Validation of Siemens TNIH assay with 0/3h pathways (95% confidence intervals in parentheses)

	ESC 0/3h pathway		High-STEACS 0/3h pathway		Basel 0/2-h algorithm	
	AMI	30-day MACE	AMI	30-day MACE	AMI	30-day MACE
Sensitivity	88.3% (80.8-93.6)	86.8% (79.2-92.4)	93.7% (87.4-97.4)	93.0% (86.6-96.9)	98.2% (93.6-99.8)	97.4% (92.5-99.5)
Specificity	95.8% (94.0-97.2)	95.9% (94.2-97.3)	84.7% (81.8-87.3)	84.9% (82.0-87.5)	73.1% (69.6-76.4)	73.3% (69.8-76.5)
PPV	77.2% (68.9-84.1)	78.0% (69.7-84.8)	49.5% (42.6-56.5)	50.5% (43.5-57.4)	37.0% (31.4-42.7)	37.6% (32.1-43.4)
NPV	98.1% (96.7-99.0)	97.8% (96.4-98.8)	98.8% (97.6-99.5)	98.7% (97.4-99.4)	99.6% (98.6-100)	99.4% (98.3-99.9)

Abstract 020 Figure 2 Diagnostic accuracy of 0-3h pathways

Background Chest pain accounts for approximately 6% of all Emergency Department (ED) attendances. We evaluated the diagnostic accuracy of a high-sensitivity cardiac troponin I assay (Siemens TNIH) on serial sampling for patients presenting to the ED with suspected cardiac chest pain. Specifically, we evaluated the accuracy of three previously reported accelerated diagnostic algorithms (figure 1), the 99th percentile upper reference limit and absolute and relative changes in TNIH over 3 hours.

This is a secondary analysis from a multi-centre prospective diagnostic accuracy study across 14 UK sites. Patients presenting to the ED with chest pain of suspected cardiac nature warranting investigation were included. The target diagnosis was acute myocardial infarction (AMI), which was adjudicated by two independent investigators. Serum blood samples were taken on ED arrival and 3 hours later. Stored frozen samples were subsequently analysed with the Siemens TNIH assay (ADVIA Centaur, 99th percentile upper reference limit: female 39.6 ng/L, male 58.0 ng/L; coefficient of variation 10% at 4.50 ng/L) and absolute (AΔ=|'3h-TNIH'-'0h-TNIH'|) and relative (RΔ%=(AΔ*100)/'0h-TNIH') changes calculated.

Of 802 included patients, 13.8% had AMI. Absolute delta had superior accuracy to relative delta (C-statistic 0.94 vs 0.76, p<0.001). However, used alone no optimised delta could achieve sensitivity >95.5% for AMI. Simply ruling out AMI in patients with TNIH below the 99th percentile at 3h had only 88.3% (95% CI 80.8–93.6) sensitivity. The Basel algorithm had higher sensitivity (98.2%) than both High-STEACS (93.7%, p=0.03) and the ESC 0/3h algorithm (88.3%, p<0.001) (see figure 1). The algorithms ruled out 63%, 74% and 84% patients respectively.

With serial sampling over 3h, the Siemens TNIH assay should be used with a validated algorithm incorporating bespoke cut-offs and absolute delta changes. In our analysis, the Basel algorithm had greatest sensitivity. 'Ruling out' AMI using the 99th percentile upper reference limit of the assay cannot be recommended.

021 EMERGENCY DEPARTMENT HYPERTENSION, IS IT REAL? A SYSTEMATIC REVIEW AND META-ANALYSIS

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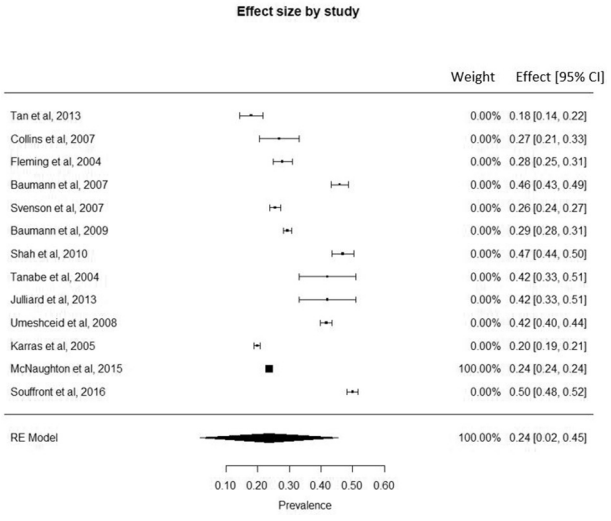
Background In 2017 15,379,166 patients attended emergency departments (ED) across the U.K. Attention is focussed on how EDs are struggling to cope with rising demand. However, each attendance presents an ideal screening opportunity for the nation's second largest cause of avoidable mortality; cardiovascular disease. We sought to evaluate a common cardiovascular prognostic factor measured in the ED.

