REDUCING VARIATION IN THE DELIVERY OF CODE RED TRAUMA CARE WITHIN THE ROYAL VICTORIA INFIRMARY – A QUALITY IMPROVEMENT PROJECT

STEPHANIE HENDERSON, PHIL JOHNSTONE & JOANNE ROBSON

The Problem

'Code red' trauma presents the most physiologically unstable trauma patients. They need tailored care, delivered seamlessly to ensure they get balanced blood transfusion, external haemorrhage control and damage control surgery.

Why does it matter?

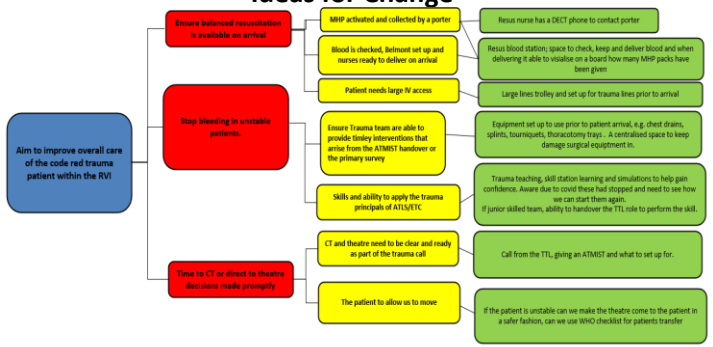
Major trauma accounts for approximately 16 000 deaths in England and Wales annually and is the most common cause of death in young children and adults under the age of 44[1].

The Trauma Standards and Care Report of 2020 showed that Major Trauma Centres (MTC) reduce mortality cases involving major trauma[2]. While centralised care has been shown to improve mortality and morbidity, there is always room for improvement of care. This comes from understanding how major trauma causes death and working to provide prompt key interventions to increase survival[3].

The Aim

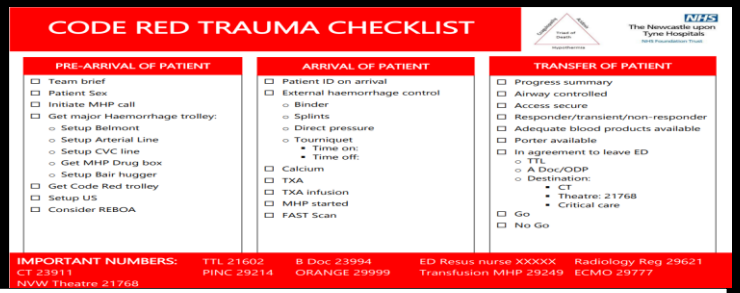
The improvement of code red trauma care by achieving 100% of 5 key standards/ interventions using the Trauma Audit and Research Network (TARN) Best Practice Tariff (BPT), National Institute of Health and Care Excellence (NICE) guidelines from Jan 2021 to May 2021.

Ideas for Change



Interventions

1) 'Code red' trauma checklist for use in 'code red' trauma
2) Development of a 'Code red' trolley for use in 'Code red' trauma



CODE RED TRAUMA CHECKLIST

NHS The Newcastle upon Tyne Hospitals

PRE-ARRIVAL OF PATIENT
- ☐ Team brief
- ☐ Patient Sex
- ☐ Initiate MHP call
- ☐ Get major Haemorrhage trolley:
  - ○ Setup Belmont
  - ○ Setup Arterial Line
  - ○ Setup CVC line
  - ○ Get MHP Drug box
  - ○ Setup Bair hugger
- ☐ Get Code Red trolley
- ☐ Setup US
- ☐ Consider REBOA

ARRIVAL OF PATIENT
- ☐ Patient ID on arrival
- ☐ External haemorrhage control
  - ○ Binder
  - ○ Splints
  - ○ Direct pressure
  - ○ Tourniquet
    - Time on:
    - Time off:
- ☐ Calcium
- ☐ TXA
- ☐ TXA infusion
- ☐ MHP started
- ☐ FAST Scan

TRANSFER OF PATIENT
- ☐ Progress summary
- ☐ Airway controlled
- ☐ Access secure
- ☐ Responder/transient/non-responder
- ☐ Adequate blood products available
- ☐ Porter available
- ☐ In agreement to leave ED
  - ○ TTL
  - ○ A Doc/ODP
  - ○ Destination:
    - CT
    - Theatre: 21768
    - Critical care
- ☐ Go
- ☐ No Go

IMPORTANT NUMBERS: CT 23911 NVW Theatre 21768 | TTL 21602 PINC 29214 | B Doc 23994 ORANGE 29999 | ED Resus nurse XXXXX Transfusion MHP 29249 | Radiology Reg 29621 ECMO 29777

Outcome Measures

1.The improvement of code red trauma care by achievement of 100% of 5 key standards/ interventions (set using the TARN BPT and NICE guidelines on Major trauma care) from Jan 2021 to May 2021.

