Practical examples of clinical audit in PET/CT

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Clinical Audit is a systematic examination or review of medical procedures. It seeks to improve the quality and outcome of patient care through structured review whereby medical practices, procedures and results are examined against a set of agreed standards. In Irish legislation Clinical Audit is a requirement under SI 478. This Statutory Instrument transposes the European Union Council Directive 97/43/Euratom and repeals directive 84/466/Euratom on the health protection of individuals against the dangers of ionising radiation in relation to medical exposure.

In this presentation we give an example of a clinical audit conducted at St James's Hospital in 2009 on a new PETCT centre. The centre commenced scanning in Jan 09. It is the first such facility in the hospital (as well as being the first such facility in the public health service for Ireland). Implementing clinical audit provided an opportunity to assess how the new service met its goals in delivering a new diagnostic service safely and effectively.

Ideally, clinical audit is performed by a multidisciplinary team and brings together clinical, administrative and scientific / technical skill sets. To cover the whole clinical pathway, clinical audit should address the three main elements of the health care practices: structure, process and outcome.

Structural audits review material resources, human resources or organisational structure. Process is concerned with the activities involved in giving and receiving care and these can be both patient activities in accessing care, as well as clinical activities in delivering care. Outcomes measure the effect of the service on a population or a patient's health.

Clinical Audit should be based on a comprehensive overview of the service from referral, to the patient's journey through the PETCT centre, to measurements of benefits to the patient as a result of using the service. Developing the methodology by which this might be achieved is an important first step. To do this, a number of tasks or processes performed in delivering the service were selected in each of the Clinical Audit categories and audit templates developed. While the range of tasks selected was not intended to represent a comprehensive or exhaustive list, the methodology employed can be easily applied to other auditable tasks within PET/CT.

Audit topics selected under the heading of structure included an assessment of whether staff numbers are sufficient for optimum control of staff doses, and whether there is sufficient staff to ensure patients progress through the centre in a timely manner. The PETCT centre building is also reviewed to assess the degree to which it facilitates patient flow and dose controls. We review whether patients receive appropriate information about their scans at the appropriate time as part of the process audit. The audit on outcome asks referrers whether use of the service contributed to the management of their patient. As a representative example, performance indicators including accuracy, specificity and sensitivity of nodal disease in the head and neck were also examined.

Audit templates were developed for each audit topic. ‘Clinical Audit in Radiology, 100+ recipes’ was used as a starting point for creating templates. A similar audit was conducted in the Nuclear Medicine department in St James’s Hospital (which is located in a different building from the PETCT centre) and the results contrasted to see if the two departments achieved comparable performance levels, and whether each of the departments might benefit from adopting approaches that work well in the other department.

Some of the audit topics were chosen because of their particular relevance or importance to a PETCT service. Examples of these include the following:

- Extremity Doses: Staff doses need to be closely monitored, especially during the establishment of a new service. PETCT staff doses are expected to be higher than doses received in a basic Nuclear Medicine department and, in a busy centre, extremity doses might bring a worker close to the dose limit for category B workers. The audit provides an initial assessment of extremity doses with a view to ensuring dose limits will not be exceeded, and that changes of practice will be implemented as needed.

- Patient Waiting Times: F-18 has a short half life and delays in a patient's arrival could potentially lead to there being insufficient activity to perform all scans on a particular day. The audit examines the frequency of occurrence of delays and assesses the subsequent impact on patients and on the
delivery of the PET service.

CT doses: The unit has a fully diagnostic MSCT. However, a low dose localisation CT scan can also be delivered. The audit overviews patient pathway to assess whether use of the diagnostic CT facility is matched optimally with the diagnostic history available for the patient.

Audits are an important quality management and improvement tool. They have a significant role to play in ensuring a high quality service, in line with national and international standards and guidelines for best practice. An important feature of clinical audit is that modifications to practice are implemented where indicated. It is clear that the introduction of clinical audit as a routine part of practice has significant resource implications. As part of our work we kept a log of activities associated with the audit, recording the time accumulated for different tasks, as well as the human and other resources that were assigned to audit. It is hoped to measure the time taken to set up audit, as well as to run audit on an ongoing basis, and to compare this with the benefits accrued from conducting Clinical Audit.

References
1. Clinical Audit in Practice, European Commission Guideline on clinical audit for medical radiological practices (diagnostic radiology, nuclear medicine, and radiotherapy, in press.
2. Criteria for Clinical Audit, Faculty of Radiologists, Royal College of Surgeons in Ireland, Medical Ionising Radiation Committee, 2004