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Benefit-risk communication in paediatric imaging: What do referring physicians, radiographers and radiologists think, say and do?

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ABSTRACT

Introduction: To assess how referrers and practitioners disclose benefit-risk information about medical imaging examinations to paediatric patients and their parents/guardians; to gauge their confidence in doing so; and to seek their opinion about who is responsible for disclosing such information.

Methods: This study followed on from a previously published study, with a questionnaire distributed in staggered phases to 146 radiographers, 22 radiology practitioners, 55 emergency physicians and 43 paediatricians at a primary paediatric referral centre in Malta. The questionnaire sought details about referrers' and practitioners' practice of disclosing benefit-risk information, as well as their opinion about their confidence and responsibility to do so.

Results: An overall response rate of 63.2% (168/266) was achieved. Most referrers and practitioners would generally explain the purpose of the imaging examination, with fewer providing benefit-risk information. The content and the approach adopted to communicate benefit-risk information varied, at times considerably. While 75% (123/164) felt that the responsibility to provide benefit-risk information was a shared one between referrers and practitioners, only 32.1% (53/165) reported a high level of confidence in their own ability to do so.

Conclusions: Our findings highlight potential knowledge and skills gaps amongst local referrers and practitioners. This needs addressing so as to ensure that paediatric patients and their parents/guardians are provided with adequate, reassuring and consistent information. Additionally, we recommend that local referrers and practitioners come together and develop a consensus document that can offer guidance on how to go about discussing the benefits and risks of paediatric imaging examinations.

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Introduction

The immense clinical value of medical imaging examinations is sometimes overshadowed by concerns relating to the use of ionising radiation. Indeed for many patients, the term radiation is perceived to be something dangerous, with many linking it to atomic bombs, nuclear disasters, genetic mutations, cancer and death.^{1–3} Such perceptions are fuelled further by sensational headlines reported in the media whenever there is a study, report or opinion suggesting an increased cancer risk as a result of medical radiation exposures.^{4,5}

Consequently young patients and their parents/guardians may feel nervous, anxious and/or concerned about the prospect of undergoing a medical imaging examination.^{6–8} In this context, the medical doctor referring the imaging examination (referrer), as well as the radiographer and/or radiologist performing and/or reporting that examination (practitioner), have a key responsibility to address any relevant questions and concerns expressed. Indeed, referrers and practitioners must not only be knowledgeable about the various conditions, disease and injury processes prevalent amongst their patients, but they also need to be aware of which imaging examinations best contribute to the most beneficial and effective care pathway. Additionally, referrers and practitioners need to be skilled on how to provide adequate information to patients or their representatives, so as to empower them to make informed decisions and/or give their consent to matters relating to their care or treatment.^{9–11}

It is within this context that the authors embarked on a large study to investigate various aspects of practice among healthcare

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professionals typically involved in the medical imaging pathway of paediatric patients. Initial phases of the study, which focused on investigating the opinion and practice of local 'practitioners', (namely: radiographers, radiologists, nuclear medicine physicians and radiologist resident trainees, as recognised by Maltese Medical Exposure Regulations¹²), have already been published, with the resultant findings providing a useful insight into their use of referral guidelines and level of radiation knowledge,¹³ as well as their practice of providing information and seeking consent for paediatric imaging examinations within the local setting.¹⁴

Since referring physicians also play a key role in the imaging of paediatric patients, the authors felt that it was opportune to survey this cohort as well. Therefore the aim of this article is to combine and compare the survey data collected from the different phases, so as to gain a broader understanding of local practice of benefit-risk communication; to learn about what is said and how it is said; and to gauge professionals' opinion on the responsibility to provide such information. Importantly, the findings we present here generally relate to aspects of local practice of benefit-risk communication that we have not previously analysed or published.

Materials and methods

Institutional board approval was obtained to extend the scope of the initial survey and include paediatricians and emergency physicians working at the same general hospital and primary paediatric referral centre in Malta. In essence, the questionnaire used remained the same with the exception of minor rewording of some questions to reflect the nature by which medical physicians 'refer' imaging examinations rather than 'perform' them.