We aimed to conduct a systematic review of the prevalence and reliability of ED hypertensive readings.

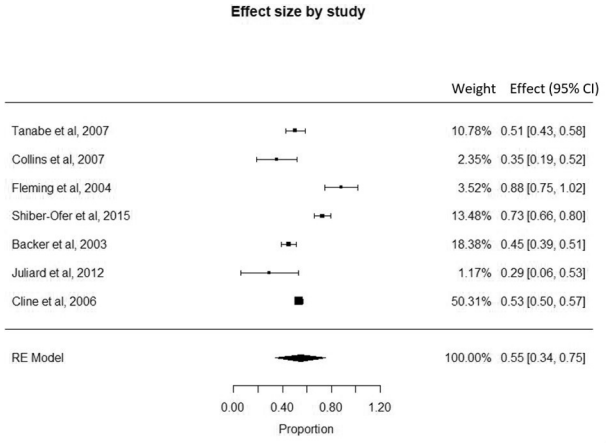


Abstract 021 Figure 1

Abstract 021 Table 1 Characteristics of the included studies

ID	Author, Country, Year	Study Design	N	Measurement of BP	Recruitment Period	Follow up	Outcome Measure	Risk of bias
1	Tan, Australia, 2013 (33)	0.0P	534	1 x Researcher	2010-2011	5 weeks	Prevalence	L
2	Tanabe, USA, 2008 (34)	P	175	2 x ED	2005-2006	1 week	Sustained HTN	L
3	Collins, UK, 2007 (35)	P	765	2 x Researcher	2005-2006	6 months	Primary care F/U	M
4	Fleming, UK, 2004 (16)	P	991	2 x Researcher	2004	30 days	Sustained HTN	M
5	Baumann, USA, 2007 (36)	P	991	3 x Researcher	2004	N/A	Descriptive	L
6	Svenson, USA, 2007 (37)	R	2821	EPR	2006	1 year	Prevalence	M
7	Adhikari, USA, 2016 (38)	R	179	ED	2011	N/A	BP counselling	M
8	Baumann, USA, 2008 (39)	R	4245	ED	2005-2006	N/A	Repeat ED BP	M
9	Shah, USA, 2011 (40)	R	601	EPR	2009-2010	N/A	F/U	M
10	Cienki, USA, 2013 (41)	R	1000	ED	2005-2006 2009-2010	N/A	BP advice	M
11	Shiber-Ofer, Israel, 2015 (42)	P	195	ED	2009-2010	5 years	F/U BP	L
12	Tanabe, USA, 2004 (43)	R	88	ED	2001	N/A	N/A	M
13	Backer, USA, 2003 (44)	P	407	3 x ED measurement	2000	6 months	F/U BP	M
14	Jullilard, USA, 2011 (45)	R	662	EPR	2009	3 months	Primary care F/U	M
15	Cline, USA, 2006 (46)	R	1391	EPR	2003-2004	3 months	Secondary care F/U	M
16	Umscheid, USA, 2008 (47)	R	2061	EPR	2005	N/A	N/A	M
17	Souffront, USA, 2016 (48)	R	2367	EPR	2014-2015	N/A	N/A	M
18	Karras, USA, 2005 (49)	P	7238	1 X ED measurement	2002	30 day	Primary care F/U	M
19	McNaughton, USA, 2015(50)	R	701,952,422	EPR	2006-2012	N/A	N/A	M
20	Lee, South Korea, 2018(17)	R	262.927	EPR	2002-2013	10 years	MACE	M
21	Masood, Canada, 2016 (51)	R	206,147	EPR	2002-2012	2 years	All-cause mortality	M

