Comparison of CT numbers

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CT QA

- IPEM Report 91: CT07 CT number values
  - axial acquisition
  - Water: baseline ± 5 HU
  - Other materials: baseline ± 10 HU

CT Clinically

- Most scans are performed helically

- Should we carry out our QA in the same way?

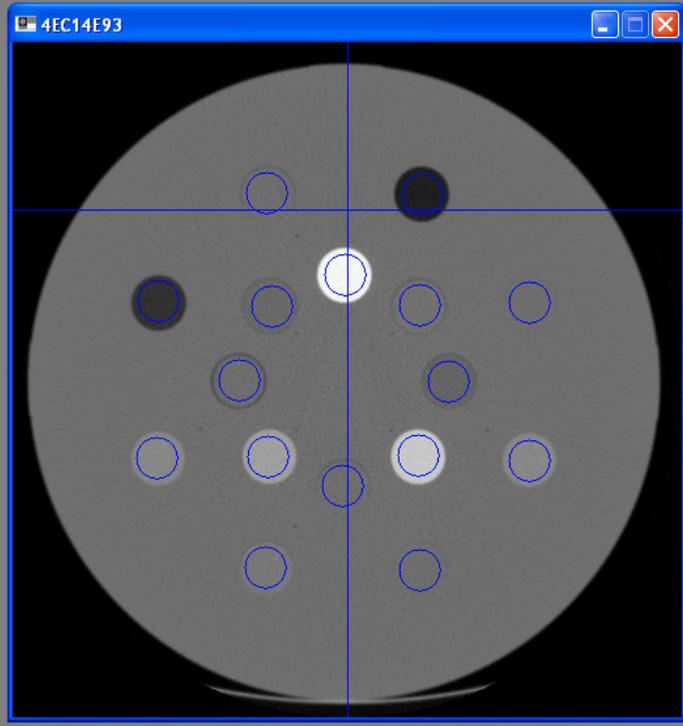- Will the results be affected?

Protocol

- Axial & Helical scans performed
  - Varied kV, mAs, slice thickness
  - Also varied pitch within helical scans

- Each scan repeated twice

- All images acquired during same set-up

- Performed the experiment on two scanners:
  - Philips MX8000 Infinite
  - GE Brightspeed 16 slice

- Central slice from each scan analysed using IQWorks

Protocol

Protocol

- Data from comparable scans collated

- Comparison and statistical analysis performed
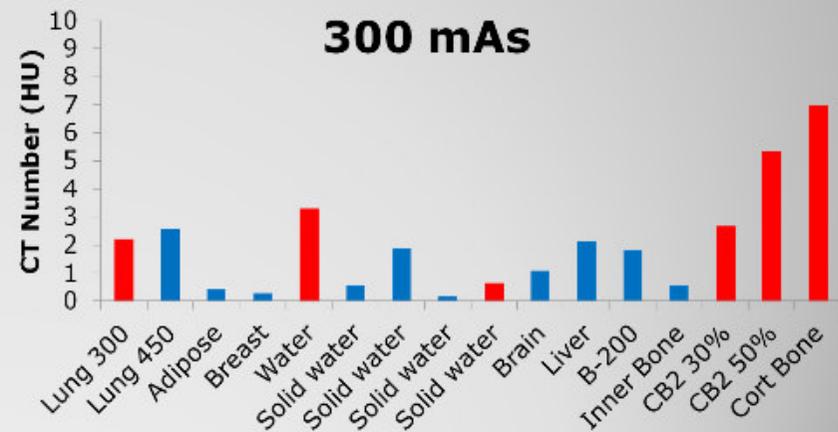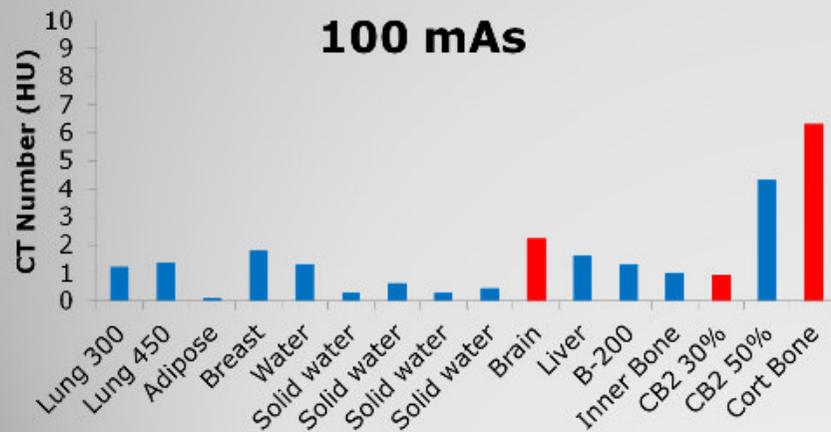 - Compared axials/axials and helicals/helicals
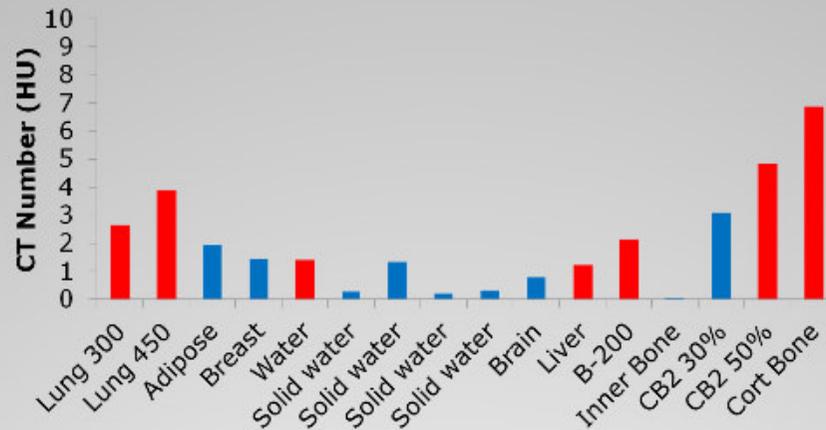 - Compared axials/helicals

