# Results of the CT Quality Assurance Survey

## So far ...

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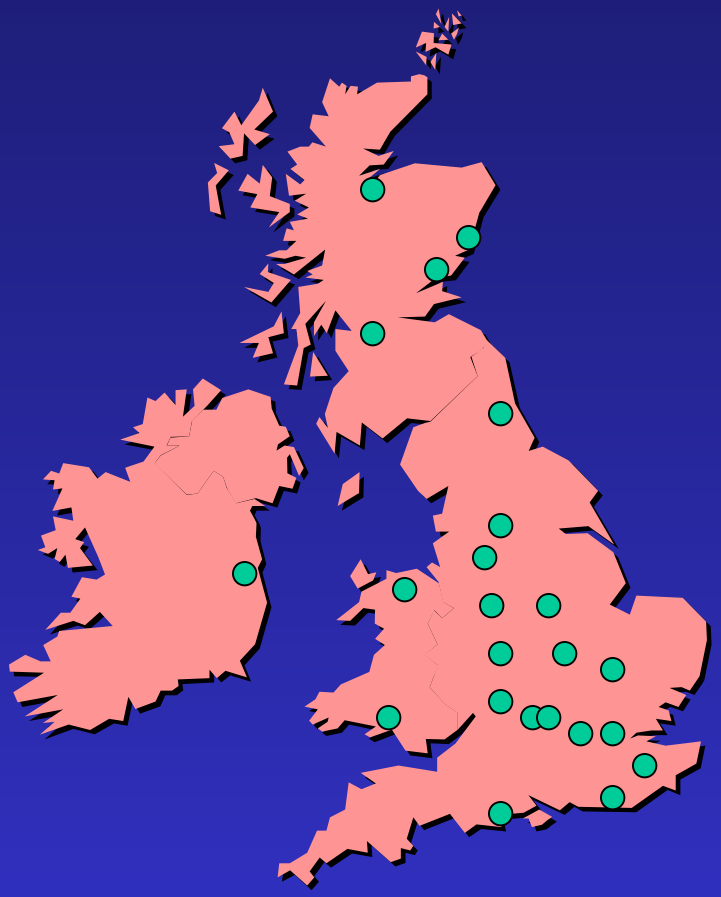
# Questionnaire

- Sent out in April 2002
  - CT Users Group
    - Med-Phys-Eng discussion mailbase
    - IPEM newsletter
      - Medical physicists involved in testing CT scanners
- 26 returned completed

  ~ 30% response

# Distribution of replies



Number of scanners within service provision

1 - 31

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# Responses and Categories

1 - there are no arrangements in place with customers

2 - the test is not done and is not necessary/considered useful

3 - the test is not done but ought to be/ would like to do given time

4 - the test is performed but is not useful

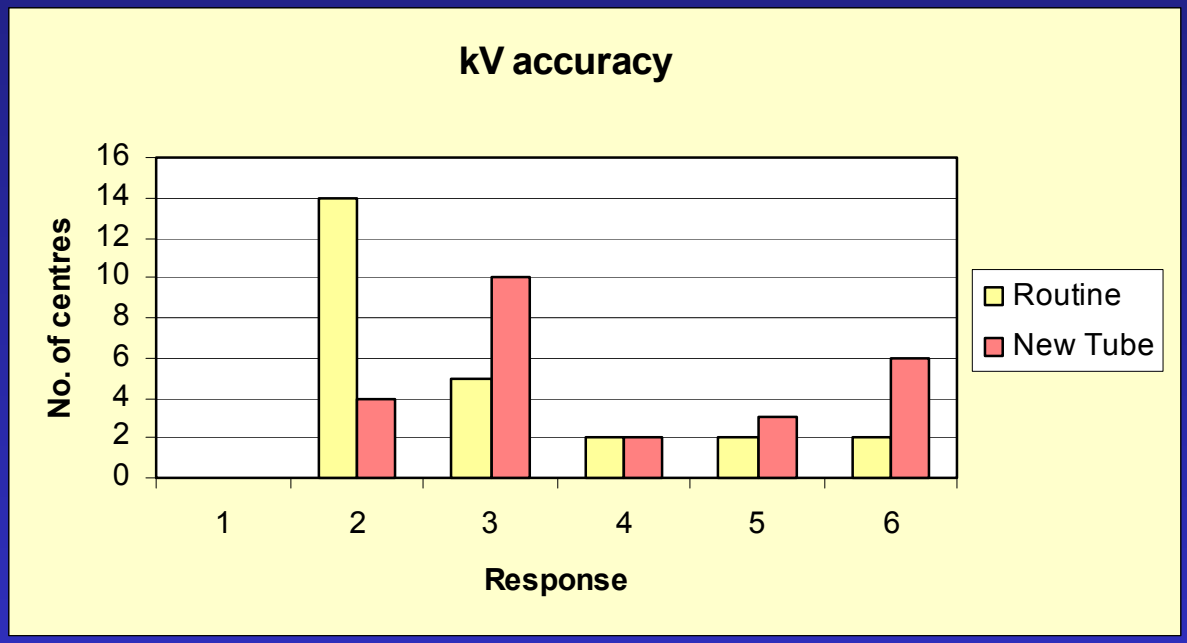
5 - the test is performed and is desirable

