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Commentary

# The strategy to develop newly joined radiographers in a COVID-19 world: a curated orientation programme

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Onboarding is an important process of welcoming new staff and fostering the sense of being a valued member of the team.<sup>1</sup> More importantly, it prepares the staff for their designated roles and multiple studies have highlighted the importance of a successful onboarding experience in better acclimating to a new environment, job satisfaction, talent management, high levels of performance, and task efficiency.<sup>2-4</sup> Yet, there are many organisations that do not embrace the provision of a formal onboarding experience for new staff.<sup>1</sup> Indeed, this may have disruptive implications where an unsuccessful onboarding experience in academia led to faculty being poorly acclimated to the organisation's culture, lacking understanding of the organisational goals, and being unable to foster relationships.<sup>5</sup> Amid the global pandemic of COVID-19, it is even more crucial for healthcare leaders to engage and integrate the new practitioners into the organisation, where healthcare delivery system is being stretched.<sup>6,7</sup>

The role of radiology in early diagnosis had been well described and was epitomised by the painful chapter of the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003. In Singapore, medical imaging plays an important part of triaging symptomatic COVID-19 patients, with chest radiography widely used as part of the initial screening process and computed tomography (CT) used only as a problem-solving tool.<sup>8</sup> As such, radiology has been classified as an essential healthcare service wherein there would be

continuation of operations despite the government implementation of elevated safe distancing measures.<sup>9</sup> The global pandemic has caused tremendous disruption in all life aspects, not least in the education of radiographers who provide front-line care to patients and use sophisticated equipment and techniques to produce radiological images.<sup>10,11</sup> This has led to a growing concern regarding insufficient numbers of practising radiographers in the local healthcare system available to support the unprecedented demand, as well as manpower shortages resulting from mandatory sick leave and redeployment to community facilities.

Radiographers in Singapore are regulated by a statutory board under the Singapore Ministry of Health (MOH) - Allied Health Professions Council (AHPC), making it mandatory for all new registered radiographers to undergo supervised practice for a minimum of one year.<sup>12</sup> To augment the pool of radiographers supporting the pandemic, the process of allowing newly graduated radiographers to enter the workforce under supervision was accelerated by the collective effort of the MOH, the academic institution, and the hospital's human resource and radiography department. In this commentary, we focus on narrating the strategy to develop the newly joined radiographers via an orientation programme conducted during COVID-19 at a large tertiary hospital in Singapore, as well as their perceived experience after completion of the orientation programme. We anticipate our experience in setting up a curated orientation programme can help other hospital departments involved in the onboarding of healthcare professionals to blueprint an appropriate orientation programme during this challenging time.

In order to conduct a successful orientation programme, it was essential to understand the attributes of the new radiographers, who were mainly made up of people from Generation Z (Gen Z). Medical educators have suggested that the characteristics of Gen Z learners will certainly shape medical education in the COVID-19 pandemic.<sup>13</sup> Members of Gen Z, which includes people born in 1997 or later, are true digital natives that are proficient in sourcing information and

Contributors: All named authors have participated sufficiently to take public responsibility for its content. All authors have approved publication.

Conflict of Interest: The authors declare no conflict of interest.

Ethical Approval: Not required for this article type.

Contributors: All authors contributed to the conception or design of the work, the acquisition, analysis, or interpretation of the data. All authors were involved in drafting and commenting on the paper and have approved the final version.

Funding: This study did not receive any funding.

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communicating in the digital world.<sup>13,14</sup> As a generation who are prolific consumers of digital technology and proficient with communication through social media, it was timely for facilitators to capitalise on the technology of video conferencing to conduct virtual tutorials and discussions.<sup>15</sup> In tandem, existing technological platforms (e-learning solutions - Wizlearn) could be utilised to fit their preference for technology integration into learning spaces.<sup>13</sup>

The curated orientation programme was a 4-day programme that was conducted on the first day of reporting and was delivered by various invited facilitators from the radiography department, presenting on various essential topics. Table 1 summarises the list of topics presented in the May 2020 orientation programme. The orientation programme adopted a hybrid mode of delivery, comprising mainly video conferencing with some elements of face-to-face sessions, well suited for the digital native members of Gen Z. Moreover, it was in line with the MOH advisory for workplaces to reduce close contact where feasible through video conferencing. A similar picture was painted by the perioperative educators who implemented distance learning and online meetings to

support the onboarding of nurses.<sup>16</sup> To comply with the implementation of safe-distancing measures at the workplace, modifications had to be made from our usual pre-COVID orientation programme. Attendees were limited to a maximum permitted capacity of 50 persons, with clear physical spacing of at least 1 m apart, masks to be worn by all, and the removal of discussion/activity/lunch get-togethers amongst attendees. A suitable venue capable of safely hosting the newly joined radiographers, facilitators, and coordinators had to be sourced for the face-to-face sessions of the orientation programme.

