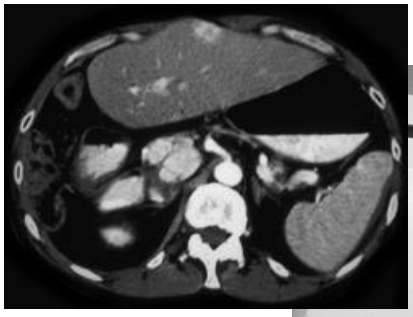
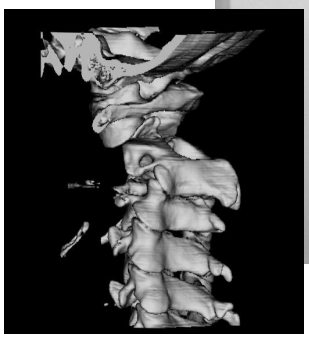
UK CT DOSE SURVEY
2002





Instructions and Questionnaire

nrpb

CT Users Group

ImPACT

UK CT DOSE SURVEY

UK CT Dose Survey

Introduction

Computed tomography examinations already account for about 40% of the population dose resulting from medical x-ray examinations in the UK, and it is likely that this contribution is increasing. There are presently no UK-wide data on current CT patient doses and examination protocols. This lack of information makes it difficult to assess trends in the application of CT and, importantly in the context of IR(ME)R 2000, impossible to set reliable national Diagnostic Reference Levels (DRLs). The present survey will establish at NRPB initial data for a long-term national patient dose database on CT, which will be reviewed periodically in order to provide both the basis for national DRLs and also data relevant to the optimisation of CT exposures.

The survey aims to cover the whole of the UK, all scanner models including single and multi-slice systems, all healthcare sectors and both adult and paediatric CT. Data are requested for standard protocols and also individual patient studies using the attached forms. Please complete these following the instructions below for each of those examinations listed which are undertaken using your particular CT scanner. If you have several standard protocols for an examination/ indication, please provide details for the one most commonly use.

Please return all completed form **AS SOON AS POSSIBLE** to:

Dr Paul C Shrimpton
Medical Dosimetry Group
National Radiological Protection Board
Chilton
Didcot
Oxon
OX11 0RQ.

Data forms should be returned by the end of November 2002 please; if data for individual patients are less readily available, these forms can be returned separately, when sufficient studies have been completed. Please enclose a data return form with **each** submission as provided in section 4

Your help in kindly participating in this national survey is very much appreciated, as contributing highly valuable data to an important national resource on patient doses from CT. All information will be treated in confidence and data from the survey will be published only in anonymous form, although participants will be gratefully acknowledged.

We are grateful to the EU CT Working Group for permission to base this questionnaire on that developed for the 2001 European Survey on CT.

Survey Instructions

Overview

There are three aspects to data collection for the UK CT dose survey, with specific forms in separate sections of this questionnaire:

Section One – Survey of routine protocols

The protocol survey is being conducted to obtain information on the routine protocols used on each scanner for some common indications and a standard patient. You need only provide data for those examination/ indication categories shown on the forms.

Section Two – Survey of individual patients

The patient survey aims to gather information on the actual scan sequences used for an individual patient, since these may differ from the standard protocol according to particular clinical needs. For **each** of the particular combinations of examination and clinical indication shown, forms should be completed for ideally at least 10 patients. We require recent data from your archive for adult patients who are close to average size (excluding those who are excessively small or large) and for children (please indicate age in years). Please use the 'Form No.' field, if you wish, to help when collecting your data for 10 patients. We appreciate that collation and submission of these data might necessarily follow on behind sending us your information on standard protocols. It is hoped that such data collection for individual patients will become an ongoing exercise.

Section Three – CTDI measurements for your particular scanner

Any local measurements that you can provide for your scanner will be useful as a check when assessing your doses. However, submission of CTDI data is optional and may be done separately from your protocol and individual patient questionnaires.

Explanation of fields on forms

The following paragraphs are provided as a guide to completion of the forms.

1. Examination/ indication

There are separate forms for each of 12 scanning procedures on different anatomical regions and patient groups. It is important that you only provide information on each form in relation to the specific examination and indication shown, in order to allow subsequent comparison with similar data from different centres.

