



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Clinical Perspective

COVID-19 stories of success: Teaching and learning in a clinical setting during a pandemic

Cynthia Palmaria* and Kari Osmar

Faculty Service Officer, Radiation Therapy Program, Department of Oncology, Faculty of Medicine and Dentistry, University of Alberta, 3-12 University Terrace, 8303-112 Street NW, Edmonton, AB, T6G 2T4, Canada

ABSTRACT

Introduction: The onset of the COVID-19 pandemic halted in-person activities in universities and caused disruption in the usual iteration of the semesters. When the clinical environment resumed student placement, the potential health risks caused additional anxiety to the students and clinical faculty. This paper aims to examine the measures implemented to support the radiation therapy students during their first clinical placement during the COVID-19 pandemic.

Background: The 2nd year radiation therapy students' first clinical placement was organized around pandemic restrictions that required new activities to support student safety and wellness. The clinical faculty team redesigned the clinical course to integrate enhanced communication, additional safety measures and mental wellness sessions, as well as making COVID-19 related resources available during the week-long orientation and throughout the semester.

Methods: Registered students were asked to participate in a 9-item survey questionnaire to gather their perspective on the effectiveness of the orientation and clinical activities during the pandemic. The responses were tabulated and independently analyzed for emergent themes by the clinical faculty.

Discussion: The students reported that the combination of activities, workshops, exposure to the treatment unit and feedback from both clinical faculty and learning mentors provided the support needed for physical safety and wellness in the clinic. Identified challenges included communication with continuous masking, the timeliness of communicating evolving clinical safety protocols, and the need for enhanced coordination of interprofessional education.

Conclusion: The COVID-19 pandemic brought new challenges and opportunities for students and clinical faculty at the University of Alberta's Radiation Therapy department. The results of the quality improvement survey highlighted the importance and effectiveness of the redesigned clinical course, which integrated COVID-19 related activities, enhanced communication strategies, safety, wellness resources and check-ins throughout the course.

RÉSUMÉ

Introduction : L'arrivée de la pandémie de COVID-19 a interrompu les activités en personne dans les universités et a provoqué des perturbations dans l'itération habituelle du semestre. Lorsque l'environnement clinique a repris le placement des étudiants, les risques potentiels pour la santé ont provoqué une anxiété supplémentaire chez les étudiants et le corps enseignant clinique. Cet article vise à examiner les mesures mises en œuvre pour soutenir les étudiants en radiothérapie lors de leur premier stage clinique pendant la pandémie de COVID-19.

Contexte : Le premier stage clinique des étudiants en radiothérapie de 2e année a été organisé autour des restrictions liées à la pandémie, nécessitant de nouvelles activités pour soutenir la sécurité et le bien-être des étudiants. L'équipe d'enseignants cliniques a repensé le stage clinique afin d'intégrer une meilleure communication, des mesures de sécurité supplémentaires, des séances de bien-être mental et des ressources liées à la COVID-19 pendant la semaine d'orientation et tout au long du semestre.

Méthodologie : Les étudiants inscrits ont été invités à répondre à un questionnaire en 9 points afin de recueillir leur point de vue

Contributors: All authors contributed to the conception, design, analysis and interpretation of the data.

Funding: All authors contributed to the conception, design, analysis and interpretation of the data.

Competing Interest: The authors have no conflict of interest to declare.

* Corresponding author.

E-mail addresses: palmaria@ualberta.ca (C. Palmaria),
kari.osmar@ualberta.ca (K. Osmar).

sur l'efficacité de l'orientation et des activités cliniques pendant la pandémie. Les réponses ont été compilées et analysées indépendamment par les deux professeurs de soins cliniques afin d'identifier les thèmes émergents.

Discussion : Les étudiants ont indiqué que la combinaison d'activités, d'ateliers, d'exposition à l'unité de traitement et de commentaires des professeurs de clinique et des mentors d'apprentissage a fourni le soutien nécessaire à la sécurité physique et au bien-être dans la clinique. Les défis identifiés comprenaient la communication avec le port continu du masque, la communication en temps opportun des protocoles

Keywords: Clinical practicum; Quality improvement; COVID-19; Radiation therapy

Introduction

The COVID-19 pandemic has necessitated modification in our approach to delivery of education, leading to a shift in university timelines; especially for clinical placements. The University of Alberta's Radiation Therapy experience during the resumption of the clinical course in July 2020 required consideration of campus risk management guidelines and provincial restrictions to keep everyone involved safe. As outbreaks occurred at hospitals and long-term care facilities in Alberta, it was critical to mitigate potential risk of transmission [1]. The risks brought about by the pandemic and the uncertainty of delayed university timelines posed concerns to the students. This paper aims to examine the measures implemented to support the radiation therapy students during their Clinical Placement 1 (CP1) course at the height of the pandemic.

