

# In what trauma patient subgroups are opportunities for improvement most frequent?

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Abstract

**Background**

**Methods**

**Results**

**Conclusion**

## **Introduction**

Trauma is a wide term including various physical injuries to the human body. It is one of the leading causes of mortality and morbidity in the world, representing about 9 % of annual global deaths. Over the last decade almost 50 million people worldwide have died from trauma.(1)

Not only does trauma represent a large share of the global mortality rate, but studies have also shown a significant difference in outcome depending on where patients are treated. It has for example been shown that trauma patients in Sweden who were treated at a trauma center rather than a non-trauma center have a 41 % lower 30-day adjusted mortality rate. (2)

To further stress the need for more knowledge and research about Trauma care, some studies indicate that the number of trauma-related deaths that potentially could have been prevented is as high as 20 to over 50 %. (3–5) Preventable deaths varies not only between trauma centers and non-trauma centers. There is a significant difference between high income countries and low and middle income countries (LMICs). It is estimated that 2 million lives could be saved annually if LMICs and high income countries had equal fatality numbers for severe injuries.(6)

Today however, it is poorly understood whether different subgroups have greater opportunities for improvement (OFI) than others. The most common cause of death after injury is hemorrhage. Among these patients, problem in decision making, technical skills and making decisions between surgery and radiology were some of the areas where OFIs were found.(7) Since trauma patients is a very heterogeneous group, it is important to have a sufficient understanding of OFIs for different trauma subgroups.(8)

In this study we aim to assess the frequency of opportunity for improvement in the following important clinical subgroups. Men and women, blunt and penetrating injuries, minor and major trauma ,and across body regions injured.

## **Methods**

This is a registry based cohort study that uses data from two different Swedish trauma registers. The first one is the Trauma registry at the Karolinska University Hospital in Solna, which includes about 21000 patients between the years 2012 and 2021. The second register is the Trauma quality database. By linking these

databases together the opportunity for improvement in the trauma subgroups mentioned in the introduction will be assessed.

Whether there is opportunity for improvement for a specific case or not is decided by an group of experts during a conference where every trauma case is discussed. OFI is defined as when the trauma care for a patient does not match the best practice guidelines in at least one aspect.

At KUH all trauma patient end up in a data base. Audit filters then point out certain trauma cases where things might have differed from the golden standard treatment based on different criterias. Such criterias are GCS 8 or less where the patient was not intubated, time to CT, time to Surgery and so on. Then A manual selection is done by a nurse, where some cases are removed from the group of potential OFI cases because obvious reasons for the treatment can be found. The patients who are then left are discussed at a conference where doctors from several specialties participate. At this conference every case is gone through thoroughly. Then those patients where OFI is found are marked with "YES" in the OFI column in the KUH Trauma register and those patient where no OFI is found are marked with "NO."

## **Study design**

### **Setting**

The Karolinska University Hospital in Solna is the leading trauma center in Sweden, and the only hospital in Sweden that can be considered as a level one trauma center. Trauma patients are divided into priority one and two by the paramedics using certain criteria, such as trauma mechanism, GCS points and blood pressure. To Karolinska Solna only those who are classified as a priority one by the pre hospital professionals are admitted. (9)

A Trauma priority one is considered directly life threatening. Therefore when arriving to Karolinska Solna every one of these patients are taken care of by a full trauma team. This team consists of a trauma leader who is a general surgeon or a resident in general surgery and an anesthetist with a nurse specialized in anesthesiology. The team also has a Orthopedic surgeon, Radiologist, radiology nurse, emergency medicine nurse, surgical nurse and assistant nurses.(9)

Beskriva att det är ett examenarbete, att det sker under handledning av er, håller på under 20 veckor osv?

## **Participants**

Beskriva kriterier för att bli tillagd i traumaregistren?