Results

- Axial/axial comparisons

    ◦ Differences < 2 HU

- Helical/helical comparisons

    ◦ differences < 4 HU

} No significant difference

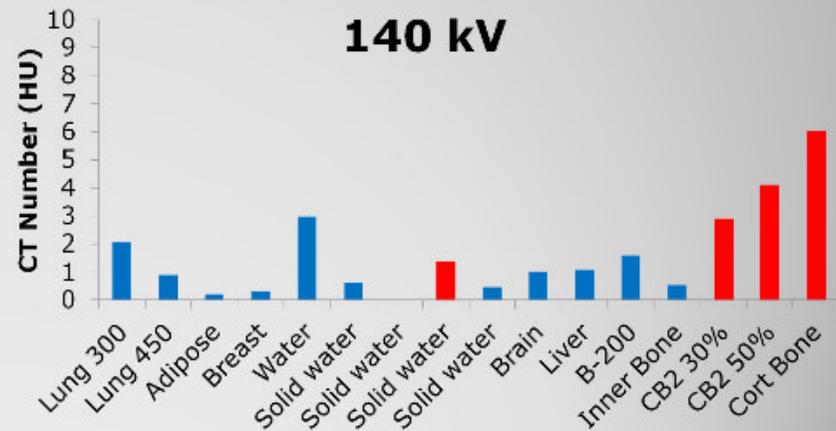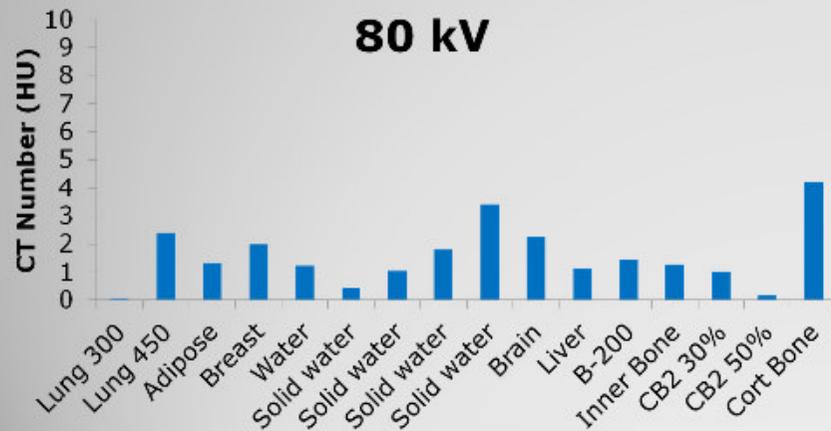- Some larger variations at lower kV settings

