4.2 ML for ICU & ICU for ML
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MIMIC-III
https://www.nature.com/articles/sdata201635#:~:text=MIMIC%2DIII%20('Medical%20Informatio
n,a%20large%20tertiary%20care%20hospital.

**Use of machine learning to analyse routinely collected intensive care unit data: a
systematic review**
https://ccforum.biomedcentral.com/articles/10.1186/s13054-019-2564-9

RCT in ML
- ICU is dangerous
  - No gold standards, ML allowing decision policies
  - Optimal decision policies

ICU
- Organ failure or system failure
  - Heart, lung, kidney, immune system etc.
- Determining whether organ is failing or responding to treatment
  - Blood tests
  - Physiology
    - Catheters
    - BP
  - Radiology – for diagnosis
  - Ventilators, dialysis machines, infusion pumps etc.

ICU data
- Big data
  - Continuous physiology
  - Others possible
  - Daily biochemistry
  - Daily hematology
  - Usually regular (~6.00am)
  - Semi-informative sampling but irregular (on average of every 4 hours)
    - Point of care measurements
    - Routine imaging

Interoperability
- Syntactic interoperability
  - Specialist hospital and general hospital may record diagnosis at different
    granularity/ system
    - Many-to-one relationship, one-to-many relationships, or no relationship[
    - Hierarchical

- SNOMED International
  - Harmonizing the difficult ontologies
- Semantic interoperability