

Resource use and outcome in intensive care units

Submission date 26/01/2021	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
Registration date 31/01/2021	Overall study status Completed	<input checked="" type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
Last Edited 16/08/2022	Condition category Other	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

Intensive care prevents death and disability caused by critical illness and it consumes large amounts of health care resources. The severity of illness influences both the risk of death and the amount of resources needed to achieve survivors. Both the ability to achieve survivors and the resources needed to achieve survivors at a specific severity of illness may vary widely between intensive care units internationally and within a country. The aim of this study is to evaluate variation in resources needed and the ability achieve survivors in intensive care units over time, using methods that take into account the severity of illness in resource use and mortality. This study attempts to find factors possibly related to such variations, for example, structural and organizational characteristics of the intensive care units in Finland, Estonia, and Switzerland.

Who can participate?

Patients treated in participating intensive care units from 1/1/2008 - 31/12/2017

What does the study involve?

The study uses routinely collected information of severity of illness and resource use during admissions to intensive care units. The data has been collected as part of standard care in a registry and will be analyzed in fully anonymized form, i.e. so that no patients can be recognized based on the data available for the study.

What are the benefits and risks of participating?

None for the individual patients. Potential benefits for society and health care may help to better allocate health care resources in the future.

Where is the study run from?

The study is run from the Department of Intensive Care Medicine, Bern University Hospital and University of Bern, Bern, Switzerland.

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

August 2017 to April 2021

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Professor (Emeritus) Jukka Takala, jukka.takala@med.unibe.ch

Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title
Variation in severity-adjusted resource utilization and outcome in intensive care units

Study objectives
This health economic study evaluates variation in resource use and mortality, both standardized for the severity of illness, in intensive care units over time, assesses factors related to the variation, and evaluates the cost structure and ICU organization in participating intensive units in Finland, Estonia, and Switzerland.

Ethics approval required
Old ethics approval format

Ethics approval(s)
According to the national regulations in Finland, Estonia, and Switzerland, no ethics committee approval is needed for health economic studies using anonymized data from existing health care registry. The study protocol, database contents and process of data management were approved by the National Institute of Health and Welfare, Finland (Decision THL/1524/5.05.00 /2017 and THL/1173/05.00/2018)

Study design
Retrospective analysis

Primary study design

Observational

Study type(s)

Other

Health condition(s) or problem(s) studied

Resource use and hospital outcome standardized for severity of illness in patients admitted to intensive care units

Interventions

Registry data from all admissions in 21 intensive care units from 2008-2017 will be used.

Severity of illness and resource use data, collected prospectively in a quality registry, are retrospectively analyzed for severity adjusted, standardized resource use ratio (SRUR) and standardized mortality ratio (SMR). The variation over time and association between SRUR and SMR and their association with predefined structural and organizational variables will be analyzed.

Intervention Type

Other

Primary outcome(s)

Resource use is measured from the retrospectively collected records using:

1. Length of intensive care unit stay
2. Daily collected data on therapeutic interventions (TISS-score)
3. Severity of illness measured during the first 24 hrs of intensive unit stay
4. Mortality measured at hospital discharge

Key secondary outcome(s)

Characteristics of treatment centres measured from the retrospectively collected records using:

1. ICU-category (University, small/large non-University)
2. Cardiac surgery in hospital (yes/no)
3. Neurosurgery in hospital (yes/no)
4. Nurses/bed
5. Nurses/bed to physician/bed ratio
6. Total number of beds
7. Readmissions/total admissions
8. Admissions/bed
9. Specialist availability 24/7 (yes/no)
10. Medical emergency team (yes/no)
11. Physician full time equivalents(FTE)/bed,
12. Organization type (independent or not)
13. Median SAPS category
14. SMR

Completion date

30/04/2021

Eligibility

Key inclusion criteria

All patients admitted to the participating intensive care units 2008-2017

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

All

Sex

All

Total final enrolment

207953

Key exclusion criteria

1. Data collection error
2. Missing admission number
3. Missing severity score
4. Missing diagnosis

Date of first enrolment

01/01/2008

Date of final enrolment

31/12/2017

Locations**Countries of recruitment**

Estonia

Finland

Switzerland

Study participating centre**Bern University Hospital**

Department of Intensive Care Medicine

Inselspital

Freiburgstrasse 18

Bern

Switzerland

3010

Sponsor information

Organisation

University Hospital of Bern

ROR

<https://ror.org/01q9sj412>

Funder(s)

Funder type

Other

Funder Name

Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

The current data sharing plans for this study are unknown and will be available at a later date

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?
Results article		18/10/2021	19/10/2021	Yes	No
Protocol file		22/08/2017	16/08/2022	No	No
Statistical Analysis Plan		29/01/2021	03/02/2021	No	No