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

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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

1 - BEating Cardiac Arrest (BECA): detection of cardiac arrest episodes using photop ... 2-06-2025

#### 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**

#### **Public**

Amsterdam UMC

Tafelbergweg 51 Amsterdam 1105BD NL

#### **Scientific**

Amsterdam UMC

Tafelbergweg 51 Amsterdam 1105BD NL

## **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

# 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