

Adding remote ultrasound "knobology" control to remote just-in-time telementored trauma ultrasound: a randomised controlled trial

Submission date
12/02/2015

Recruitment status
No longer recruiting

☐ Prospectively registered

☐ Protocol

Registration date
23/02/2015

Overall study status
Completed

☐ Statistical analysis plan

☒ Results

Last Edited
25/06/2020

Condition category
Injury, Occupational Diseases, Poisoning

☐ Individual participant data

Plain English summary of protocol

Background and study aims

Traumatic injury remains the leading cause of potentially preventable death in the Western world, especially in the Arctic, and is one, if not the most feared, pathology in Space Medicine. Resuscitative ultrasound is becoming a universal tool in emergency medicine that can capture a vast array of injuries and deranged physiology in the critically injured. An unfortunate practical reality however, is that ultrasound is very user dependant. Space Medicine has led the innovation however, in using advanced telecommunications to allow experts not at the scene of the trauma (remote expert) to guide non-experts to use on-scene ultrasound equipment to get clinically meaningful images. Furthermore, the Trauma Services group at the University of Calgary has led the world in examining the use of this technology in a clinical setting on earth. The Ultrasonix Corporation, under contract to the Canadian Space Agency (CSA), has developed an advanced Graphic User Interface (GUI) which allows a expert to control the ultrasound settings of a Ultrasonix Ultrasound remotely and to communicate with the non-expert user over a unique voice and video connection. A consistent finding of this experience has been the sentiment that being able to transfer the responsibility of controlling the ultrasound settings (knobology) from the on-site inexperienced user to the remote expert. The aim of this study is to test whether the use of a remote controlled GUI improve the usefulness of emergency "just-in-time" remote telementored ultrasound as measured by examining the accuracy of the examination

Who can participate?

Firefighters from the city of Edmonton that have not had any prior experience with trauma ultrasound.

What does the study involve?

Participants are randomly allocated into one of two groups. Those in group 1 perform a telementored ultrasound examination on an ultrasound phantom (a training model that gives realistic ultrasound images when scanned) to which fluid has been added. Those in group 2 perform a telementored ultrasound examination on an ultrasound phantom to which fluid has not been added. All participants are mentored by remote ultrasound experts who can view their

hand movements and provide 2-way communication. The intervention being randomized is the remote control of the ultrasound machine "knobology" by the remote mentor or not which is randomly assigned. The accuracy of the mentored examination is determined by the known "truth" regarding the volume of fluid added to the phantom. The time needed to complete the examination is also recorded with and without GUI assistance. All volunteers and remote mentors are asked to complete questionnaires for each examination in which all responses will be anonymous, regarding how useful they found the technique and the GUI, any suggested modifications to the GUI, and other general comments.

What are the possible benefits and risks of participating?
Not provided at time of registration

Where is the study run from?
Foothills Medical Centre, Calgary (Canada)

When is the study starting and how long is it expected to run for?
October 2014 to March 2015

Who is funding the study?
Canadian Space Agency

Who is the main contact?
Professor Andrew Kirkpatrick
andrew.kirkpatrick@albertahealthservices.ca

Contact information

Type(s)
Scientific

Contact name
Dr Andrew Kirkpatrick

Contact details
Trauma Services
1403 29 St NW
Calgary
Canada
T2N 2T9
4039442888
andrew.kirkpatrick@albertahealthservices.ca

Additional identifiers

Protocol serial number
20949

Study information

Scientific Title

Medical ultrasound remote access/control interface testing requirements for a graphic user interface (GUI)

Study objectives

The aim is to test the usefulness of a remote ultrasound examination that utilizes a graphic user interface to assist with the knobology of the remote ultrasound machine.

Ethics approval required

Old ethics approval format

Ethics approval(s)

University of Calgary Office of Medical Bioethics, 06/07/2007, ref: 20949

Primary study design

Interventional

Study design

Randomised controlled trial

Study type(s)

Diagnostic

Health condition(s) or problem(s) studied

Trauma Resuscitation

Interventions

Pre-hospital responders unfamiliar with trauma ultrasound will be randomized to perform a tele-mentored ultrasound examination on an ultrasound phantom to which fluid has been randomly added or not. They will be mentored by remote ultrasound experts who can view their hand movements and provide 2-way communication. The intervention being randomized is the remote control of the ultrasound machine "knobology" by the remote mentor or not which will be randomly assigned

Intervention Type

Device

Phase

Not Applicable

Primary outcome(s)

The accuracy of the mentored examination to detect any free fluid within the phantom (Binary yes/no determination) with and without GUI assistance.

Key secondary outcome(s)

The relative user satisfaction will be assessed using a previously verified post-examination satisfaction survey with the Likert scores compared for those using the GUI versus not.

Completion date

30/03/2015

Eligibility

Key inclusion criteria

1. Pre-hospital care provider
2. Willingness to participate
3. Command of English

Participant type(s)

Health professional

Healthy volunteers allowed

No

Age group

Adult

Sex

All

Total final enrolment

101

Key exclusion criteria

1. Any prior experience with ultrasound
2. Unwilling to participate
3. Unable to speak English

Date of first enrolment

29/10/2014

Date of final enrolment

30/05/2015

Locations

Countries of recruitment

Canada

Study participating centre

Foothills Medical Centre

Trauma Services

1403 29 St NW

Calgary

Canada

T2N 2T9

Sponsor information

Organisation

Canadian Space Agency

ROR

<https://ror.org/03a1gte98>

Funder(s)

Funder type

Government

Funder Name

Canadian Space Agency

Alternative Name(s)

Agence Spatiale Canadienne, The Canadian Space Agency (CSA), L'Agence spatiale canadienne (ASC), Government of Canada, Canadian Space Agency, csa_asc, canadianspaceagency, CSA, ASC

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

Canada

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/05/2016	25/06/2020	Yes	No