

Supplement 3 Included primary studies: study setting, demographic of target population, and sensitivity and specificity of handheld ECG devices

First author, publication year, country	Handheld ECG (version)	Setting	Target populations	Average age (SD), year	No. of participants recruited	Reference standard		Handheld ECG algorithm accuracy ^b	
						12-lead ECG timing	Blinded interpretation of Handheld ECG ^a	Sensitivity (95% CI)	Specificity (95% CI)
Orchard J 2016, Australia ²⁴	AliveCor (Kardia) ^c	Community	People aged ≥ 65 years attending their general practice for flu vaccination	NR ^d	973	Same screening session	2 general cardiologists	95.0% (83.0–99.0%)	99.0% (98.0–100%)
Chan PH 2016, Hong Kong ²²	AliveCor (Kardia - version 2.2.2)	Community	Patients with hypertension, diabetes mellitus, and/or aged ≥65 years in the community	68.4 (12.2)	1,013	Within 15 minutes after AliveCor	2 general cardiologists	71.4% (51.0–87.0%)	99.4% (99.0–100%)
Chan PH 2017, Hong Kong ²³	AliveCor (Kardia - version 2.2.2)	Community	Patients aged ≥65 years with hypertension or diabetes mellitus in the community	67.8 (10.6)	2052	Same screening session	2 general cardiologists	66.7% (44.7–84.4%)	99.0% (99.0 - 100%)
Lown M 2018, UK ¹²	AliveCor (Kardia - version 4.7.0)	Community	Individuals from three general practices aged >65y both	73.9 (6.1)	418	Same screening session	2 general cardiologists	AliveCor: 87.8% (78.7-94.0%)	AliveCor: 98.8% (97.0-99.7%)

	Polar HP7 ^c		with and without a coded diagnosis of AF in their medical records					Polar HP7: 96.3% (89.7- 99.2%)	Polar HP7: 98.2% (96.2-99.3%)
	Body Guard2 ^c							Body Guard2: 96.3% (89.7-99.2%)	Body Guard2: 98.5% (96.6-99.5%)
Vaes B 2014, Belgium ²⁵	My Diagnostic ^c	Community	General practice patients with diagnosed paroxysmal or chronic AF and patients without a history of AF	74.6 (9.7)	191	Same screening session	1 general cardiologist	94.0% (87.0 – 98.0%)	93.0% (85.0–97.0%)
Tieleman R 2014, The Netherlands ³³	My Diagnostic ^c	Community	Patients underwent influenza vaccination at two general practices	74 (7.1)	676	Immediately after MyDiagnostic	1 general cardiologist	99.0% (92.0-100%)	99.0% (98.0-100)
		Hospital	Patients visited cardiology and AF clinics	69.4 (12.6)	192			100% (93.0-100%)	96.0% (91.0-98.0%)
Lau J 2013, Australia ²⁹	AliveCor (Kardia) ^c	Hospital	Cardiology ward	NR ^d	204	Same screening session	2 general cardiologists	98.0% (89.0–100%)	97.0% (93.0–99.0%)

Haberman Z 2015 ^e , USA ²⁷	AliveCor (Kardia - version 1.1.8)	Hospital	Cardiology clinic	59.0 (15.0)	130	Immediately after AliveCor	2 electrophysiologists	92.0% (72.0-98.0%)	99.0% (94.0-100%)
Desteghe L 2017 ^f , Belgium ¹¹	AliveCor (Kardia) ^c	Hospital	Hospitalized patients in the cardiology ward	67.9 (14.6)	265	Immediately before AliveCor and MyDiagnostick	2 electrophysiologists	AliveCor: 54.5% (35.0-73.0%)	AliveCor: 97.5% (94.0-99.0%)
	MyDiagnostick ^c							MyDiagnostick: 81.8% (60.0-92.0%)	MyDiagnostick: 94.2% (90.0-96.0%)
William A 2018, USA ³¹	AliveCor (Kardia) ^c	Hospital	Patients, aged 35–85 years with paroxysmal or persistent AF admitted for anti-arrhythmic drug initiation	68.1 (42.6–85.6)	52 ^g	Immediately before AliveCor	2 electrophysiologists	96.6% (87.0-99.0%)	94.1% (87.0-97.0%)
Kaleschke G 2009, Germany ³⁰	Omron HCG-801-E	Hospital	Patients attending the AF center	61.4 (14.5)	505	Within 5-10 seconds before Omron	1 interpreter (qualification not specified)	99.0% (96.0-100%)	96.0% (94.0-98.0%)
Renier W 2012, Belgium ³²	Omron HCG-801	Hospital	Patients visited the emergency department and patients hospitalised in three hospital	55.0 (18-94)	177	Within one hour after Omron	1 general cardiologist	92.3% (64.0-99.8%)	100% (97.8-100%)

Brito R 2018, Switzerland ²⁶	Beurer ME90 (version 2.20.33)	Hospital	wards on one day Patients admitted to the cardiology ward	62.0 (18.0)	127	Immediately before Beurer	1 electrophysiologist	88.9% (65.3–98.6%)	61.9% (51.9–71.2%)
Haverkamp H 2019, Norway ²⁸	ECG Check ^c	Hospital	Patients admitted to the cardiology ward	58.0 (NR ^d)	94	Immediately after ECG Check	2 readers (qualification not specified)	100% (70.0-100%)	94.0% (86.0-97.0%)

a, in studies with more than one person interpreting same rhythm strip, the consensus results were reported; b, sensitivity and specificity were assessed against the reference standard; c, version of diagnostic algorithm was not reported; d, average age of study population was not reported; e, Haberman et. al.'s study²⁷ in cardiology ward was included, but their separate studies on recruiting athletes only and university students only were excluded because they were not representative of typical community setting; f, Desteghe et. al.'s study¹¹ in cardiology ward was included, but their study in geriatric ward was excluded because the reference standard was a 6-lead limb ECG; g, William et. al.³¹ obtained more than one rhythm strip from each participant using AliveCor.