2. Manufacturer, model and hospital.

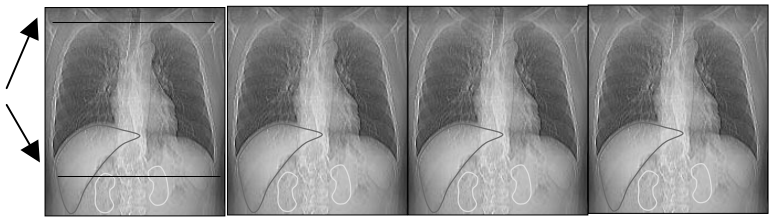
Include as much detail on the model as possible since this may affect the scanner dosimetry. A list of most scanner models installed in the UK is provided in Appendix 1. Please use these descriptions in full when completing the forms. If your scanner is not included in the list, please provide the full model name.

3. Sequences (1-4)

Data should be completed for each scanning sequence in the particular examination. If more than 4 sequences are used for an entire examination, then additional forms should be used (any continuation sheets should be clearly marked and linked to the initial sheet).

4. Anatomical range diagrams

Indicate clearly, using straight lines on the images, the start and stop positions for each sequence of images.



5. Anatomical range

Describe the range of the scan sequence (e.g. lung base to apices).

6. Standard protocol sequence or *ad-hoc* sequence

Indicate whether the sequence is routinely performed for every patient or only in response to findings in a previous sequence. When completing the routine protocol section of the survey, include any common (i.e. performed for at least a quarter of patients) additional sequences (e.g. following a routine head scan, an additional *ad-hoc* sequence may be performed using a contrast agent, if a tumour is suspected from the previous images).

7. IV contrast

Indicate if an IV contrast agent is used for the sequence. Indicate which phase of contrast enhancement is being imaged (e.g. arterial or venous phase).

8. Nominal beam collimation

Indicate the x-ray beam collimation as selected on the console. For single slice scanners, this will usually be the same as the imaged slice width. For multi-slice scanners, indicate the number of slices per rotation, as well as the acquired slice width (e.g. 4 ×1mm).
N.B Ignore any known variation between the displayed value and the actual value used (e.g. post-patient collimation).

9. Scanned field of view

Indicate the scanned or acquisition field of view (e.g. 50 cm or "Body").

N.B This is not the same parameter as the reconstructed field of view, which can be smaller.

10. Tube voltage

Indicate the tube voltage used for each sequence scanned.

11. Tube rotation time

Indicate the rotation time selected on the scanner console (include partial rotation times).

12. Tube current

Indicate the tube current (set mA) used for the sequence. For the protocol survey, indicate the set mA for a standard patient. Ignore any dose saving (mA modulation) options that the scanner may use.

13. mAs

Indicate the displayed mAs used for the sequence. Since different scanners indicate mAs in different ways, please tick one box to show which value your scanner displays: mAs, mAs/slice or effective mAs. For the protocol survey, indicate the mAs displayed for a standard patient.

14. Auto dose reduction (mA modulation)

If your scanner has mA modulation, indicate the system used and also the average mA as given by the scanner, if available. On some models, other information (e.g. maximum mA used) may be given. Please indicate the basis for the value you provide.

15. Axial or helical scanning

Axial (or “step and shoot”) mode is available on all scanner types. Helical or spiral mode is available on all multi-slice scanners and most single slice units. Indicate the scanning mode used for each sequence.

16. No. Axial slices/ scan length (individual patient survey only)

For axial mode, indicate the number of slices scanned for each sequence. For helical scanning, indicate the range scanned (mm) as indicated by the start and stop positions.

17. Table increment/ pitch

For axial scanning, indicate the table increment (in mm) between slices. For helical scanning, indicate the pitch if known. On some multi-slice models, the pitch may be assigned a name (e.g. HQ or HS mode).

18. Overscan or partial scan (axial scanning only)

State degrees of scan angle if known, otherwise indicate if either mode has been used.

19. Table speed/ travel (helical scanning only)

This value will be used by the survey team, in conjunction with the collimated beam width, to calculated pitch if the latter is not provided.

