Developing Future In-House Radiology Service Technologists

E. Rose1, T. Koch1, B. Krishna1, K. Stuart1, H. Do1

1 Lower Mainland Biomedical Engineering, Providence Healthcare, Vancouver, Canada

INTRODUCTION

Lower Mainland Biomedical Engineering (LMBME) Radiology Service group provides in-house service for medical imaging equipment across 28 acute hospital sites serving a patient population of roughly 3 million people in British Columbia (BC)[1]. Divided into three teams, 32 radiology service technologists (RSTs) support over 750 medical imaging systems, including: 26 MRIs, 38 CT scanners, 70 x-ray rooms and a mobile fleet of over 500 systems.

The success of in-house services for medical imaging equipment is contingent on qualified, skilled technologists [2]. In the past, RSTs were recruited externally from Original Equipment Manufacturers (OEMs) field service, independent service organizations or other hospital in-house service departments [3]. Recruitment challenges have become more pervasive in BC across the greater field of Biomedical engineering, with fewer Biomedical Engineering Technologist (BMET) graduates and even fewer specialized in medical imaging. The scarcity of qualified applicants to RST positions poses a risk to long-term sustainability of in-house radiology service.

Methods

Qualification as a full-scope RST requires both years of experience servicing medical imaging equipment and vendor specific training in a higher complexity modality, such as MRI, CT, nuclear medicine or angiography systems. To bridge the gap between a BMET and a full-scope RST, a unique job description was created for a radiology service technologist apprentice. The RST apprentice job description set the minimum requirements as: graduation from a recognized program in Biomedical Engineering Technology and three years of experience as a BMET.

The apprenticeship is structured to obtain competency as a full scope RST within 4 years. Apprentices are first sent on basic x-ray service courses. Vendor product courses for ultrasounds, mobile x-ray and c-arms round out experience across various platforms before they progress to proficiency level courses on a major modality. Courses are spaced out to allow sufficient time between training to build familiarity with various systems, faults, and maintenance protocols. Apprentices work alongside full scope RSTs to assist in preventative maintenance and corrective repairs of complex systems and learn from experienced mentors. Supervisors assess competency and readiness of the apprentice in taking on increasing levels of service responsibility. An apprentice learning plan is used which details tasks the apprentice must complete and obtain sign-off by a senior mentor to demonstrate competency. Example of tasks include radiation protection surveys, calibrations, end-to-end connectivity testing, network configuration, shut down procedures, and software reloads.

CONCLUSIONS

LMBME has successfully qualified three apprentices to full scope RST positions. Currently, LMBME has seven apprentices in various stages of training. Overall, nearly a third of the RST roles are filled by graduates of the apprenticeship or current apprentices.

Prior to the creation of an RST apprentice role, there was no opportunity for internal BMETs within the department to move into medical imaging service. The only opportunity to gain the training, skills and experience needed to qualify as an RST was to seek a position with an OEM in medical imaging field service. The RST apprentice role has allowed eager BMETs to progress in their careers and seek training in medical imagining service. The apprentice program has provided a viable path to fill future retirement vacancies and team expansions as facilities expand their medical imaging equipment base and new developments come to fruition.

The success of this initiative within LMBME can be shared with other service organizations looking to strategize around recruitment and retention of highly qualified radiology service technologists.

REFERENCES

1. Statistics Canada, “Census Profile, 2021 Census of Population,” Statistics Canada Catalogue no. 98-316-X2021001, https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E (accessed January 22, 2024).
2. M. Asbil, et. al., “Developing an In-House Magnetic Resonance Imaging Maintenance Program,” Biomed. Instrum. & Tech, vol. 52, pp. 218-222, 2018.dot_trans
3. B. Stallard, “Picturing a Future for Diagnostic Imaging Apprentices,” Biomed. Instrum. & Tech, vol. 54, pp. 434-437, 2020.