6 - the test is performed and is essential

CE | Acceptance | Commissioning | NewTube | Routine

# What did people say?

- Wide variation of response

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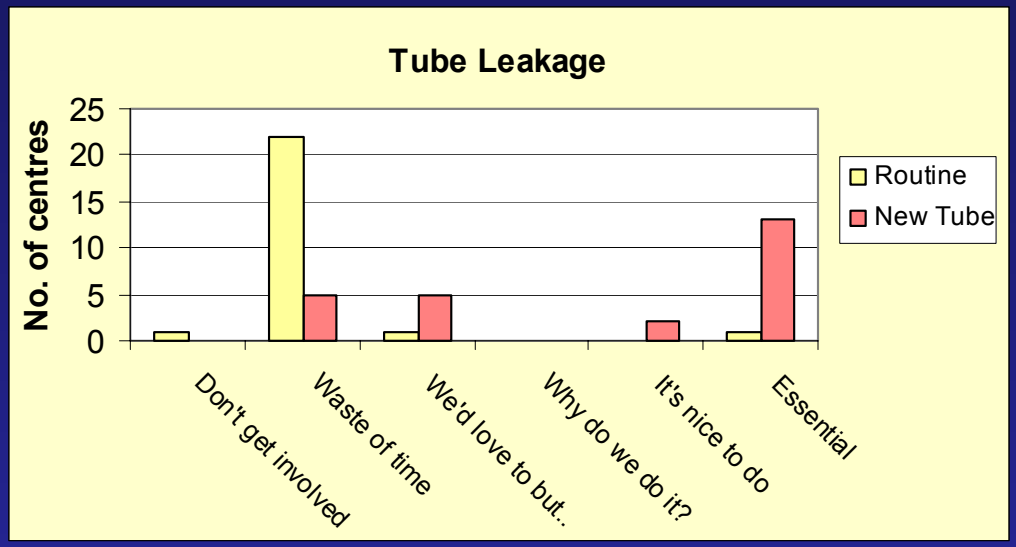


