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The radiographers' role in information giving prior to consent for computed tomography scans: A cross-sectional survey

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ABSTRACT

Purpose: Computed tomography (CT) use has increased in recent years with concerns regarding radiation risk. Informed consent requires that patients are informed of risks and benefits; however, it is known that radiation risk communication occurs infrequently between referrers and patients. This research aimed to explore the role CT radiographers play in giving information to patients prior to CT; specifically, whether they can give appropriate and accurate information to facilitate informed decisions.
Results: An on-line cross-sectional survey of UK-based CT radiographers returned 78 completed questionnaires. Participants predominantly saw their role as giving procedural information to reassure the patient. Only 23.1% stated that they discussed the risks of radiation at least sometimes; iodinated contrast risks were discussed more frequently (44.9% always, 28.2% sometimes). Participants felt referrers should take a greater role in discussing CT risk/benefit with patients. Although 92% of radiographers felt confident in giving CT information, when asked to respond to a patient regarding the radiation dose that would be received during a CT abdomen/pelvis scan, 45% would not give a dose or equivalence and only 23% could give accurate dose estimates, with 28% grossly underestimating the dose.
Conclusions: There is variation in practice for information giving and consent procedure in CT. Radiation information communication is infrequent between radiographers in this study and their patients, unless the patient specifically asks about the risks. Relatively few radiographers who completed the survey could give an accurate estimation of radiation doses in CT.

Introduction

Valid consent is required legally and ethically prior to any intervention to a patient, including diagnostic radiographic procedures.[1] For consent to be valid, the patient must be suitably informed, have capacity and they must give their consent voluntarily.[2] Guidelines on consent set out by Society and College of Radiographers[3] state that "patients are entitled to know that they will receive a dose of radiation and should be informed of the benefits of the procedure" (p. 6) and that the radiographer must provide a "limited amount of accurate and relevant information in the form that the patient is able to grasp" (p. 14). However, discussion of radiation risk is a complex topic and the amount and format of information required may vary between patients, depending on their own cognitive ability and beliefs. Subsequently a radiographer must use their professional judgement to tailor the information given to the individual patient and ensure that they have understood it.[4–6]

The use of computed tomography (CT) in medical imaging has increased in recent years leading to concerns with regard to the radiation risks.[7] In 2009, Smith-Bindman et al.[8] suggested that radiation doses were much higher than previously thought, with some scans such as multiphase abdomen and pelvis amounting to 31 mSv. They claimed that when one accounts for the age and gender of the patient, some CT scans may carry a risk as high as 1 in 330 for developing cancer. Brenner and Hall[9] estimated that in the USA, 1.5–2% of all cancers may be attributable to CT scans, although more recent reports suggest typical UK CT doses may be lower.[10] Particular concern is raised over those having recurrent studies, and radiation exposures during childhood.[11,12] Despite debate regarding the appropriateness of current risk models in radiation,[13,14] it is argued that low dose radiation such as that used in CT is considered a carcinogen and should therefore be disclosed to patients for ethical and legal reasons.[15]

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The need for informed consent for CT is identified in the literature; however, it is known that radiation risk communication occurs infrequently between referrers and patients, and questions have been raised over the ability of referrers to adequately estimate the radiation risks for CT scans.[16–19] This study therefore aimed to determine the role that CT radiographers currently play in informed consent and whether they were able to provide accurate and appropriate information.

Methods

A cross-sectional survey of diagnostic radiographers working within CT in the United Kingdom was undertaken utilising an online questionnaire (available on request). A convenience sampling strategy was used as the study was advertised via the Society of Radiographers web pages and Synergy News. Recruitment was therefore self-selection and interested participants could download an information sheet and access the survey in their own time. Inclusion criteria were radiographers working in the UK, in CT. Staff working outside the UK were excluded due to different working practices and guidance from professional bodies. The survey was open for a period of three months (5th March to 5th June 2015), during which the study was promoted by the SoR through social media.

The survey incorporated open and closed questions which explored current consent practice; how radiographers saw their roles and responsibilities in information giving; and what information they currently gave their patients. Ethical approval was obtained through the University of Hertfordshire, Health & Human Sciences Ethics Committee (HSK/PG/UH/00319). Survey completion was voluntary and anonymous. Informed consent was implied through submission and participants could withdraw at any point up until they submitted the completed survey.

Survey results were evaluated using descriptive and inferential analysis. Open questions were reviewed to identify themes that emerged, and these were subsequently categorised and coded by the researcher. Dominant themes were determined by the frequency of related statements expressed by the radiographers. When considering whether accurate radiation dose or dose equivalencies were given, responses were compared to a range of reasonable answers as derived from tables published by the Royal College of Radiologists[10] and Public Health England.[20] For CT abdomen/pelvis, a range of answers between 5.6 and 10 mSv or dose equivalency of 370–670 chest x-rays; 2.5–4.5 years' background radiation; or 70–125 transatlantic flights was therefore deemed acceptable. Radiation risk assessments were compared to broad risk categories published in the Committee on Medical Aspects of Radiation in the Environment report (COMARE),[21] in which CT heads are considered “very low risk” and CT abdomen/pelvis scans “low risk”.

Results

Current departmental procedure

In total, 78 UK CT radiographers completed the survey – their characteristics are given in Table 1, along with a summary of their departmental procedure for informed consent. Departmental policy for taking consent in CT varied. Verbal or implied consent was more common practice although 10 respondents employed some form of written consent; although this was often dependent upon the perceived risk or invasiveness of the scan; e.g. written consent was reserved for CT colonoscopy (CTC) and/or cardiac scans due to an increased risk of perforation or higher radiation dose respectively. Regarding pre-scan information sent to patients, the most commonly reported risk mentioned related to iodinated contrast, although radiation risks were sometimes mentioned. Specific risks for CTC and information regarding preparation and aftercare for iodinated contrast and oral contrast were also signposted. Of note, 31 radiographers were not sure what information was sent to patients prior to their CT appointment.

Table 1
Participant characteristics and departmental procedure (number of responses).

Gender	
Male	20
Female	58
Age	
20–29	26
30–39	28
40–49	14
50–59	10
60+	0
Number of years qualified	
Under five years	21
Between five and ten years	23
Over ten years	34
Region of UK currently working in	
Scotland	11
Wales	0
Northern Ireland	0
North East	2
North West	4
Yorkshire and the Humber	5
West Midlands	7
East Midlands	3
East of England	9
London	22
South East	7
South West	6
Rather not say	2
Policy on consent for CT	
Verbal consent is obtained	28
Implied consent is assumed by patient's actions	19
No departmental policy	12
Patient signs specific consent form	7
Unsure of departmental policy	5
Other	4
Patient signs the request form	3
Information sent by department prior to CT[a]	
Iodinated Contrast risks	35
Not aware	31
Benefits of scan	20
Radiation risks	17
Other risks	13
Radiation dose	5
Alternatives to CT	5

[a] Note: multiple responses were allowed for this question.

Perceived roles and responsibilities of radiographers in information giving in CT

Radiographers in this study varied in the way they perceived their roles and responsibility in information giving. The researcher identified three over-riding themes from the open responses of the radiographers (Fig. 1). The dominant theme, expressed to some extent by 64 participants, was the perceived importance of procedural information, in ensuring the patient knew what type of scan was being done, what the examination would be like, and what would happen afterwards. Radiographers expressed the need to reassure and reduce anxiety in patients (n = 14) while some felt this information would also aid compliance (n = 4). This information also had important care aspects, for example recommending hydration after contrast injections (n = 16).

The other two themes were less often reported by participants and related to the perceived risk-versus-benefit of CT scans; and the

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