20. Reconstruction interval (helical scanning only)

Indicate the spacing of the reconstructed slices.

21. Imaged slice thickness.

Indicate the thickness of the slices reconstructed from the data. For some scanners, the images may be reconstructed and then fused. The fused thickness should be recorded.

22. $CTDI_w$, $CTDI_{vol}$, DLP (DLP for individual patient survey only)

Where $CTDI_w$, $CTDI_{vol}$ or DLP are displayed on the console, the values should be included on the form. If these quantities are not displayed on the console, this part of the form may be left blank and the survey team will derive the data.

23. Comments

Please add, at the bottom of each form, any relevant comments in support of the data provided.

Advice on completing the survey

This form should be completed in collaboration with your Medical Physics Expert.

For any further advice, please contact:

Paul Shrimpton	(NRPB)	(01235 822646) paul.shrimpton@nrpb.org
Maria Lewis	(ImPACT)	(020 87253366) maria@impactscan.org
Matthew Dunn	(CTUG)	(0115 9249924) matthew.dunn@nottingham.ac.uk

The survey document and other information is available to download at:

www.ctug.org.uk/ctsurvey.htm

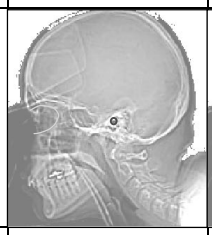
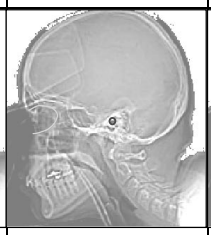
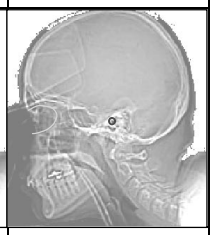
MANY THANKS!

SECTION ONE

SURVEY OF ROUTINE PROTOCOLS

Examination:	**Routine head [Adult]**
Indication:	**Acute stroke**

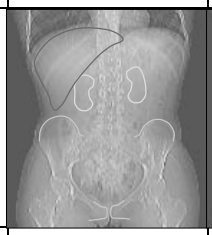
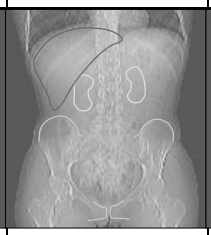
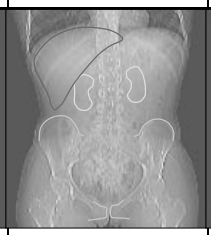
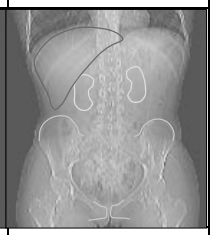
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Abdomen [Adult]**
Indication:	**Liver metastases**

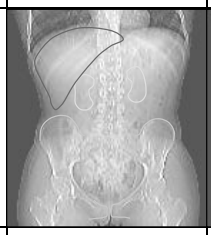
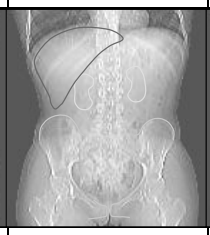
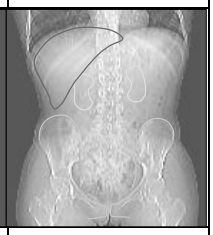
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Abdomen and pelvis [Adult]**
Indication:	**Abscess**

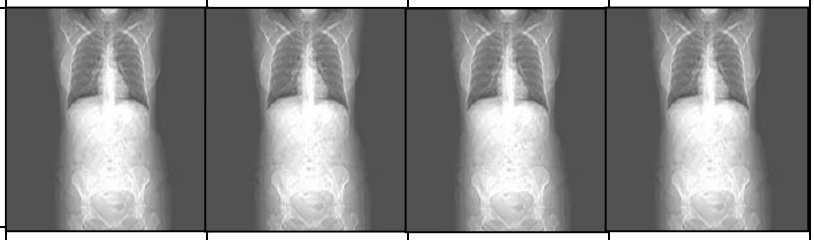
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Chest, abdomen and pelvis [Adult]**
Indication:	**Lymphoma staging or follow up**