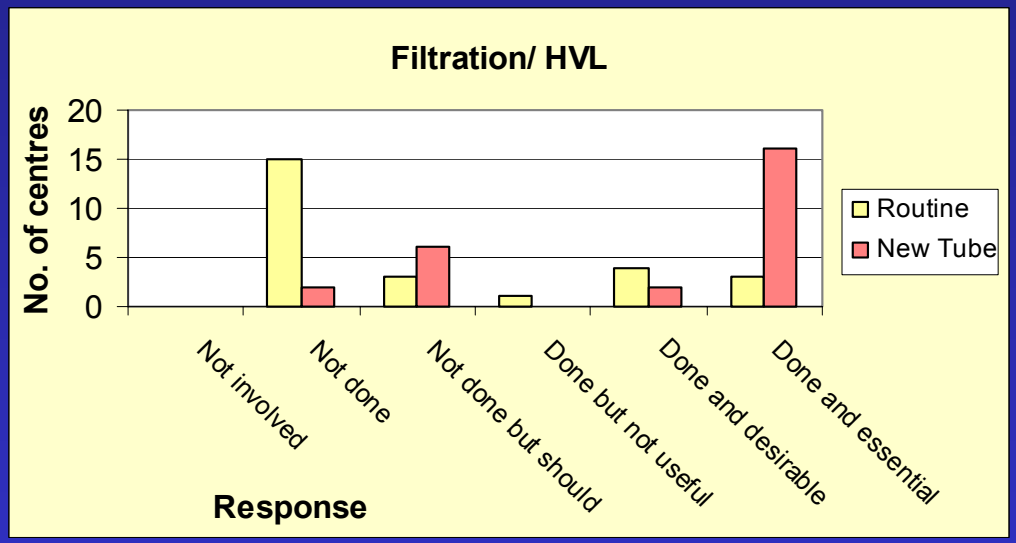


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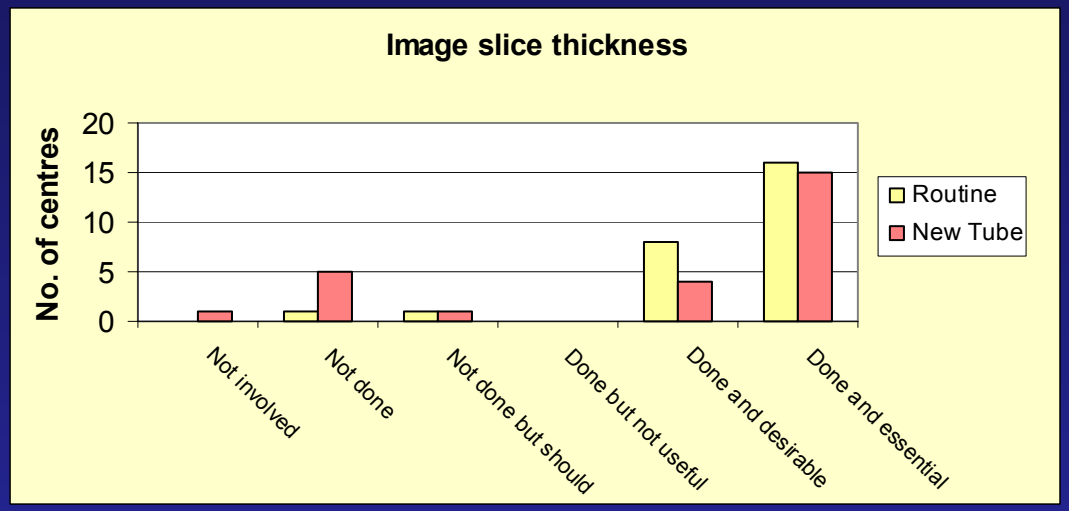


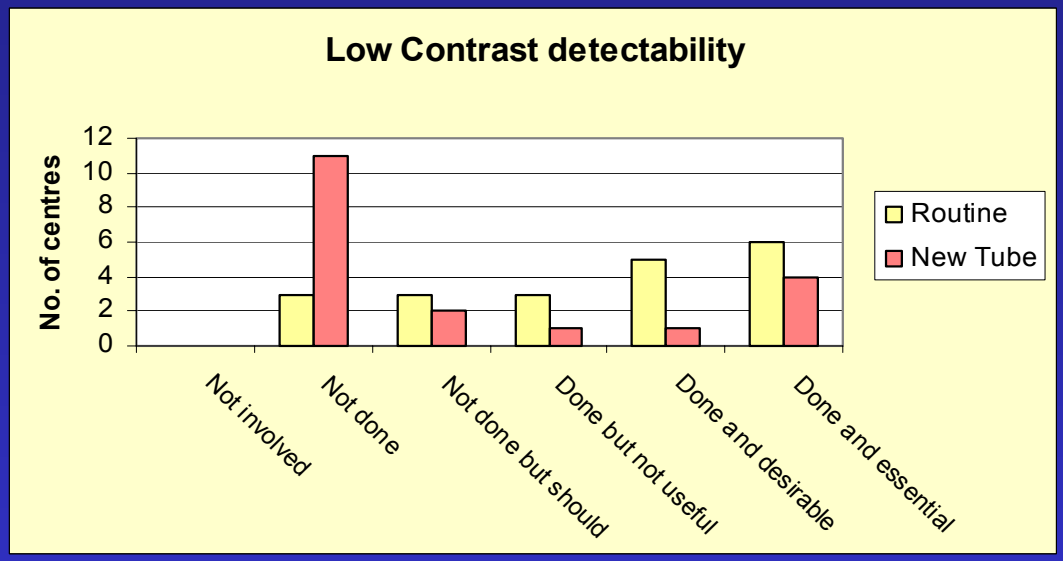


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# Median Response – Routine Tests

- Test performed and essential
  - Output variation with mA and scan time
  - Output variation with slice width
  - Irradiated slice thickness
  - Imaged slice thickness (axial)
  - CT number: mean water value
  - CT number uniformity
  - CTDI in air – at isocentre
  - CTDI in Perspex phantoms
  - Slice location indication from slice alignment lights
  - Warning lights – entry doors, console

