

Supplementary materials

Review protocol:

All study types eligible for inclusion providing patient inclusion/exclusion criteria met.

Participants:

Inclusion: Human, adults aged 18 + years with major trauma (injury severity score > 12) admitted to an intensive care unit who underwent laboratory assessments of neutrophil kinetics or function

Exclusion: pregnancy, underlying haematological malignancy or immunosuppression, animal studies

Comparators/control: healthy controls or subgroups who did/did not develop complications following major trauma

Main outcomes: description of neutrophil kinetics and function after trauma. This may include but is not limited to:

- Neutrophil number, size, granularity, lobulation
- Neutrophil cell surface markers
- Neutrophil activation state, as determined by cell surface markers, genomic or proteomic analysis
- Neutrophil functions such as reactive oxygen species production and phagocytosis

Measures of effect:

Statistically significant differences in the above outcomes between trauma patients and controls or trauma patients who developed complications and those who did not, as determined by appropriate statistical testing for the included study

Data extraction:

Studies will be selected according to inclusion and exclusion criteria applied by 2 individuals. Studies will be screened and data extracted using Covidence online software. Conflicts resolved by discussion and consensus between 2 individuals extracting data

Risk of bias assessment

Will be qualitative and assess features including but not limited to:

Study size, presence and appropriateness of control groups, likelihood of confounding, laboratory methodology used to assess neutrophil function.

Bias assessment completed by 2 individuals at study level

Data synthesis:

Data will be synthesised qualitatively owing to heterogeneity of quantitative data.

No meta-analysis planned.

Database: PubMed

Search Strategy:

1. (trauma[Text Word]) OR (multiple trauma[MeSH Terms])
2. (neutrophil[Text Word]) OR (neutrophil[MeSH Terms])
3. (neutrophil activation[MeSH Terms]) OR (neutrophil*[Text Word])
4. immunity, innate[MeSH Terms]
5. function*[Text Word]
6. (immunophenotyping[MeSH Terms]) OR (immunophenot*[Text Word])
7. (phenotype[MeSH Terms]) OR (phenotyp*[Text Word])
8. dysfunction*[Text Word]
9. (intensive care[Text Word] OR ICU[Text Word]) OR (intensive care units[MeSH Terms])
10. (critical illness[MeSH Terms]) OR (critical care[MeSH Terms])
11. #1 and (#2 or #3 or #4) and (#5 or #6 or #7 or #8) and (#9 or #10)

Database: Embase Classic+Embase <1947 to 2021 Week 01>

Search Strategy:

- 1 trauma.mp. or exp multiple trauma/
- 2 neutrophil.mp. or exp neutrophil/
- 3 exp leukocyte activation/ or neutrophil*.mp.
- 4 exp innate immunity/
- 5 function*.mp.
- 6 exp immunophenotyping/ or immunophenot*.mp.
- 7 exp phenotype/ or phenotyp*.mp.
- 8 dysfunction*.mp.
- 9 (intensive adj3 care).mp. or exp intensive care unit/ or ICU.mp.
- 10 exp critical illness/ or exp intensive care/
- 11 1 and (2 or 3 or 4) and (5 or 6 or 7 or 8) and (9 or 10)

Database: Ovid Medline

Search strategy:

- 1 trauma.mp. or exp multiple trauma/
- 2 neutrophil.mp. or exp neutrophils/
- 3 exp neutrophil activation/ or neutrophil*.mp.
- 4 exp immunity, innate/
- 5 function*.mp.
- 6 exp immunophenotyping/ or immunophenotyp*.mp.
- 7 exp phenotype/ or phenotyp*.mp.
- 8 dysfunction*.mp.
- 9 (intensive adj3 care).mp. or exp intensive care units/ or ICU.mp.
- 10 exp critical illness/ or exp critical care/
- 11 1 and (2 or 3 or 4) and (5 or 6 or 7 or 8) and (9 or 10)