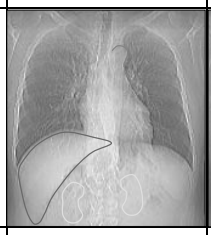
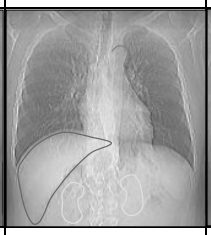
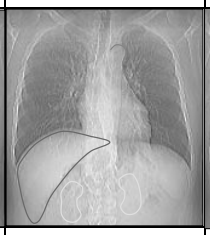
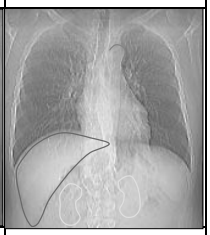
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Chest [Adult]**
Indication:	**Lung cancer (known, suspected or metastases)**

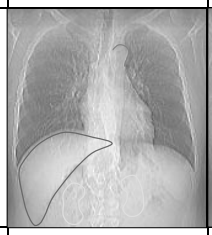
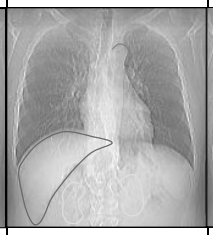
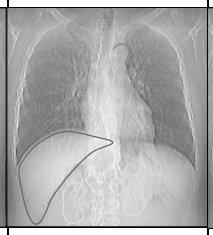
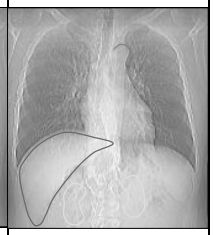
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Chest (Hi-resolution) [Adult]**
Indication:	**Diffuse lung disease**

Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Chest [Age 0-1 years]**
Indication:	**Detection of malignancy**

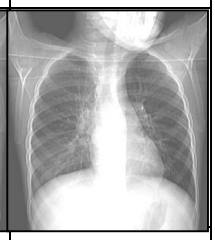
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Chest [Age 5 years]**
Indication:	**Detection of malignancy**

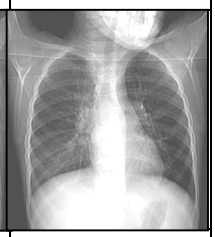
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Chest [Age 10 years]**
Indication:	**Detection of malignancy**

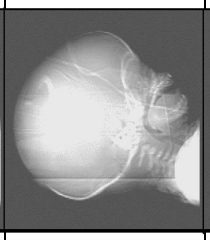
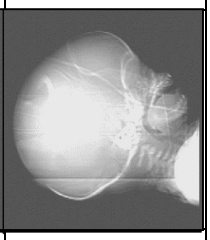
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Head [Age 0-1 year]**
Indication:	**Trauma Including Non-Accidental Injury**

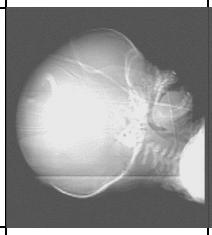
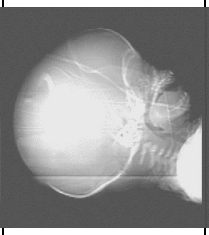
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Head [Age 5 years]**
Indication:	**Trauma Including Non-Accidental injury**

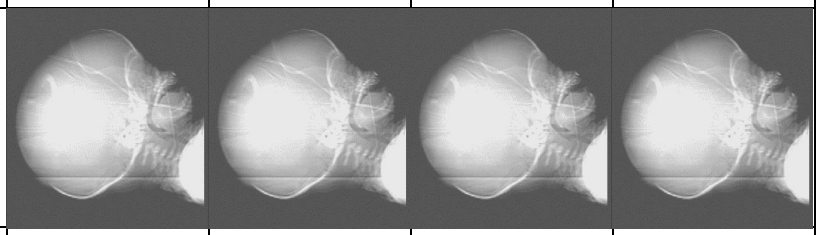
Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

Comments:

Examination:	**Paediatric Head [Age 10 years]**
Indication:	**Non-Accidental injury**

Manufacturer:	**Model:**	**Hospital:**

Routine Protocol Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the usual start and end positions with lines on each image. 					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					

