

# Ultrasound Cannulation of the Internal Jugular Vein

<b>Submission date</b> 10/04/2006	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 23/05/2006	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 21/04/2011	<b>Condition category</b> Respiratory	<input type="checkbox"/> Individual participant data

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
Ultrasound/022006

## Study information

**Scientific Title**  
Ultrasound Cannulation of the Internal Jugular Vein: a prospective randomised controlled study

## **Study objectives**

This study was designed to evaluate whether real-time ultrasound-guided cannulation of the internal jugular vein is superior to the standard landmark method.

As of 08/11/2010 this record was updated to include an addition to the inclusion criteria as a result of a protocol change in January 2006. This is as follows:

"Ultrasound guided cannulation of the internal jugular vein versus the landmark method was extended at the subclavian vein site as from 2006 until 2010 in the same critical care population following the same methodology and the same protocol. Currently, 200 additional patients were enlisted for the ultrasound group and 201 additional patients were enlisted for the landmark group concerning the cannulation of the subclavian vein."

Thus, the inclusion criteria have been updated, and the target number of participants has been increased from 900 to 1301.

## **Ethics approval required**

Old ethics approval format

## **Ethics approval(s)**

The study was in conformation with the principles outlined in the Declaration of Helsinki and was approved by the Institutional Ethics Committee in 1999 (ref: 1999/02/ICUGG)

## **Study design**

Prospective, randomised controlled study

## **Primary study design**

Interventional

## **Study type(s)**

Treatment

## **Health condition(s) or problem(s) studied**

Critically ill patients

## **Interventions**

Ultrasound-guided cannulation of the internal jugular vein versus the standard landmark method

## **Intervention Type**

Other

## **Phase**

Not Applicable

## **Primary outcome(s)**

Cannulation of the internal jugular vein was achieved in all patients using ultrasound and in 425 of the patients (94.4%), the landmark technique ( $p < 0.001$ ) was used. Average access time (skin to vein) and the number of attempts were significantly reduced in the ultrasound group of patients compared to the landmark group ( $p < 0.001$ ). In the landmark group, puncture of the carotid artery occurred in 10.6% of patients, hematoma in 8.4%, hemothorax in 1.7%, pneumothorax in 2.4% and central venous catheter-associated blood stream infections in 16% which were all significantly increased compared to the ultrasound group ( $p < 0.001$ ).

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

There were no significant differences in gender, age, body mass index, left or right side of cannulation and in the presence of risk factors for difficult venous cannulation such as prior catheterization, limited sites for access attempts, previous difficulties during catheterization, previous mechanical complication, known vascular abnormality, untreated coagulopathy, skeletal deformity and cannulation during cardiac arrest between the two groups of patients. Furthermore, the physicians who performed the procedures had comparable experience in the placement of central venous catheters ( $p = \text{non-significant}$ ).

## **Completion date**

01/12/2006

## **Eligibility**

### **Key inclusion criteria**

Amended as of 08/11/2010:

Critical care patients which are hospitalised in the intensive care unit from January 2000 to December 2006 and were all mechanically ventilated requiring central/subclavian venous access for various therapeutic reasons.

Initial information at time of registration:

Critical care patients which are hospitalised in the intensive care unit from January 2000 to December 2006 and were all mechanically ventilated requiring central venous access for various therapeutic reasons.

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Adult

### **Sex**

All

### **Key exclusion criteria**

Patients who were not on mechanical ventilation

### **Date of first enrolment**

01/01/2000

### **Date of final enrolment**

01/12/2006

## **Locations**

### **Countries of recruitment**

Greece

### Study participating centre

Intensive Care Unit

Athens

Greece

11527

## Sponsor information

### Organisation

General State Hospital of Athens (Greece)

### ROR

<https://ror.org/00zq17821>

## Funder(s)

### Funder type

Hospital/treatment centre

### Funder Name

General State Hospital of Athens (Greece) - Intensive Care Unit

## Results and Publications

### Individual participant data (IPD) sharing plan

### IPD sharing plan summary

Not provided at time of registration

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	01/08/2006		Yes	No
<a href="#">Results article</a>	results	01/07/2011		Yes	No