**Pre-On call - Key Conditions Year 1 - Emergency Radiology Training**

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Learning Objectives

Implement and monitor a formal training program for first year registrars in Emergency Radiology prior to on-call duties, in accordance with RANZCR guidelines.
Background

Emergency Radiology is an evolving subspecialty. The RANZCR has recognised the importance of formal training in this area with the introduction of "Key conditions in Year 1 training" (1). The Key Conditions cover a spectrum of important diagnoses in emergency radiology, common in every day practice and critical to the functioning of an on-call registrar. We have used the RANZCR Key conditions to design a training course to teach first year registrars key skills and knowledge in emergency radiology, and prepare them for on-call duties in the emergency department. Presented here is the RBWH experience with implementing and monitoring this new segment of registrar training.
Imaging Findings OR Procedure Details

The program was compiled in 2011 using the Key Conditions in Early Training as listed in the RANZCR training manual. Weekly training sessions were overseen by senior registrars or consultants, and began with up to six short, case-based powerpoint presentations delivered by the first year registrars. This was followed by image interpretation sessions for each topic, structured as "hot seat" cases, followed by appropriate discussion.

Registrars were examined prior to the commencement of the program, within the first 3 weeks of commencing formal radiology training. A total of 32 cases were made available as a work list on local PACS workstations, using images from all modalities approved by three radiology consultants. Registrars were given 60 minutes to review as many of these cases as possible, handwriting their findings, final diagnosis and management plan. The request form was available, but registrars were asked not to look at this, as often the answer was part of the history. The reports were marked by the supervising consultant. Following the 8-week program, registrars repeated the same examination once more under the same time constraints. No participating registrar had, by this stage, been rostered to on-call duties or night shift.

A total of 10 registrars participated in this study, although one did not sit the follow up examination, reducing the sample size to 9 participants. While the sample size from this preliminary study is relatively small, initial results have yielded improvements in reporting speed and accuracy of up to 50.0% and 40.9% respectively. The overall trend shows an average improvement in speed and accuracy of 21.5% and 23.1% respectively (see chart 1). Every participant improved in both the number of cases reported (speed) and the number of cases correct (accuracy) (see chart 2). In addition, with increasing improvement in accuracy there is an apparent decrease in improvement in speed. This is not a statistically significant result owing to the small sample size, however the trend is somewhat unexpected. While each registrar improved in both speed and accuracy, it was expected that as the accuracy improved so would the speed, as the participant would spend less time on cases they got right. While it is of utmost importance that we produce accurate reports, we must also report studies in a timely fashion. The balance between these two factors can be a difficult one to make and can vary widely among radiologists and trainees. A possible explanation for this unexpected trend is that in this junior registrar population, the balance between these factors has not yet been found. This relationship will be closely monitored, both in future cohorts undertaking the course, and in longitudinal assessment of this first cohort.
There is no clear association between the initial examination results and any subsequent improvement, although associations such as these may be elucidated in the future when a greater sample size achieved.

Aside from the small sample size, the main study limitation is the absence of a control group. That is, was the improvement seen in the post-course examination due to the quality of the Key Conditions course, or was it due to other factors such as day-to-day experience and progress acquired on-the-job during the 8 week period? We acknowledge this limitation, however excluding half of all new registrars from the key conditions training was felt to be inappropriate given the potential benefits. Given the relatively low exposure to Emergency Radiology over this 8-week period outside the Key conditions training, it is likely that the improvement in speed and accuracy can be ascribed to the training. In the future we will consider possibilities where a control group can be tested. An example of this may include initial delay of Key Conditions training until the trial group have finished the course.

We plan to continue the Key Conditions training course for each new intake of registrars and accumulate data regarding its effectiveness for improving post-course abilities. In response to feedback from registrars, our intention is to delay future Key conditions training until the completion of the Part 1 RANZCR examination, usually undertaken within the first three months of training.
Fig. 1

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Fig. 2

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Conclusion

Early results demonstrate advances in accuracy and speed of Emergency Radiology reports issued by junior registrars, and suggest significant ongoing educational and departmental benefit. Ongoing Key Conditions training and assessment for all new registrars is planned.
References

1. RANZCR Radiodiagnosis Training Program Curriculum 2012