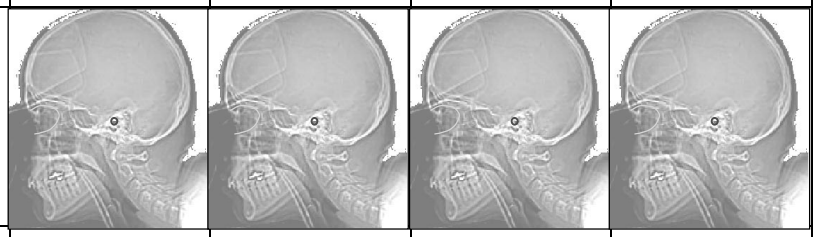
Comments:

SECTION TWO

SURVEY OF INDIVIDUAL PATIENTS

Examination:	**Routine head [Adult]**	**[Form No. ….]**
Indication:	**Acute stroke**	

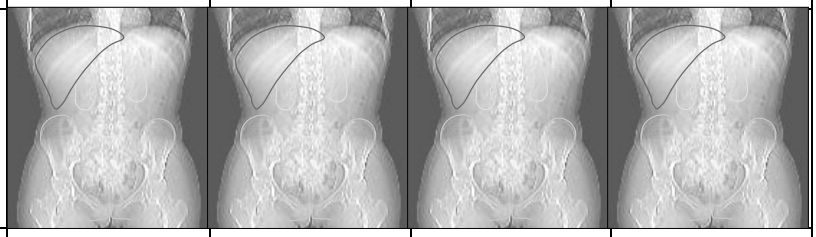
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination:	**Abdomen [Adult]**	**[Form No. ….]**
Indication:	**Liver metastases**	

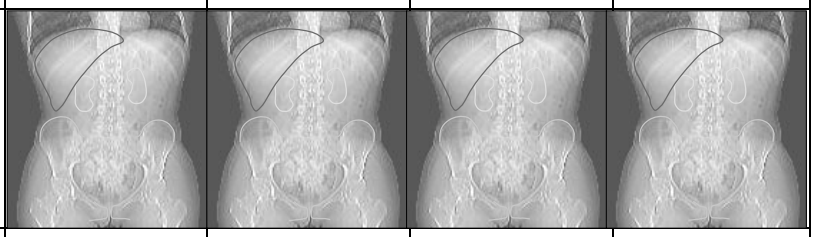
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination: **Abdomen and pelvis [Adult] [Form No. ….]**
Indication: **Abscess**

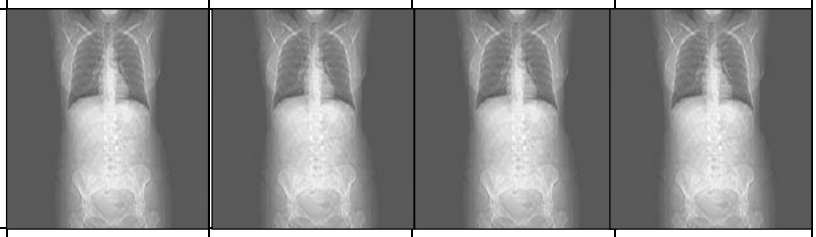
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination: **Chest, abdomen & pelvis [Adult] [Form No. ….]**
Indication: **Lymphoma staging or follow-up**

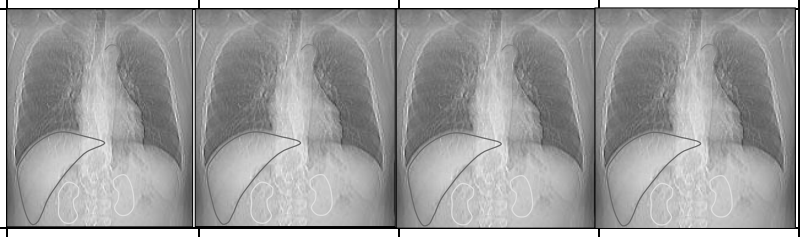
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination:	**Chest [Adult]**	**[Form No. ….]**
Indication:	**Lung Cancer (known, suspected or metastases)**	