Process measures

2.The % of code red trauma in where the checklist was used as a tool to standardise code red trauma care

3.The % of code red cases where the consultant was present within 5 mins

4.The % of patients receiving TXA within 3 hours

5.The % of patient receiving blood products on arrival

6.The % of patients receiving external haemorrhage adjunct as appropriate.

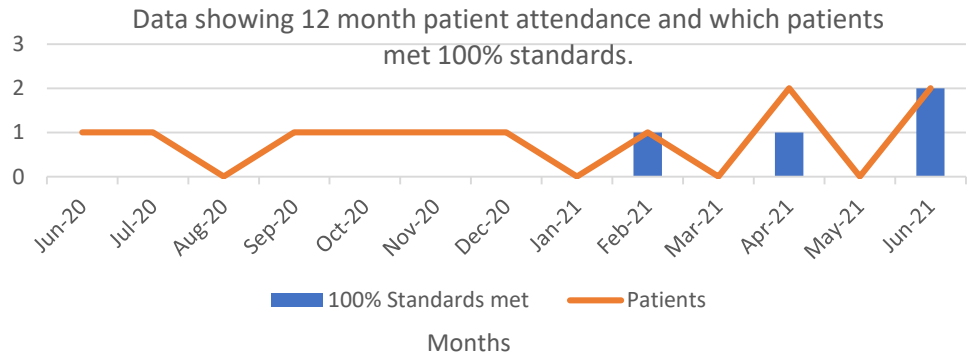
Balancing Measures

7.Did the using of the checklist cause deterrent or delay in the patient care?

Design and Planning

The Model for Improvement is a well-recognised framework used in healthcare improvement.[5]. The framework consists of the application of three questions before the testing of a change idea via a PDSA cycle.

Results



Due to the relative rarity of 'code red' trauma, the sample size was lower than expected (11) Run charts are graphs of data over time and are one of the most important tools for assessing the effectiveness of change, and these will be aspired to be used in the future once the data numbers increase.

Conclusion and Discussion

After two PDSA cycles we there was 100% adherence to the 5 key standards/ interventions, thus achieving the original aim. One can infer that the implementation of the safety checklist tool delivered this improvement, this is further supported by TARN data for 2020-2021 and shows that the RVI excess mortality rate dropped from 0.08 (2019-20) to 0.03 of 0.08 (2020-21) [6].

Despite low case numbers, qualitative data has also been used; combined with the reflections of those involved and written up formally for regional QIP review. Additionally, we plan to introduce and train staff using Code red trauma trolleys as an adjunct, similar to the checklist. Then, using the model for improvement method to reassess. We feel we are making the right moves in the direction of culture change, safety improvement and standardisation of code red trauma care.

1. TARN Website, Home, Resources, https://www.tarn.ac.uk/Home.aspx (updated website January 2021)
2. NHS England reports. Various Authors, 2018. NHS England » More than 1,600 extra trauma victims alive today says major new study (website updated Nov 2021)
3. A. L. McCullough, J. C. Haycock, D. P. Forward, C. G. Moran, Il. Major trauma networks in England, *BJA: British Journal of Anaesthesia*, Volume 113, Issue 2, August 2014, Pages 202–206, https://doi.org/10.1093/bja/aeu204
4. Haugen AS, Sevdalis N, Søfteland E. Impact of the World Health Organization Surgical Safety Checklist on Patient Safety. Anesthesiology. 2019 Aug;131(2):420-425. doi: 10.1097/ALN.0000000000002674. PMID: 31090552.
5. The Model for Improvement - Quality Improvement - East London NHS Foundation Trust : Quality Improvement – East London NHS Foundation Trust (elft.nhs.uk). Website updates 2021.
6. TARN, Northern Trauma Network, Clinical report issue 3, November 2021.