Feasibility of transesophageal echocardiography in patients with cardiac arrest in Dutch emergency departments

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In the Netherlands, TEE is currently not used in emergency departments during cardiac arrest. The purpose of this study is to investigate if point-of-care TEE can be used effectively and safely in patients with cardiac arrest.

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON56765

Source
ToetsingOnline

Brief title
Feasibility of TEE in cardiac arrest in ED's the Netherlands

Condition

- Other condition

Synonym
Cardiac arrest, cardiopulmonary resuscitation

Health condition

Alle aandoeningen leidend tot een reanimatiesetting.

Research involving

Human

Sponsors and support

Primary sponsor: Medisch Centrum Leeuwarden
Source(s) of monetary or material Support: Medisch Centrum Leeuwarden (loonkomsten onderzoekers)

Intervention

Keyword: Cardiac arrest, Emergency Department, Feasibility, Transesophageal echocardiography

Outcome measures

Primary outcome

The percentage of patients with cardiac arrest in which providers are able to

determine the AMC with the use of TEE.

Secondary outcome

- The AMC location during cardiac arrest

- The accuracy of reported AMC

- Safety of using TEE in patients with cardiac arrest in the ED

- Need for intubation and prolonged intubation attempts

- Time from start ED treatment to first images

Study description

Background summary

Point-of-care ultrasound is a valuable diagnostic tool during cardiopulmonary resuscitation (CPR) in cardiac arrest and its use is recommended by international guidelines. Transthoracic echocardiography (TTE) is most commonly used, but has certain limitations. Image acquisition can be challenging due to patient specific factors such as body habitus. Also image quality may be impacted by the limited acquisition time during CPR pulse checks. Furthermore, observational data suggests that pulse checks are prolonged due to TTE, while

minimizing interruption of chest compressions is emphasized for better CPR outcomes in the guidelines. Transesophageal ultrasound (TEE) is a possible alternative for TTE. It has the theoretical advantage of superior image quality and thereby possible reductions of chest compression delays. Furthermore, TEE gives the opportunity determine which part of the heart is compressed most effectively, which is referred to as the area of maximal compression (AMC). Animal studies showed that an AMC located over the left ventricle positively influenced hemodynamics and return of spontaneous circulation (ROSC) compared to an AMC over the aortic root. In human studies, data also suggests that AMC located on the left ventricle, as measured by TEE, may positively influence prognosis.
In the Netherlands, TEE is currently not used in emergency departments during cardiac arrest. The purpose of this study is to investigate if point-of-care TEE can be used effectively and safely by providers and teams that have not previously used this modality. Given the paramount importance of quality of chest compressions, the ability of the providers to assess the location of the AMC will be the main focus of this feasibility study.

Study objective

In the Netherlands, TEE is currently not used in emergency departments during cardiac arrest. The purpose of this study is to investigate if point-of-care TEE can be used effectively and safely in patients with cardiac arrest.

Study design

Prospective observational feasibility study.

Intervention

Point-of-care transoesophageal echocardiography will be used as diagnostic modality during cardiac arrest.

Study burden and risks

TEE will be used during the study period during cardiac arrest. TEE is widely used in the hospital in multiple departments. In previous studies concerning the use of TEE during cardiac arrest no complications of TEE have been reported. While rare, complications of the use of TEE in general have been reported. The potential risks are described in more detail in section 4 and 6 of the protocol. The possible benefits include superior diagnostic characteristics, shorter compression pauses, continuous assessment and enhancement of chest compressions (see section 1 of the protocol).

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

Cardiac arrest patients in the emergency department.

Exclusion criteria

Patients <18 years old
Pregnant patients
Traumatic cardiac arrest
Increased risk of esophageal trauma (malignancy or stricture of the upper gastro-intestinal tract. previous radiation or surgery of the esophagus, esophageal varices)

Do not resuscitate order

Study design

Design

Study type: Interventional

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	09-07-2024
Enrollment:	30
Type:	Actual

Medical products/devices used

Generic name:	Transesophageal ultrasound
Registration:	Yes - CE intended use

Ethics review

Approved WMO

Date:	21-05-2024
Application type:	First submission
Review commission:	RTPO, Regionale Toetsingscie Patientgebonden Onderzoek (Leeuwarden)

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	NL84790.099.24