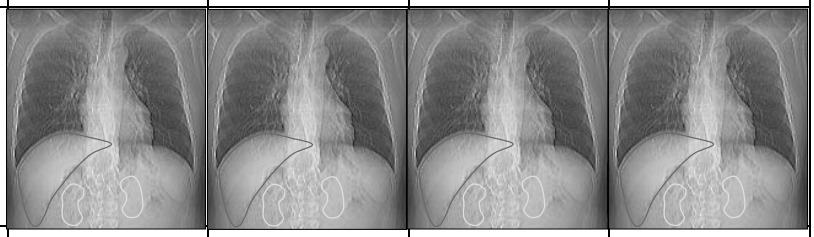
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination:	**Chest (Hi-resolution) [Adult] [Form No. ….]**
Indication:	**Diffuse lung disease**

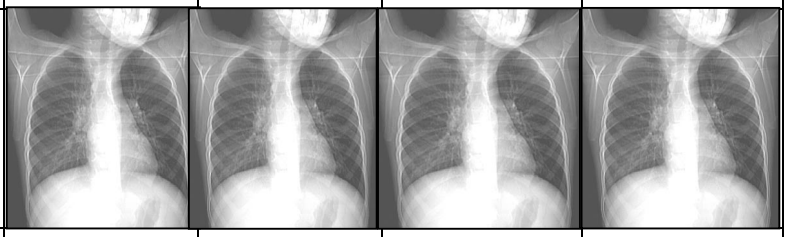
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination:	**Paediatric Chest [Age ……] [Form No. ….]**
Indication:	**Detection of malignancy**

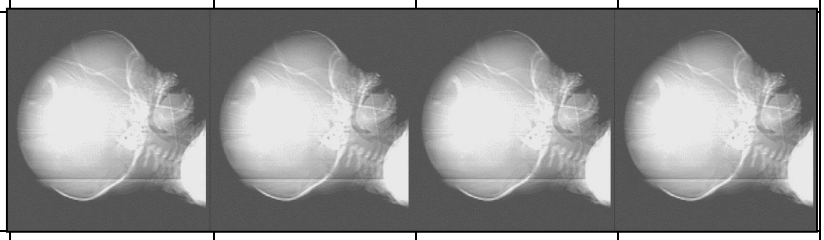
Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

Examination:	**Paediatric Head [Age ……] [Form No. ….]**
Indication:	**Trauma (Inc Non-Accidental injury)**

Manufacturer:	**Model:**	**Hospital:**

Individual Patient Survey		Provide data for each axial or helical scan sequence of the examination.			
		Sequence 1	**Sequence 2**	**Sequence 3**	**Sequence 4**
Indicate the actual start and end positions with lines on each image.					
Describe anatomical range scanned					
Standard sequence (*routine*) or additional in response to initial findings (*ad-hoc*)		❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc	❑ Routine ❑ Ad-hoc
IV contrast used? If YES, indicate name of phase		❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N	❑ Y ❑ N
Nominal beam collimation (mm) (combination for multi-slice, e.g. 4 × 1mm)					
Scan field of view (mm or e.g. Head/ Body)					
Tube voltage (kV)					
Tube rotation time (s)					
Tube current (mA)					
Displayed mAs (mAs ❑ mAs/slice ❑ effective mAs ❑)					
Auto dose reduction used? Y/N Give name of system If yes what was the displayed mA used?					
Axial Scanning	**Helical Scanning**	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical	❑ Axial ❑ Helical
No. of axial slices	Scan length (mm)				
Table incr. (mm)	Pitch				
Overscan or partial scan angle (+° or -°)	Table speed/travel (mm per rotation)				
	Reconstr. Int. (mm)				
Imaged slice thickness (mm)					
$CTDI_w$ (as indicated on console) mGy					
DLP for sequence (indicated) mGy cm					
DLP for total examination (indicated) mGy cm					

Comments:

SECTION THREE

CTDI MEASUREMENTS

CTDI Measurements (optional)

Scanner Make: ……..

Scanner Model: ……..

Serial Number: ……..

