

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

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<b>Registration date</b> 01/03/2016	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 01/03/2016	<b>Condition category</b> Other	<input type="checkbox"/> Individual participant data <input type="checkbox"/> 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?  
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## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
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

### **Study type(s)**

Other

### **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(s)**

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

#### **Key secondary outcome(s)**

1. Knowledge is measured using 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

**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

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**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)

## 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

## Individual participant data (IPD) sharing plan

### IPD sharing plan summary

Data sharing statement to be made available at a later date

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Participant information sheet</a>	Participant information sheet	11/11/2025	11/11/2025	No	Yes