## **Variables and data sources/measurements**

### **Bias**

### **Study size**

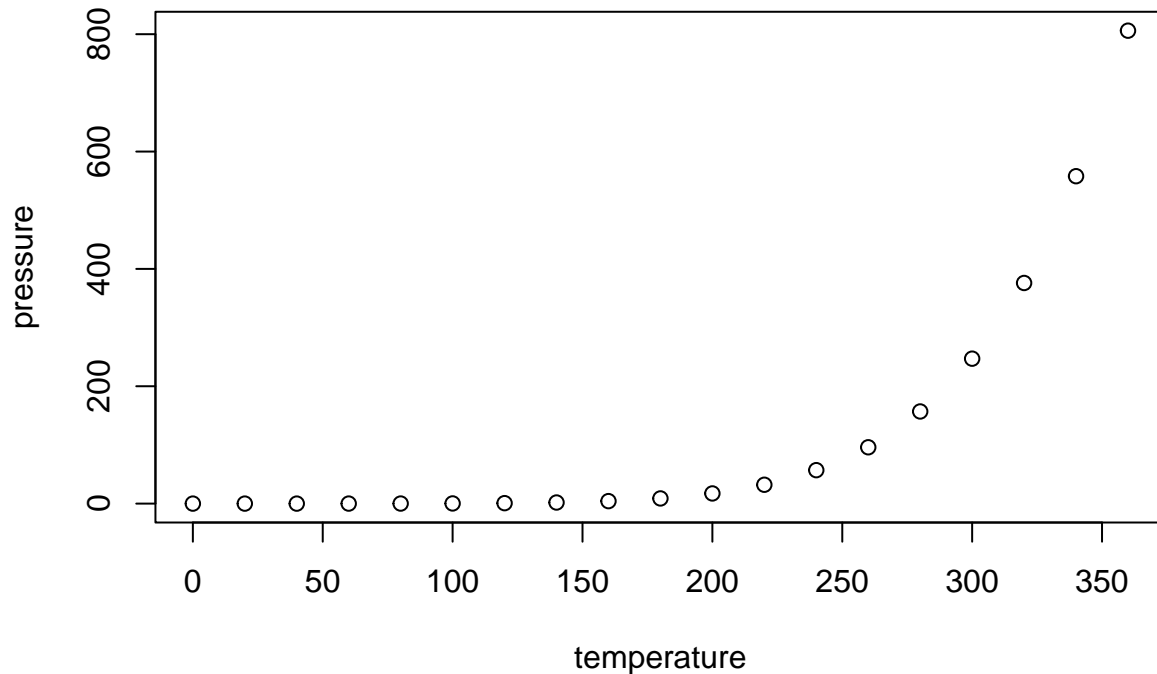
### **Quantitative variables**

### **Statistical methods**

#### **Results**

You can include code in this document like this:

You can also embed plots:



You can also mix text and code, so called inline code, like this: 7.

Discussion

Conclusion

References

1. GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980-2017: A systematic analysis for the global burden of disease study 2017. *Lancet*. 2018 Nov;392(10159):1736–88.
2. Candefjord S, Asker L, Caragounis E-C. Mortality of trauma patients treated at trauma centers compared to non-trauma centers in sweden: A retrospective study. *Eur J Trauma Emerg Surg*. 2022 Feb;48(1):525–36.
3. Drake SA, Holcomb JB, Yang Y, Thetford C, Myers L, Brock M, et al. Establishing a regional trauma preventable/potentially preventable death rate. *Ann Surg*. 2020 Feb;271(2):375–82.
4. Ray JJ, Meizoso JP, Satahoo SS, Davis JS, Van Haren RM, Dermer H, et al. Potentially preventable prehospital deaths from motor vehicle collisions. *Traffic Inj Prev*. 2016 Oct;17(7):676–80.
5. Ghorbani P, Strömmer L. Analysis of preventable deaths and errors in trauma care in a scandinavian trauma level-i centre. *Acta Anaesthesiol Scand*. 2018 Sep;62(8):1146–53.
6. Mock C, Joshipura M, Arreola-Risa C, Quansah R. An estimate of the number of lives that could be saved through improvements in trauma care globally. *World J Surg*. 2012 May;36(5):959–63.
7. O'Reilly D, Mahendran K, West A, Shirley P, Walsh M, Tai N. Opportunities for improvement in the management of patients who die from haemorrhage after trauma. *British Journal of Surgery* [Internet]. 2013 Mar;100(6):749–55. Available from: <http://dx.doi.org/10.1002/bjs.9096>
8. Coats T. Blunt major trauma: Now two different diseases? *Br J Hosp Med (Lond)*. 2020 Apr;81(4):1–3.
9. Granström A, Wihlke G, Brattström O, Ostlund A. [Activation of the trauma team is related to injury severity. Triage stringency can yield optimal use of resources]. *Lakartidningen*. 2012;109(4):154–7.