BEating Cardiac Arrest (BECA): detection of cardiac arrest episodes using photoplethysmography and accelerometry data

Published: 25-10-2024
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Automatic detection of cardiac arrest and autonomously alerting emergency medical services.

Ethical review	Approved WMO
Status	Pending
Health condition type	Heart failures
Study type	Observational non invasive

Summary

ID

NL-OMON57092

Source
ToetsingOnline

Brief title
BEating Cardiac Arrest (BECA)

Condition

- Heart failures

Synonym
heart attack, Out-of-hospital Cardiac Arrest

Research involving
Human

Sponsors and support

Primary sponsor: Amsterdam UMC
Source(s) of monetary or material Support: Hartstichting

Intervention

Keyword: Accelerometry, Cardiac Arrest, PPG, Wearable

Outcome measures

Primary outcome

PPG + accelerometer signals

Secondary outcome

Answers to the questionnaire

Study description

Background summary

The low survival of unwitnessed OHCA due to not alerting emergency medical services.

Study objective

Automatic detection of cardiac arrest and autonomously alerting emergency medical services.

Study design

Study participants are asked to wear a smarwatch for 28 consecutive days. During this study period they are asked to inflate a blood pressure cuff 25 times. PPG and accelerometer signals are measured and they are used to develop an algorithm to detect cardiac arrest. Study participants are also asked to fill in a questionnaire at the end of the study period.

Study burden and risks

We expect the burden of this research to be very low because study participants do not experience discomfort from wearing the smartwatch. Inflation of the blood pressure cuff happens for very small windows of time so this is also not burdensome.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- adults of 18 years and older
- fluent in Dutch
- willing and able to provide informed consent

Exclusion criteria

- wounds, injuries, or infectious diseases on the skin, where the Smartwatch will be placed
- tattoos on the skin where the Smartwatch's PPG sensor will be placed
- has a wrist size that is either too small or too large for the Smartwatch to

fit

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-09-2024
Enrollment:	60
Type:	Anticipated

Ethics review

Approved WMO

Date:	25-10-2024
Application type:	First submission
Review commission:	METC Amsterdam UMC

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL85389.018.23