R = retrospective, P = prospective, EPR = electronic patient record, F/U = follow up, H = High risk of bias M = moderate risk of bias, L = Low risk of bias



Abstract 021 Figure 2

Method and results The review was conducted in accordance with the PRISMA and was registered on PROSPERO. We planned to conduct a meta-analysis if the data was suitable. Searches were conducted using pre-determined terms using MEDLINE and Embase databases. A hand search of the grey literature was also conducted. Studies eligible for inclusion were those: peer reviewed, conducted in the last 20 years, included a general population, and written in English. Risk of Bias was assessed by the QUIPS tool, and overall quality by GRADE. Searches, screening, data extraction, risk of bias and GRADE assessment were all conducted by two independent researchers.

Conclusions The search identified 1,071 results, after title and abstract review 47 underwent full text review. A further 26 were excluded following full text review (table 1).

The outcome of prevalence was extracted from 13 studies. They were dominated numerically by McNaughton *et al*'s study of 701,952,422 patients, with the next largest having 7,238. A meta-analysis was conducted and confirmed the prevalence finding of the largest study at 0.24 (95% CI 0.02–0.45) (see figure 1).

The persistence at follow of hypertensive ED readings was extracted from 7 studies, a random effects model was conducted demonstrating a pooled persistence of 0.55 (95% CI 0.34–0.75) (see figure 2).

Hypertension is common and the persistence of it at follow up adds credibility to ED's public health potential.

022 EVALUATING DIVERSION OF ALCOHOL RELATED ATTENDANCES: THE EDARA STUDY

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Background Alcohol Intoxication Management Services (AIMS), commonly known as 'drunk tanks', provide an alternative to emergency department (ED) attendance for intoxicated adults at times of high incidence. The EDARA study evaluated the role of AIMS in the emergency care system and night time economy. Here we present findings describing AIMS activity and running costs, and estimating the effect of AIMS on ED attendance rates and ED user experience.

We identified six cities with AIMS and collected data relating to attendances and costs of running the service. We matched these cities with six cities without AIMS and used routine NHS data to estimate the effect of AIMS operation upon ED attendances during hours of AIMS activity. We also surveyed ED user experience over matched time periods of AIMS activity in cities with and without AIMS.

Mean attendance rates at the AIMS ranged from 2.7 to 11.8 per night. The mean running cost for an AIMS was £1635 per night (range £1075 to £2265) and the mean cost per attendance was £222.50 (range £132.27 to £583.8). Overall AIMS were associated with reduced ED attendances (−5.30 per night, $p<0.05$, 95% CI −9.62 to −0.62). However, the effect varied markedly between individual AIMS, ranging from 4.93 fewer attendances to 3.32 additional attendances per night. There was no significant effect from AIMS on ED user aggregate service rating score (coefficient 0.060, $p=0.372$), perception of feeling threatened (−0.037, $p=132$), aggregate negative experience score (−0.147, $p=0.196$), and overall service rating score (0.25, $p=0.440$).

AIMS vary markedly in activity, running costs and effect on ED attendances, so estimating overall effects is probably inappropriate. The most active and expensive AIMS appeared to be associated with the greatest effect on ED attendances. We identified no effect on ED user experience.

023 FOR HOW LONG SHOULD WE MONITOR ED PALPITATION PATIENTS IN THE OUTPATIENT SETTING?

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Background The IPED study showed that use of a smartphone-based event recorder (AliveCor) in ED patients presenting with palpitation or pre-syncope, increased the number of patients in whom an ECG was captured during symptoms over five-fold to more than 55% at 90 days (Reed MJ *et al*. Lancet eClinical Medicine 2019; 8: 37–46). The pocket sized AliveCor (now Kardia) mobile (AliveCor, San Francisco, USA) is a monitoring device that requires the patient to trigger the ECG recording. With minimal training, two fingers from each hand are placed on the monitor (which can be connected to the back of a smartphone) for 30 s to take an ECG recording.

This pre-planned analysis looked at the time to symptomatic rhythm detection in the intervention (AliveCorgroup)to determine the optimum AliveCor device monitoring period in the outpatient setting.

Method and results Pre-planned sub study analysis of a randomised controlled multi-centre trial. Participants ≥16 years old presenting to 10 UK hospital EDs with palpitation or pre-