# Median Response – Routine Tests

- Test performed and desirable
  - CT number values of various materials
  - Output variation with kV
  - Output variation with beam shaping filter
  - Image noise – variation with mA, scan time
  - Low Contrast Detectability
  - Couch position readout and incrementation

# Median Response – Routine Tests

- Test not performed but should be, given time/ equipment
  - Tube alignment/ plane of rotation check
  - Imaged slice thickness (spiral) with pitch and interpolation
  - CT number variation with kV, recon algorithm
  - Image noise – with slice width, kV, FOV, clinical protocol, ...
  - Image noise uniformity - with kV, phantom size, recon
  - CTDI – spiral mode, clinical protocol, verification of CTDIw
  - Couch travel accuracy, distance measurement for SPR
  - Image monitor, hard copy performance
  - Clinical scan protocol advice/ customisation

# Median Response – New Tube

- Test performed and essential / desirable
  - Additional to routine list
    - Tube filtration / HVL
    - Tube leakage
    - Tube alignment/ plane of rotation check

# Who does the tests?

- MTO (2)
- Physicist (10)
- MTO x 2 (1)
- Physicist x 2 (4)
- MTO + Physicist (4)

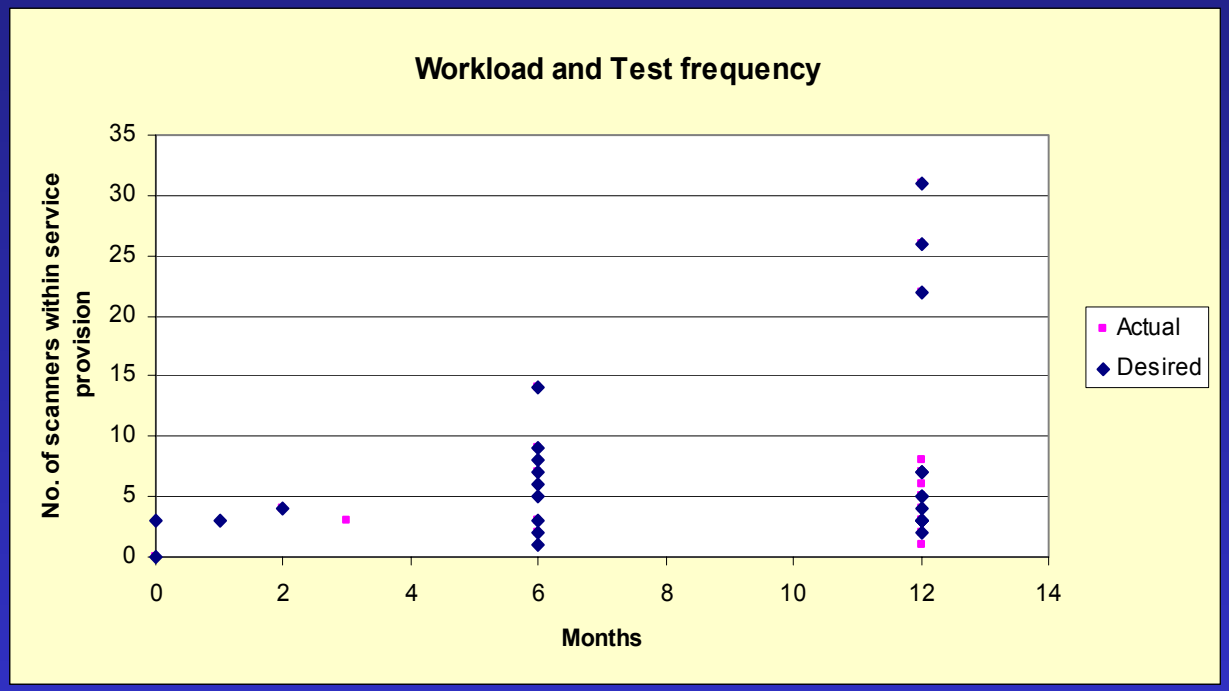
# How long does it take?

- 1-2 hours to 1 day

  Median/ mean = 3.5 hours (0.5 day)

# How often is routine?

- 2, 6, 12 monthly
  - Median = 12 months (Desired = 9 months)

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# Comments

- IQ tests at different clinical protocols so parameters varied indirectly
- Check radiographer's QA results
- Radiographer – laser accuracy/ distance measurement
- Software version – engineer sign to say if dose or IQ affected
- New tube: information/ results obtained from engineer
  - Tube details, filtration, leakage, focal spot
  - Resolution, MTF, HU accuracy, slice thickness, noise uniformity, manufacturers phantom images