Patient dose audit with OpenREM

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DLP per requested procedure

Patients at least 16 years old
1/2/2015 to 31/1/2016
n=24006
n=22500 excluding CT sim
CT Urograms

Median DLP from one system higher than the other

Look at the histograms
CT Urograms

What acquisition protocols are being used?
Abdomen: 64.9% (n=887)

- ABDOMEN CONTRAST /Abdomen: 0.1% (n=1)
- Thorax: 0.1% (n=1)
- Colo_prone: 0.1% (n=1)
- * CHEST/LIVER /Thorax: 0.3% (n=4)
- 2 PHASE AORTA /Abdomen: 0.3% (n=4)
- CT IVU /Abdomen: 0.3% (n=4)
- UROGRAM (prone) /Abdomen: 0.9% (n=12)
- ABDOMEN NON CONTRAST /Abdomen: 1.8% (n=24)
- UROGRAM (prone)large /Abdomen: 3.8% (n=52)
- UROGRAM (prone) sm/med /Abdomen: 27.5% (n=376)

Topogram: 0.0% (n=0)
Histogram of Abdomen CTDIvol values
CT Urograms

AEC has been switched on for the Siemens system
CT Chest High Resolution
Histograms of CT Chest High Resolution DLP values

- Number
- DLP range (mGy.cm)
- Philips Ingenuity
- Siemens Definition AS
Histograms of CT Chest High Resolution DLP values (normalised)

- Philips Ingenuity
- Siemens Definition AS
CT Chest High Resolution

A mixture of axial and helical scans
Helical AEC settings to be reviewed for the Philips scanner
OpenREM vs. CRIS
CRIS dose data

• DLP data for total examination
  – No breakdown per acquisition protocol
  – No scan parameter data available
• DLP values manually entered by radiographer
  – Transcription errors
• CT scanner sometimes incorrect
  – All patients entered as scanner 1 by reception; checked and updated by radiographer post-scan
• Takes time to analyse
Summary

• Easy to compare mean or median dose values between systems using a variety of methods
  – Requested procedure; study description; acquisition protocols

• More information than previous audit method (examining RIS data)

• More reliable data than previous audit method (no manual data entry)

• Doesn’t solve all problems
  – Different acquisition and study names; assuming that requested procedures did what was requested

• Tabulated and graphical dose data can be exported

• Relatively easy to install \([\text{docs.openrem.org}]\) with little or no capital outlay