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A nationwide investigation of radiation therapy event reporting-and-learning systems: Can standards be improved?

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ABSTRACT

Introduction: Variation exists between event reporting-and-learning systems utilised in radiation therapy. Due to the impact of errors associated with this field of medicine, evidence-based and rigorous systems are imperative. The implementation of such systems facilitates the reactive enhancement of patient safety following an event. The purpose of this study was to evaluate Irish event reporting-and-learning procedures against the current literature using a developed evidence-based process map, and to propose recommendations as to how the national standard could be improved.

Methods: Radiation Therapy Service Managers of all Irish radiation therapy institutions ($n = 12$) were invited to participate in an anonymous online questionnaire. Included in the questionnaire was a reporting-and-learning process map developed from evidence-based literature, which was used to assess the institution's practice through the use of vignettes. Frequency analysis of closed-ended questions and thematic analysis of open-ended questions was performed to assess the data.

Results: A 91.7% response rate was achieved. The following areas were found to have the most variation with the evidence-based process map: event classification, external reporting, and dissemination of lessons-learned to a wider audience. Recommendations to standardise practice were made.

Conclusion: Opportunities for improvement exist within event reporting-and-learning systems of Irish radiation therapy institutions and recommendations have been made on these. These findings can provide learning for other countries with similar reporting systems.

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Introduction

The rapid rate of advancements in radiation therapy (RT) practices and the continuing increase in cancer incidence worldwide will likely lead to a future increased potential for error.^{1,2} Reporting-and-learning systems are implemented within RT as a means to reactively learn from incidents and near-misses, thereby minimising risk and promoting patient safety.^{3–8} These systems consist of a sequence of steps taken in the aftermath of an incident or near-miss. The pathway can be divided into the following stages: reporting, investigation, causal analysis, corrective action, and feedback-and-learning.⁵ The European risk management project, ACCIRAD, identified a large variation among the systems in RT.⁹ While the principle stages outlined above are consistent throughout, the processes implemented within these stages vary.⁹ The Health Service Executive (HSE) of Ireland has defined the role

of reporting radiation incidents as “enhancing patient safety by learning from failures”.¹⁰ Reporting and investigating alone, are not enough to reduce the risk inherent to RT. Distributing lessons-learned is an essential aspect of the process. European Union (EU) legislation states that reporting-and-learning systems must be used, and emphasises the importance of disseminating lessons-learned.¹¹

Although major/critical incidents are infrequent, their effect on the health of patients can be fatal.⁷ Minor incidents and near-misses are much more common, and can potentially result in more serious incidents over time.^{1,12} Their management is equally as important as that of major incidents. Due to the large variety of event classification and reporting systems worldwide, the lack of conformity in the taxonomy used can stunt the potential benefits of event reporting.³ With increased uniformity in classification, reactive learning is more effective due to increased transferability of results.³ Throughout this study, the term “event” is used to include incidents and near-misses, as proposed by the European Commission.³

This study aims to identify the standard of reporting-and-learning procedures of Irish RT institutions by developing a

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Methods

Participant population

Process map and questionnaire development

A process map outlining an evidence-based event reporting-and-learning pathway was developed (Fig. 1). The literature was identified through a systematic search of electronic databases (PubMed, Google, Google Scholar, Science Direct). The process map was then used as a guide to develop the questionnaire.

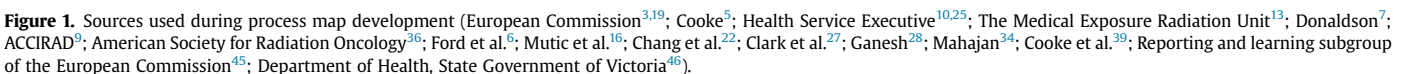
The anonymised questionnaire consisted of forty-six (open-ended and closed-ended) questions across three sections. Section 1 identified the demographic of the RT institution (size, public or private etc.), the event classification systems used and the event investigation team make-up. Section 2 was divided into three

Data analysis

Frequency analysis and descriptive statistics was performed for closed-ended questions. Thematic analysis, as outlined by Braun and Clarke,¹⁵ was employed for the data from open-ended questions. Frequency analysis of codes and themes was used when applicable.

Results

Six private and five public institutions participated in the study [91.7% response rate]. Six of the participating institutions had two



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