentina	Four public EDs in Adelaide, Australia	Single university hospital in Germany
Design	Pre-implementation period compared with post-implementation period	Patients randomised to either the ESC 0/1-h algorithm or 3-h masked* standard algorithm	6-month pre-implementation period followed by 6-month post-implementation period
Primary endpoint	Triage performance and 30-day MACE	30-day all-cause death and MI	Change of diagnostic algorithms and 30-day mortality after direct discharge

*cTnT-hs results <29 ng/L were masked. ACS, acute coronary syndrome; ED, emergency department; MACE, major adverse cardiac event; MI, myocardial infarction

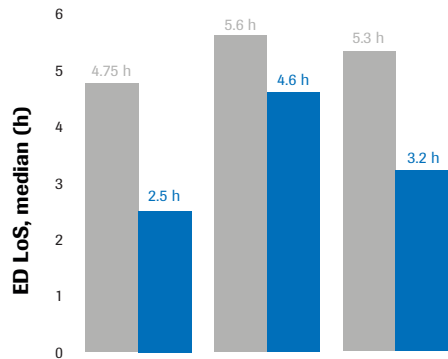
The ESC 0/1-h cTnT-hs algorithm improves patient flow

Compared with standard of care

Implementation of the ESC 0/1-h cTnT-hs algorithm improves ED length of stay, acute care length of stay, and ED discharge rate

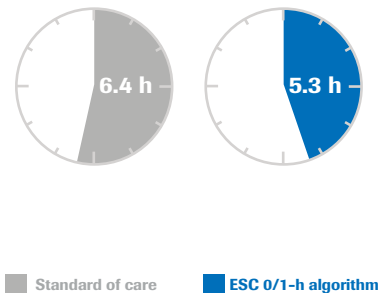
Reduction of ED length of stay

Twerenbold R. et al. ²	Chew D.P et al. ³	Stoyanov K.M. et al. ⁴
2.25 h reduction*	1 h reduction*	2.1 h reduction*
- 47.3%	- 17.8%	-39.6%



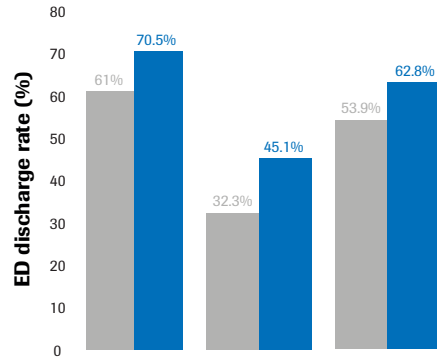
Reduction of acute care length of stay

Chew D.P et al. ³
1.1 h reduction*
- 17.2%



Increase of ED discharge rate

Twerenbold R. et al. ²	Chew D.P et al. ³	Stoyanov K.M. et al. ⁴
9.5% increase*	12.8% increase*	8.9% increase*
+ 15.6%	+ 39.6%	+16.5%

