ISRCTN16213898 https://doi.org/10.1186/ISRCTN16213898

High fidelity simulation training for anesthesia residents: Performance assessment of technical and non-technical skills

Submission date
29/02/2016

Recruitment status
No longer recruiting

Registration date
01/03/2016

Overall study status
Completed

Last Edited
01/03/2016

Condition category
Other

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Anesthesiology is a branch of medicine which focuses on the control of pain relief and sedation during and after surgery. Anesthesiologists are also responsible for managing patients' critical bodily functions, such as breathing, heart rate and blood pressure during surgery, making them indispensable in modern surgical procedures. High-fidelity simulations are a type of training exercise commonly used to train doctors so that they can improve their technical and non-technical skills. This involves 'treating' a lifelike mannequin that responds the way a person would, allowing trainees to practice their skills in a 'real-time', 'real-life' environment. High-fidelity simulation has been widely used in anesthesiology training and is increasingly suggested as a means of testing competence in anesthesiology. Until now however, there is a lack of evidence with respect the real impact of simulation in the anesthetic education further the technical skills. The aim of this study is to find out whether the use of high fidelity simulation can help to improve technical and non-technical skills in anesthesiology residents.

Who can participate?
Second and third year residents of the anesthesiology residency program at Pontifical Catholic University of Chile.

What does the study involve?
Participants take part in a total of 12 different simulated crisis scenarios, including difficult airway (difficulty putting a breathing tube in place), anaphylaxis (a severe allergic reaction) and intraoperative cardiac arrest (when the heart stops during surgery). All scenarios are filmed and after each one, the participants are fully debriefed about how well they have done and what they have learned. After each scenario, participants also complete a survey so that that can give their opinion on how effective each session has been. Participants complete the scenarios in blocks of three, after which they take part in a test scenario where they are graded on their non-technical and technical skills. During the four test sessions, participants also complete a multiple-choice test in order to assess their knowledge.

What are the possible benefits and risks of participating?
Participants may benefit from being able to improve their knowledge and skills in different situations that they may encounter in their career. There are no risks involved with taking part in this study.

Where is the study run from?
Pontifical Catholic University of Chile (Chile)

When is the study starting and how long is it expected to run for?
February 2016 to February 2017

Who is funding the study?
National Commission for Scientific and Technological Research (Chile)

Who is the main contact?
Dr Jidong Sung
jdsung@skku.edu

Contact information

Type(s)
Scientific

Contact name
Mr Alejandro Delfino

ORCID ID
http://orcid.org/0000-0002-0659-7130

Contact details
Catholic University of Chile
Marcoleta 367
Santiago
Chile
8330024
+56 9 57394112
anestesi@med.puc.cl

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
High fidelity simulation training for anesthesia residents improves knowledge, technical and non-technical skills

Study objectives
The use of high fidelity simulation could improve technical and non-technical skills in anesthesiology residents.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Pontificia Universidad Catolica de Chile ethics committee, 06/08/2013, ref: 13-199

Study design
Single-centre interventional non-randomised study

Primary study design
Interventional

Secondary study design
Non randomised study

Study setting(s)
Hospital

Study type(s)
Other

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet.

Health condition(s) or problem(s) studied
Technical and non-technical skills of anesthesiology residents

Interventions
During the second and third year of the anesthesia residency program the students participated in 12 simulated crisis scenarios (difficult airway, anaphylaxis, malignant hyperthermia, negative pressure pulmonary edema, emergency cesarean section, hypovolemic shock, local anesthetic toxicity, pediatric laryngospasm, intraoperative cardiac arrest and trauma patient management) divided in groups of 3 training scenarios, followed by a test scenario until the 12 scenarios were completed.
Residents were distributed in teams, conformed by two anesthesia residents and one operating room nurse. All the scenarios were videotaped. After each scenario a trained instructor guided a debriefing session focused on both, technical and nontechnical skills performance.
Residents completed a pre- and post-test questionnaires in order to assess their knowledge acquisition. Videotapes of test scenarios, were later reviewed by two blinded independent assessors, who rated participant's technical and nontechnical skills. Resident's medical (technical) management was graded using the number of tasks correctly performed, from

checklists designed by Arriaga for intraoperative emergencies. Non-technical skills were graded using the Anaesthetists' Non-Technical Skills (ANTS) system.
A satisfaction survey was distributed immediately after each session to rate the simulation scenarios.

Intervention Type

Primary outcome measure
1. Technical skills are measured in a test scenario which is completed every time participants have completed three scenarios (four in total) and are graded using the Arriagada checklist
2. Non-technical skills are measured in a test scenario which is completed every time participants have completed three scenarios (four in total) and are graded using the anaesthetists' Non-Technical Skills (ANTS) system

Secondary outcome measures
1. Knowledge is measured suing a purpose-designed multiple-choice test at the start of each group of three scenarios and during the test scenario
2. Users' satisfaction is measured using a satisfaction survey after each scenario is completed

Overall study start date
01/03/2013

Completion date
01/12/2016

Eligibility

Key inclusion criteria
Residents of second and third year of the anesthesiology residency program at Pontificia Universidad Catolica de Chile.

Participant type(s)
Health professional

Age group
Adult

Sex
Both

Target number of participants
60

Key exclusion criteria
Refusal to participate in the study.

Date of first enrolment
04/05/2014

Date of final enrolment

10/12/2015

Locations

Countries of recruitment
Chile

Study participating centre
Pontifical Catholic University of Chile (Pontificia Universidad Catolica de Chile)
420, - Av Libertador Bernardo O'Higgins 328
Santiago
Chile
8330024

Sponsor information

Organisation
Catholic University of Chile (Pontificia Universidad Catolica de Chile)

Sponsor details
Marcoleta 367
Santiago
Chile
8330024

Sponsor type
University/education

ROR
https://ror.org/04teye511

Funder(s)

Funder type
Government

Funder Name
National Commission for Scientific and Technological Research (Comisión Nacional de Investigación Científica y Tecnológica)

Alternative Name(s)
National Commission for Scientific and Technological Research, CONICYT

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Chile

Results and Publications

Publication and dissemination plan
Planned publication in an anesthesiology or education journal.

Intention to publish date
30/06/2017

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date