The pandemic forced the interactions in the orientation programme to evolve from face-to-face to virtual, which the Gen Z attendees easily accomplished, since they were already efficient in communicating in digital environments.<sup>15</sup> However, this posed a challenge to some of the facilitators who were forced to plunge into an online model.<sup>15</sup> They had to battle with accustomed technology while fostering engagement in the digital environment.<sup>17</sup> For a successful orientation, the facilitators had to avoid “culture clash” between the different generations. Fortunately, the use of modern technology was familiar to most of the facilitators, since pre-COVID they

Table 1  
The 4-day curated orientation programme for newly joined radiographers.

Day	Topic	Content
1	Tour of Radiography Department	
	Introduction to Division of Radiological Sciences & Radiography Department	<ol style="list-style-type: none"> <li>1. Opening address/welcome</li> <li>2. Organization Chart</li> <li>3. Peer support</li> </ol>
	Tips & Tricks for your trip within Division Radiological Sciences	<ol style="list-style-type: none"> <li>1. Policies and Procedures</li> <li>2. Department House rules</li> <li>3. 7 Habits of highly effective people</li> </ol>
2	Quality Management & Risk Management System	<ol style="list-style-type: none"> <li>1. Patient safety culture strategy – learning from incidents in Risk Management System</li> </ol>
	Sharing session by previous cohort radiographers	
	Allied Health Professions Council Supervision Framework	<ol style="list-style-type: none"> <li>1. Types of registration/Levels of supervision</li> <li>2. Supervisor and supervisee direct contact time/logging of cases</li> </ol>
	Radiographers' Career Pathway & Competency Framework	<ol style="list-style-type: none"> <li>1. Radiographers' clinical track and career progression</li> <li>2. Competency assessment</li> <li>3. Continuing Professional Development Portfolio</li> </ol>
3	Respirator fitting	
	General Radiography- Structure and Administrative matters	<ol style="list-style-type: none"> <li>1. General Radiography- Organization Chart and house rules</li> <li>2. Overtime/Public Holidays/Locum Claims</li> <li>3. Roster – Working hours, sick leave, annual leave</li> </ol>
	Infection control practices in radiology	<ol style="list-style-type: none"> <li>1. COVID-19 infection control measures</li> <li>2. Routine isolation measures</li> <li>3. Proper use of personal protective equipment</li> </ol>
	Radiography Department Policy and Procedures	<ol style="list-style-type: none"> <li>1. Pregnancy rules</li> <li>2. Assessment of patient's condition</li> <li>3. Handling of patient's valuables</li> </ol>
4	Supervision of students	<ol style="list-style-type: none"> <li>1. Supervision framework</li> <li>2. Academic Institution clinical placement framework</li> </ol>
	Modality training curriculum	<ol style="list-style-type: none"> <li>1. Training framework and expected training outcome</li> <li>2. Assessment methods</li> <li>3. Teaching faculty</li> </ol>
	General Radiography protocol	<ol style="list-style-type: none"> <li>1. Utilizing of protocol</li> <li>2. Case discussion</li> </ol>
	Infotech	<ol style="list-style-type: none"> <li>1. Radiological information system</li> <li>2. Picture archiving and communication system</li> <li>3. Electronic Medical Records</li> </ol>
	Reflection and debrief	

had been embracing the digital revolution through use of social media, mobile devices, and internet-based media. This was unsurprising since Singapore has made continuous efforts at enhancing digital inclusion for the entire population.<sup>18</sup> Through various programmes and blueprints, the nation's digital readiness and inclusion were strengthened, bridging the gap between generations in the use of technology.<sup>18,19</sup> In addition, coordinators scheduled all virtual meetings for the facilitators and were onsite to provide support. Nevertheless, understanding the key features of the Gen Z radiographers allowed the facilitators to plan and define a strategy to promote engagement and assess their understanding of the content.<sup>16</sup>

The key consideration for this orientation programme was to provide the newly joined radiographers with the same intrinsic experience and engagement as pre-COVID, while adhering to the strict social distancing measures. Acting in the face of uncertainty, another focus was to decrease stress and enhance the transition from supervised students to practitioners.<sup>4</sup> Similar concerns were raised by athletic trainers, and even nurses who highlighted that increased stress resulted in errors in patient care.<sup>4</sup> Essentially, the orientation programme should provide the resources, build relationships, and provide necessary training for newly joined radiographers to be successful in the radiography clinical environment.<sup>4</sup>