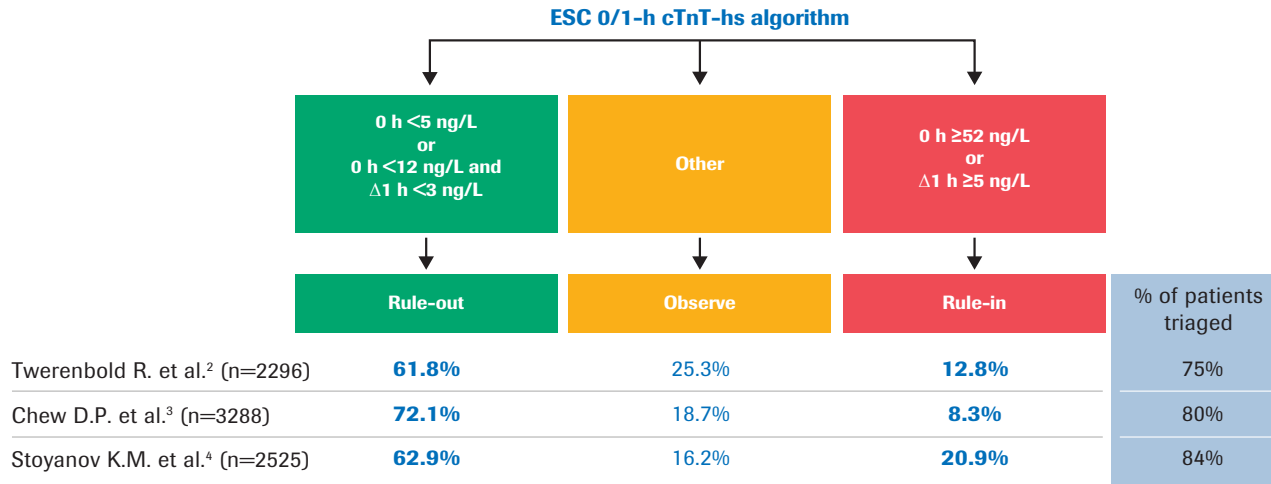


* p<0.001

Three quarters of ED chest pain patients are successfully triaged

Using the ESC 0/1-h cTnT-hs algorithm

Implementation of the ESC 0/1-h cTnT-hs algorithm triaged over three-quarters of ED chest pain patients: 75–84%



Myocardial infarction is ruled-out within one hour in 62–72% of patients²⁻⁴

Safety aspects of the ESC 0/1-h cTnT-hs algorithm

Results of three large prospective trials (n=8109) for 30-day major adverse cardiac events (MACE) and mortality

	Twerenbold R. et al. ²	Chew D.P. et al. ³	Stoyanov K.M. et al. ⁴
	30-day MACE (%)	30-day all-cause death or MI (%)	30-day mortality (%)
ESC 0/1-h algorithm			
Rule-out group ^a	0.2	0.4	0.4
Outpatients ^b	0.1 (vs 1.7% pre-implementation)	0.3 (vs 0.4% with the 0/3-h algorithm)	0.08

^aRule-out group indicates patients recommended to be ruled-out for MI by the ESC 0/1-h algorithm

^bOutpatients indicates patients in which the final decision management made was direct discharge

The low incidence of 30-day MACE or mortality in rule-out patients confirm the safety of the ESC 0/1-h cTnT-hs algorithm²⁻⁴

Feasibility and cost effectiveness of the ESC 0/1-h cTnT-hs algorithm

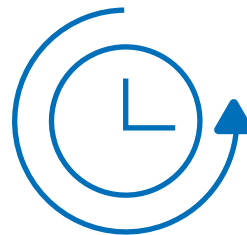
Using the ESC 0/1-h algorithm

Implementation of the ESC 0/1-h cTnT-hs algorithm in busy EDs is feasible

- 94% of patients are managed without algorithm violations²
- The median interval between initial and first follow-up cTnT-hs sample is reduced by 45 min post-implementation of the ESC 0/1-h algorithm⁴

The ESC 0/1-h cTnT-hs algorithm does not increase the use of diagnostic resources

- Functional cardiac testing is reduced by 3.5% compared with standard care³
- Use of coronary angiography is not increased compared with standard care^{3,4}



– 45 minutes

between initial and first follow-up cTnT-hs sample using the ESC 0/1-h cTnT-hs algorithm compared to standard of care⁴

Three prospective interventional studies have confirmed early and effective diagnosis of AMI within 1 hour

Adoption of the ESC 0/1-h cTnT-hs algorithm:



Helps with effective triage of three quarters of ED chest pain patients²⁻⁴



Improves patient flow by reducing ED and acute care length of stay, and increasing ED discharge rate²⁻⁴



Helps in safe rule-out of myocardial infarction with a low incidence of 30-day MACE and mortality²⁻⁴



Is feasible and cost-effective²⁻⁴



References

1. Roffi, M. et al. (2016). *Eur Heart J* 37, 267–315.
2. Twerenbold, R. et al. (2019). *J Am Coll Cardiol* 74, 483–494.
3. Chew, D.P. et al. (2019). *Circulation* 140(19), 1543–1556.
4. Stoyanov, K.M. et al. (2019). *Eur Heart J Acute Cardiovasc Care*, 2048872619861911.doi:10.1177/2048872619861911. [Epub ahead of print]

Roche Diagnostics International Ltd
CH-6343 Rotkreuz
Switzerland

© 2020

All trademarks mentioned are legally protected.

www.roche.com

Not for distribution in the USA.