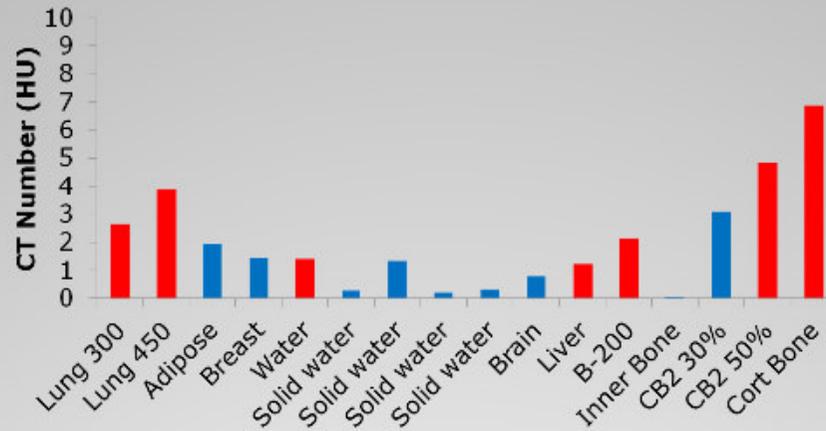- Confident that CT number measurements were repeatable
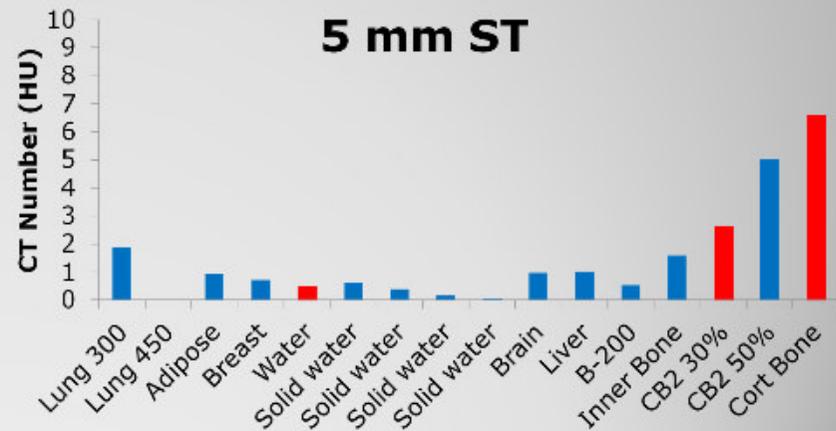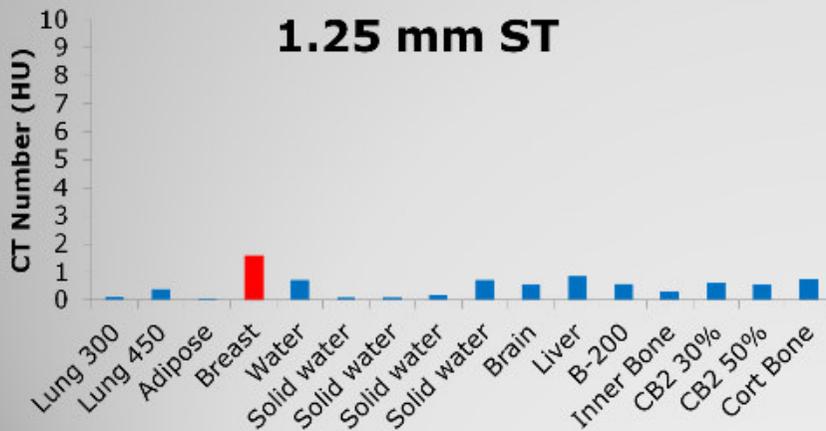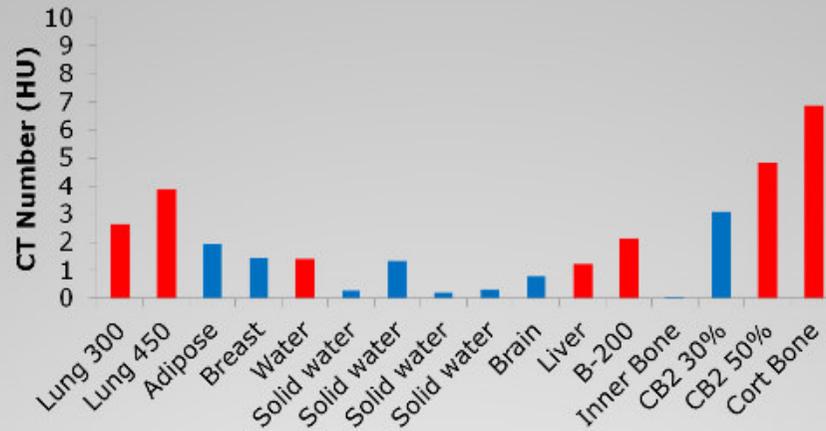
Results – Standard parameters
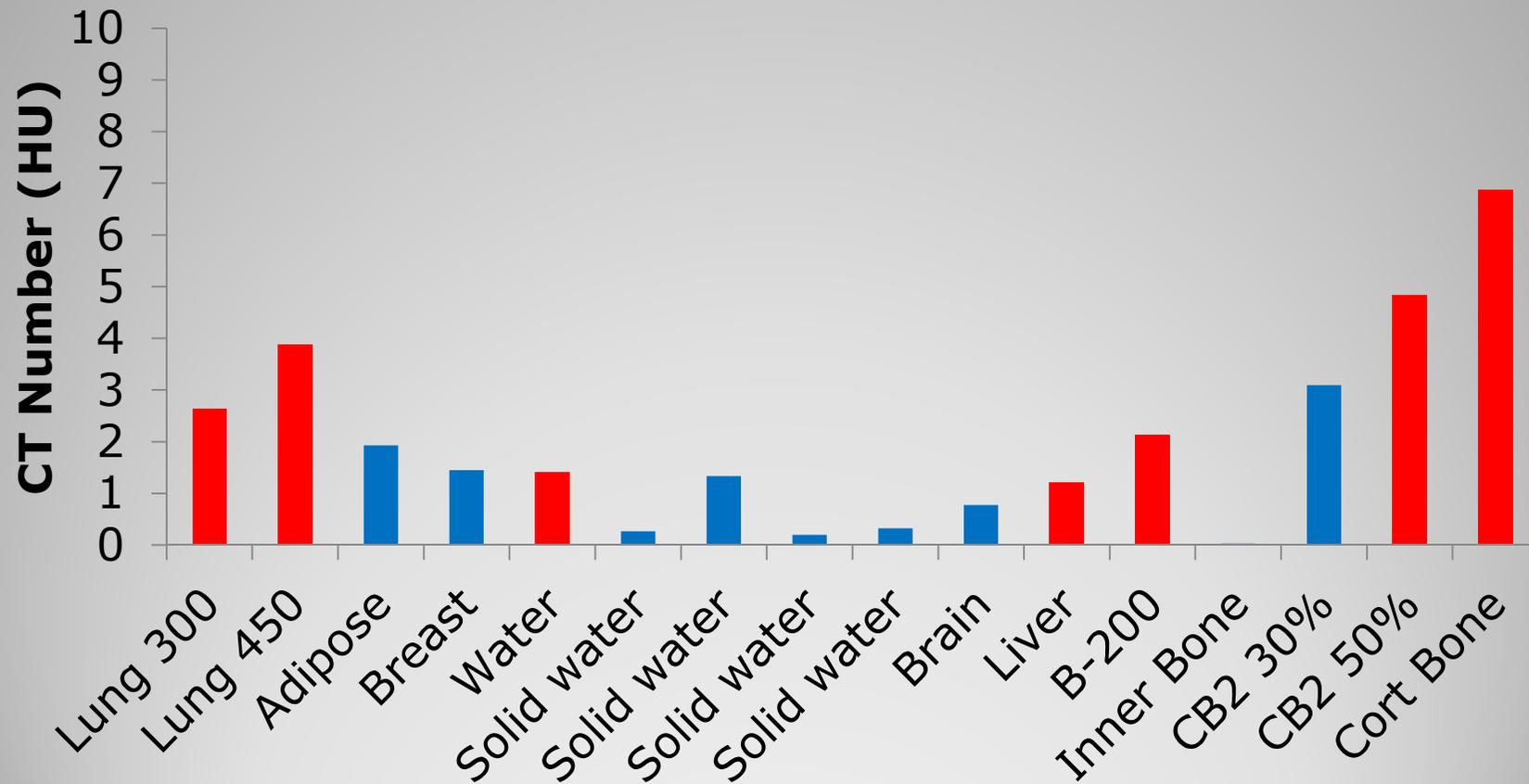
Results – mAs variation

Results – kV variation

Results – ST variation

Results

- Results are comparable

- Some significant differences, but all less than 7 HU.

Questions

- Has anyone else carried out this investigation?
- Did anyone else find out anything interesting?
- What do other centres do routinely – axial or helical QA scans?
- Is it worth everyone checking one scanner?