As highlighted by Lui et al.(2020)<sup>20</sup>, the duration of the orientation should consider the availability of resources while balancing the educational needs of the newly joined radiographers and their service commitment. In addition, it was important for the orientation programme to cover elements of Bauer's four levels of onboarding: compliance, clarification, culture, and connection; adopting the proactive onboarding strategy to increase preparedness of the radiographers.<sup>21</sup> Moreover, the facilitators were determined to refine and improve the orientation programme with the lessons learnt from the pre-COVID orientation. The feedback from the previous batch of radiographers joining the orientation program suggested they would like pre-reading materials to better prepare themselves for the sessions (often constrained by time) and to have engagement sessions to understand and prepare themselves for their new role as a practitioner.

With areas of improvement being previously identified, appropriate strategies to overcome those abovementioned issues were put into operation, including preparation of pre-reading materials, better time management, and engagement sessions with the previous cohort of practising radiographers to help understand the demand and expectation as a radiographer under supervision. It was apparent that the previous orientation had overlooked elements such as clarification (radiographers understand their new jobs and all related expectations) and connection (interpersonal relationships and information networks) as identified by Bauer.<sup>21</sup> Such gaps had to be bridged since, like any generation who enter the workplace, socialisation into the organisation was the first significant hurdle they would encounter.<sup>22</sup> In fact, significant changes had been made to the pre-COVID orientation programme. The curated 4-day orientation programme was

developed by the facilitators in collaboration with the radiography department's education team. Consultation with current practising radiographers on their opinions and previous onboarding experience were sought for content development. Clearly, there was a need to mitigate the lack of readiness on the first day of work by developing an effective and robust orientation programme.<sup>20</sup>

In recent times, reports of negative psychological impacts of the pandemic on practicing healthcare workers were not unheard of.<sup>23-25</sup> Hence, it was of utmost importance to explore the challenges, concerns, and emotions of the newly graduated radiographers who must accelerate their transition from student radiographer to qualified radiographers. The radiographers' perceived stress, resilience, and attitudes regarding starting work in this pandemic had to be explored. Singapore student radiographers had highlighted fear, anxiety, and worry about one's health; difficulty in adapting to a new system resulting in confusion and frustration; and, more importantly, competency in radiography due to the decreased time and experience in radiography following the suspension of clinical placement.<sup>10</sup> This concurred with the perspective that reduction of patient engagement could make it more difficult for students to develop key clinical skills.<sup>26</sup> Understanding the students' perspectives helped in the development of a better blueprint of the orientation programme, addressing the concerns and needs of the newly joined radiographers.

During a global pandemic, taking infection control and staff well-being into consideration were essential and had to be addressed from the onset.<sup>27</sup> As healthcare professionals, the newly joined radiographers had to be familiar and up to date with infection control measures. COVID-19 infection control measures were covered during the orientation and the importance of hand hygiene and need to seek prompt medical attention were constantly reiterated. Refresher training on donning and doffing of personal protective equipment was also conducted. Unlike pre-COVID situations whereby respirator fit-tests were conducted at pre-designated dates by the hospital infection control nurses, logistical and manpower arrangements were made to have our sole in-house respirator fit-test trainer conduct the test for the radiographers during the onboarding. Indeed, adopting fit-testing into the orientation programme posed a time and logistical challenge. However, it was of paramount importance to ensure that all radiographers pass the qualitative fit testing and were certificated prior to their deployment to clinical environment. It could not be emphasised enough that improper fitting masks had been reported to be the cause of healthcare professionals contracting COVID-19.<sup>28</sup> Moreover, it provided an opportunity to ensure that the newly joined radiographers were properly trained in the correct usage of the respirator, reducing the risk of nosocomial infection.<sup>29</sup>

Social get-togethers and discussion activities were well received in the pre-COVID orientation programme. However, with the removal of such activities, it could be tougher to forge close, meaningful relations with the radiographers. Moreover, because of the underdeveloped social and

relationship skill building, Gen Z has been reported to be at increased risk for isolation and insecurity.<sup>30</sup> Therefore, during the pandemic, an important element of the orientation programme was to get the newly joined radiographers connected and to continue to meet the need for safety and security. This was mitigated by providing mutual support and reassurance, and nurturing of participation in virtual discussions.<sup>30</sup>