SCAN CONDITION	HEAD	BODY
FOV (mm)		
kVp		
Slice thickness combination **(e.g. 1 × 10mm or 4 × 2.5 mm)**		
MEASUREMENT	**Normalised CTDI $_{100}$ (mGy/mAs)**	
Free-In-Air		
Standard dosimetry phantom	16cm Perspex phantom	32cm Perspex phantom
Periphery* (average)		
Centre		

* The periphery value should be the average of measurements performed at four locations around the phantom separated by 90 degrees. At least three readings should be taken at each position. If the variation is very large (>20%), 10 readings should be taken at each position to obtain a good average.

Suggested conditions of exposure for CTDI data:

- Use an axial scan with overscan turned off (if appropriate).
- Use a collimated slice width setting of preferably 10mm or nearest available.
- Use the most frequently used kVp setting.
- For head scans, the phantom should be placed in the head rest.
- For body scans, the phantom should be placed on the couch.
- The centres of both phantoms should be located at the isocentre.
- For the free-in-air scans, the dosemeter should be placed at the isocentre perpendicular to the scan plane. The couch should not be in the scan plane.
- All measurements should be expressed as absorbed dose to air.

DATA RETURN FORM

Please complete a copy of this form for each submission of survey data.

Name: ……

Department: ……

Hospital: ……

Address: ……

……

……

Telephone No: ……

Extension: ……

Fax number: ……

Email : ……

Date: ……

Comments:

Appendix 1

List of CT scanner models currently in use in the UK

Please use the appropriate full description for your scanner model from this list when completing the forms. If your particular model is not shown, please be sure to provide us with full details.

GE

GE 9800 HiLight Advantage
GE 9800 HiSpeed Advantage
GE HiSpeed CT/i (no SmartBeam)
GE HiSpeed CT/i (with SmartBeam)
GE Sytec Sri
GE Prospeed SX, ProSpeed SX Power
GE Prospeed SX Power Highlight
GE Prospeed SX Advantage
GE HiSpeed FX/I
GE HiSpeed LX/I
GE HiSpeed ZX/I
GE HiSpeed NX/I
GE LightSpeed QX/i, LightSpeed Advantage
GE LightSpeed Plus, LightSpeed Plus Advantage
GE LightSpeed Ultra, LightSpeed Ultra Advantage
GE LightSpeed 16
GE Electron Beam CT:C150L, C150XP, C300

Philips

Philips Tomoscan-M
Philips AV, AV-PS
Philips AV Performance (AV-P1)
Philips AV Expander (AV-E1)
Philips Secura
Philips Aura
Philips (Elscint/Marconi) Helicat
Philips(Elscint/Marconi)CT Twin,Twin Flash,Twin RTS
Philips (Marconi/Picker) Ultra Z
Philips (Marconi) Mx8000
Philips (Marconi) Mx8000D
Philips Mx8000 Infinite
Philips (Marconi) AcQsim CT
Philips (Picker/Marconi) PQ S
Philips (Picker/Marconi) PQ 2000
Philips (Picker/Marconi) PQ 2000S, PQ 2000SV
Philips (Picker/Marconi) PQ 5000, PQ 5000V
Philips (Picker/Marconi) PQ 6000, PQ 6000V

Siemens

Siemens Somatom AR Star
Siemens Somatom AR.HP
Siemens Somatom AR.SP
Siemens Somatom AR-T
Siemens Somatom Plus 4, Plus 4A, 4B, 4C
Siemens SomatomPlus 4 Expert / Xenon detectors
Siemens Somatom Plus 4 Expert /Lightning detectors
Siemens Somatom Plus 4 Power / Xenon detectors
Siemens Somatom Plus 4 Power/ Lightning detectors
Siemens Somatom Plus 4 Lightning
Siemens Emotion
Siemens Emotion Duo
Siemens Volume Access
Siemens Volume Zoom
Siemens Sensation 4
Siemens Sensation 16

Toshiba

Toshiba Xvision, Xvision EX, Xvision GX
Toshiba Xpress GX (Pre '98)
Toshiba Xpress GX (Post '98)
Toshiba Auklet
Toshiba Asteion VF
Toshiba Asteion VI, Asteion VR
Toshiba Asteion Dual
Toshiba Asteion VR Multi
Toshiba Aquilion
Toshiba Aquilion Multi
Toshiba Aquilion 16