

STRATEGIES TO ENHANCE THE RADIOLOGY RESIDENT'S PREPAREDNESS FOR INDEPENDENT CALL COVERAGE: IS THERE A ROLE OF SIMULATORS?

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ABSTRACT

The radiology residents are the primary physician in the traditional night call system and provide the initial interpretations of the radiology studies with the consultant radiologist on call as a backup. This is an important aspect of residents training and fosters the important skills of autonomy, decision making and confidence. A number of teaching methods are adopted by residency programs to best prepare resident for independent overnight call which includes the use of a didactic radiology interactive lecture series, core rotation, review of teaching modules and "buddy" call with senior residents before the residents embark on independent calls. In addition incorporation of simulator program also provide a practice of independent image reading and enhances interpretation skills and hence also prepare them for the challenges of being on-call.

Strategies to Enhance the Radiology Resident's Preparedness for Independent Call Coverage

One of the essential parts of radiology training is independent overnight call coverage. The Radiology Residency Review committee (RRC) of the Accreditation Council for Graduate Medical Education (ACGME) has proposed 12 months of training before a resident is allowed to take an independent call which is defined as "making an interpretation available to patient care providers prior to review of the examination by faculty or senior resident."¹

There are number of reasons that focus on enhancing the resident's preparedness for correctly interpreting and reporting of studies done during on call hours and include patient safety, complexity of cases and increased reliance of clinicians on imaging diagnosis and the medico legal aspect. The current health care system requires competency-based medical practice in which the physicians are allowed to deliver patient care after they have achieved a specific level of training. This specially applies to residents embarking for on call coverage and for this the strategies that

are implemented include dedicated lecture series, basic rotations, mini and shadow/buddy calls and the review of teaching cases. However none of these comprehensively addresses the specific task encountered during on call in radiology i.e. the independent interpretation of an entire set of images.²

The RRC conducts on site evaluations to determine the program's compliance and fulfillment of the recommendations regarding resident's education. It has proposed modifications to the radiology programs to give adequate exposure to residents of all primary subspecialties of radiology and for them to gain confidence. The independent call coverage for the residents is a valuable learning experience which depends more on adequate preparation rather than just the duration. An adequately prepared resident is expected to report critical findings that influence patient care.³

Direct evaluation of competence through program administered oral and written examination has been suggested by some to determine a resident's readiness for on call coverage. Other's suggests that the

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radiology studies read by these residents should be reviewed within hours of the preliminary reporting. The aim of all this exercise is to build residents' capacity to work independently and enhance confidence for ensuring patient safety.¹

Role of Simulators

The other strategy to teach management of crisis events in radiology is through incorporation of computerized realistic simulation. Sica et al. used a mock CT scanner and patient simulator to simulate the setting of crisis encounter by radiologist. This report was the first in radiology literature that described improvement in performance resulting from attending training session and the resident's acceptance for the hands-on program.⁴ The critical assessment of a teaching methodology is although difficult and subjective, improvement in scores of performance and the acceptance of the program by the residents suggested that simulation technology was an effective training tool.⁵ Important questions in the above context are: does the performance improvement in the course reflect into better clinical judgment and execution? and how long will the improvement last? This would require long term observation of the course participants and their comparison with non-participants, which seems daunting and impractical.

Standardization of education when all users are exposed to the same cases can be achieved with the use of simulators for teaching and learning.⁵ This also allows for the sharing of the rare cases which a resident may not come across during a regular rotation. Beside call preparation and residents teaching, there are other uses of simulators, like for teaching a new modality to a seasoned radiologist and as a mean for acquiring Continuing Medical Education (CME) credits.

Simulation based teaching and learning is an approach to bring about improvement of the trainees professional knowledge, skills and attitudes and at the same time guarding the patient from unnecessary threats and hazards. Simulation based training methodologies and techniques allow for multiple time practice, training and hands-on experience till the mastery in the procedure or skill is attained. With all the advantages related to teaching, learning and patient safety, the simulation related intervention in

pedagogy is expensive and requires a lot of hard work.

Simulators have been created in radiology to teach interventions and ultrasound and a few have also described the simulators mimicking the day to day and important radiology practice of image interpretation. An ideal simulator is required to function similar to the picture archiving and communication system (PACS) with specific features of image manipulation like changing of windowing level and width, recording measurements, applying annotation and recording of Hounsfield units. The other important features are anonymization of images to comply with patient confidentiality and the availability of the entire study set. A perfect stimulator allows easy upload of teaching files which are task specific and appropriate to the residency level and module to the data set and also provide feedback to learners to the learning process.⁶

In radiology, simulators can be utilized for not just residents education i.e. acquisition of competency or for pre testing- post testing in a specific rotation or before embarking on independent call coverage but also as a testing tool for re-certification. In addition, a simulator can be integrated with the PACS for creation of teaching files. Ganguli et al. describes the practice adopted by their program for preparation and assessment of their resident's preparedness for independent call. They arranged for a lecture series based on emergency radiology core curriculum for a period of one month. At the end of lecture series the assessment was carried out through a computer based simulation testing. They report that the computer based module proved to be useful in assessment and identification of residents who need enhanced individual attention and directions before they start their independent overnight call.²

Conclusion

A number of strategies to enhance the radiology resident's preparedness for on call coverage were highlighted. Simulators have the potential to enhance active learning process by closely mimicking the real radiology practice and prepares the user for different clinical scenarios.

Conflict of Interest: None

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