Another concern for this group of “COVID-era” radiographers joining the workforce was the demand to fulfil the requirements of supervised practice, building up their clinical competency and achieving the expected learning outcomes stipulated in their training curriculum. A lower level of confidence and preference to take fewer risks have been attributed to Gen Z.<sup>30</sup> Recognising that they were different in this sense from the Millennials, arrangements were made to have “seniors” from the previous cohort share their experiences in adapting to the demand as a newly joined radiographer and their live-in experience as a radiographer during this pandemic.<sup>30</sup> This was a great opportunity for the newly joined radiographers to receive real world advice and mentoring while feeling reassured and safe, supporting their characteristics of being pragmatic and having increased risk for isolation, anxiety, insecurity, and depression.<sup>20,30,31</sup> The role of the facilitators was additionally important. The session had to be moderated to ensure the balance between realism about the challenges ahead and confidence that the radiographers would navigate through the demands of the training amid the pandemic—infusing optimism yet bounded by realism.<sup>32</sup>

As highlighted by Bauer,<sup>21</sup> high-quality relationships with leaders were related to favourable onboarding outcomes, which included performance and job satisfaction. Hence, there was a need for the newly joined radiographers to connect to the leaders and senior management of the radiography department. The opening address was delivered by the Head of the Radiography Department, followed by a sharing session facilitated by the Assistant Director of Operations. These were the only sessions to be conducted face-to-face as such mode of communication was the best way for relational development.<sup>33</sup> In addition, it fulfilled Gen Z’s gravitation toward in-person interaction.<sup>34</sup> The leaders’ presence facilitated an open discussion and a question and answer period in which they were accessible and available to answer questions from the newly joined radiographers. To augment staff well-being, a peer support group was also introduced as part of the support action for employees.

As part of the teaching-learning design strategies and approach to support the radiographers, the newly joined radiographers were paired up with their AHPC supervisors during the initial rotation to facilitate mentorship. Not only can mentorship help the mentee in improving clinical efficiency, but the mentee can also receive professional support and advice.<sup>35</sup> This aided in addressing the challenge of adapting to a new system at the workplace and provided crucial support in improving their radiography specific competencies. However, this required significant operational planning—engaging with roster planner(s) on best-fit distribution of newly joined

radiographers, while balancing the needs of professional development and the required minimum functional manpower in each area. While this could be a daunting process, it was crucial for the Gen Z radiographers to get feedback and readily available support during their clinical work.<sup>30</sup>

This year, though under the cloud of the COVID-19 pandemic, the feedback from the newly joined radiographers on the curated orientation programme was positive. Feedback indicated that the topics covered were sufficient and important in preparing them for work in the department. The orientation voluntary feedback reported mixed opinions on the intensity of the content/information covered in the orientation programme. Some indicated that it was overwhelming, while others felt it was sufficient. Nonetheless, all agreed that the content/information were helpful in preparing them to commence clinical work with feedback indicating that it aided in relieving some anxieties before starting work. The newly joined radiographers were also appreciative of the efforts and honesty of the facilitators during the orientation programme. In fact, they were thankful to the facilitators for being approachable in clarifying and answering of questions.

The importance of reflection and reflective practice are well reported in literature, and indeed, the reflection session was the capstone of the orientation programme.<sup>36</sup> The reflection session provided the radiographers with an opportunity to make sense of their learning, so that knowledge gained during the onboarding could become embedded in their practice while fostering constant thought.<sup>37</sup> Moreover, the reflection session was a good opportunity to provide speed mentoring. In providing effective support to the newly joined radiographers, a stronger sense of community and inclusiveness to the department was encouraged.<sup>38</sup> Moreover, as the department becomes more diverse, the need to communicate properly becomes more essential. It was a key priority of the session to spur ongoing communications with the radiographers while facilitating transfer of valuable insights for professional growth.<sup>38</sup>

To date (October 2020), the newly joined radiographers are completing the first six months of clinical rotation and based on the feedback from the supervisors, have integrated well to the workforce. It was heartening to know through checking-in with the radiographers that they were adapting well to the system and had been supported in the building of their competencies. However, a more in-depth study is needed to evaluate the outcomes of accelerating the transition to workplace of the newly graduated radiographers following the curated orientation programme. Nonetheless, preliminary evaluation of the curated orientation programme indicated that it was well received and had prepared our newly joined radiographers well, while supporting them for their transition from student to practitioner.

## Acknowledgment

The authors would like to acknowledge Mr Tan Chin Chong, Ms Rafidah, Ms Toh Hong Guan, Mr Li Sheng,

Mr Sim Wei Yow, Ms Ooi Xian Hua, Ms Ariel Chow, Mr Adam Kee, Ms Tan Weiling and Mr Eugene Chen for their contribution as facilitators in the curated orientation programme, as well as Ms Candice Goh for her role in fit-testing the newly qualified radiographers.

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