As outlined in previous publications,^{13,14} this questionnaire comprised of 20 questions which sought information about various aspects concerning referrers' and/or practitioners' experience and practice of referring or performing paediatric imaging examinations. These included questions relating to participants' demographics; education and/or training undertaken in radiation protection and benefit-risk communication; as well as their opinion and practice of communicating benefit-risk information to paediatric patients and their parents/guardians. Most questions were close ended but participants could also elaborate on the answer provided or add their own response. A few open-ended questions were also present, including one which specifically asked participants to briefly describe how they generally went about explaining benefits and/or risks of a medical imaging examination to paediatric patients and/or their parents/guardians. Another sought participants' opinion on the responsibility to provide such information.

Previous work had identified that approximately 71% of all paediatric imaging referrals originated from emergency physicians or paediatricians working in the hospital studied.¹⁵ Consequently, a list of all 68 emergency physicians and 49 paediatricians was obtained by the primary author, who then went on to meet with each physician listed and provide an information letter and a copy of the questionnaire. The information letter outlined the purpose of the study, emphasised the importance of a truthful response and assured anonymity of participants. While highlighting voluntary participation, the letter instructed interested participants to submit their completed questionnaire in the collection boxes provided. No incentives were offered for participation.

Questionnaires were collectively distributed over a four-week period to 55 emergency physicians in October 2014 and to 43 paediatricians in March 2015. Thirteen emergency physicians and six paediatricians had to be excluded from the sample, since they were not available during the data collection period because of long leave of absence or relocation to a different clinical speciality. In the previous phase, questionnaires were distributed to 168

practitioners (146 radiographers and 22 radiology practitioners) over a four-week period in July 2014.

Data collected was coded and inputted into the same IBM SPSS dataset version 20 (IBM Corporation, New York, USA) that contained the data of the initial survey. Statistical analyses of the responses provided by the different professional groups and/or by their status of being a referrer or practitioner, was performed by the Chi squared (χ^2) test. For such tests the overall value for statistical significance was $P < 0.05$. The qualitative responses obtained from the open-ended questions were inputted into computer assisted qualitative data analysis software (NVivo 11 Pro, QSR International Pty Ltd.). Each response was assigned a prefix reflecting the professional group of the respondent, with 'RAD', 'RADIOL', 'MDA&E' and 'MDPAED' respectively representing responses provided by radiographers, radiology practitioners, emergency physicians and paediatricians. The primary author performed thematic analysis of this data according to established methods,¹⁶ whereby each response was initially openly coded so as to index and organise the data. Following further reading, additional axial codes were assigned according to patterns or meanings noted within the data, with similar responses being grouped together. This process allowed for the development of themes that provided a useful insight into the manner by which benefit-risk information was generally communicated by participants, as well as their opinion on the responsibility to do so.

Results

Fifty-six questionnaires were returned from the 98 distributed to referring physicians (57.1%). This included a higher representation of paediatricians (31/43; 72.1%) in comparison to emergency physicians (25/55; 45.5%). In the previous phase involving practitioners, 112 out of 168 questionnaires were collected. After combining questionnaires returned by referrers and practitioners, an overall response rate of 63.2% ($n = 168/266$) was achieved. Table 1 summarises the demographics of all the participants of this study, with Table 2 detailing education and/or training received.

Provision of information

Nearly all referrers and practitioners (97.6%; $n = 164/168$) were of the opinion that paediatric patients and/or their parents/guardians should be provided with benefit-risk information relating to a proposed medical imaging examination. Despite this response, not all respondents actually indicated that they 'very often' or 'always' did so in practice, with a minority of referrers (5.4%) and practitioners (6.3%) having claimed that they 'never' or 'rarely' did so (Table 3).

Table 1
Summary demographics of study participants (% values in parenthesis).

Characteristics	Referrers	Practitioners
	Emergency medical physicians and paediatricians ($n = 56$)	Radiographers, radiologists, nuclear medicine physicians and radiology trainees ($n = 112$)
Female gender, n (%)	31 (55.4)	65 (59.1)
Age, n (%)		
<25 years	9 (16.1)	23 (20.7)
26–35 years	29 (51.8)	64 (57.7)
36–45 years	8 (14.3)	9 (8.1)
>46 years	10 (17.9)	15 (13.5)
Clinical experience, n (%)		
<2 years	8 (14.6)	19 (17.0)
3–10 years	30 (54.5)	59 (52.7)
11–20 years	6 (10.9)	20 (17.9)
>21 years	11 (20.0)	14 (12.5)

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