Alberta's provincial COVID-19 restrictions at the time included limited indoor gathering to 15 people, social distancing of 2 m, continuous mandatory masks [2], hand hygiene practices, and use of personal protective equipment (PPE) [3]. The rapidly evolving global crises and the health recommendations led to an overwhelming demand for PPE and other medical equipment [4]. Health institutions struggled to secure essential supplies for healthcare workers, and it was even more challenging for the radiation therapy simulation suite to acquire PPE equipment, hand sanitizer, and plexiglass barriers for social distancing.

Literature has demonstrated that student resources during critical times need well-defined policies and procedures on safety, psychological support, anxiety-relieving interventions to enhance their learning. A study by Rainford et al. [5] indicated that, in times of a pandemic, student assistance should include a mentoring process, increased communication regarding clinically related information and assessments, pandemic management, and PPE training [6]. Choi et al. [7] stressed the importance of the medical students' well-being during the COVID-19 pandemic through continuous support from induction of their clinical placement to supervision throughout the clinical course. A study on nursing students' experience highlighted the negative impact on their clinical performance when faced with occupational hazards such as infectious dis-

de sécurité clinique en évolution et le besoin d'une meilleure coordination de la formation interprofessionnelle.

Conclusion : La pandémie de COVID-19 a apporté de nouveaux défis et de nouvelles opportunités pour les étudiants et le corps enseignant clinique du département de radiothérapie de l'Université de l'Alberta. Les résultats de l'enquête sur l'amélioration de la qualité ont mis en évidence l'importance et l'efficacité du cours clinique remanié qui a intégré des activités liées à la COVID-19, des stratégies de communication améliorées, des ressources en matière de sécurité et de bien-être et des contrôles tout au long du cours.

eases [8]. Hence, to ensure safe implementation of this clinical placement during the pandemic, the clinical faculty (CF) team planned a revised course to augment student support.

The learning mentors (LM) are the radiation therapists who provide direct student supervision and were apprised of the clinical limitations posed by the pandemic. The clinical team utilized online platforms and other creative strategies to alleviate the impact to the students while still achieving the course outcomes. This paper provides both the thematic results from the student questionnaire and tips and tricks on teaching and learning during the course's iteration in the times of the COVID-19 pandemic.

Background

The first clinical placement course (CP1) at the University of Alberta is a 6-week course that normally runs from May to July, with the students rostered in Edmonton and Calgary Cancer Centres in Alberta. The orientation week bridging the student transition from the didactic to the clinical environment is typically held in the simulation learning suite in Edmonton with all students prior to integrating into the cancer centres. Due to the pandemic, the clinical course started almost two months later than usual and orientation activities were completed in each of the cancer centres. Students whose placements were in Edmonton had their orientation activities in the simulation learning suite, while students in Calgary utilized the classroom and a treatment unit when available for simulated activities. Despite the circumstances, the shorter nature of the course still allowed the students to finish just before commencing the fall semester.

In preparation for the clinical placement, the CF team proactively redesigned the course. Prior to the beginning of the course a communication strategy was organized, and an online meeting was held with the students, CF, and the program director to provide university updates and to address student concerns. The CF supplemented the regular, week-long orientation with activities on revised health practices to comply with the pandemic requirements. Communication workshops and mental health sessions for students' well-being integrated pandemic considerations, and check-ins were added throughout the clin-

ical placement. Additional mental wellness activities, such as an expressive art workshop, were conducted to provide a venue for the students to visually portray their clinical experience in the times of COVID-19 pandemic. Literature has proven that expressive art therapy through different art forms has been an effective way of engaging clients to convey personal meaning to experiences and to relieve stress [9]. Whenever possible, online technology was employed for joint activities to support the students' well-being and to emphasize collective learning.

Infection prevention and safety: A workshop with an infection prevention and control (IP&C) officer was organized to reinforce student awareness about precautionary measures and to conform to the risk control measures. The students' safety was of paramount importance, and this required refresher training on hygiene practices, donning and doffing of PPE, review of COVID-19 modules, and completing the required "Fit for Work Questionnaire" [10] daily prior to entering hospital facilities. Due to the limited medical equipment supplies, the CF discussed the restricted student participation when COVID-19 positive patients needed radiation treatment.

Skills development: The orientation week included simulated sessions on communication strategies, positioning practice on the simulation suite (treatment unit dedicated to student learning), and observation of safe practices on the treatment units. The activities were restructured such that skills development and technical workshops were held with a smaller group of students. This accommodated the social distancing requirements and provided a safe learning environment.

Reimagining Communication: The CF recognized the difficulty in articulating scope of practice when entering the clinical environment and the need to equip students with language surrounding scope and readiness for difficult conversations. Interactive sessions were prepared for students to enhance communication strategies in the clinical environment.

1. "Scenarios in a Jar"

In this activity, participants pick out a scenario from a jar that may have been previously experienced by students or that we anticipated they may encounter in the clinical environment. The student reads out the scenario and presents how they would address the situation. CF provided immediate feedback to the students' response and reiterated who to contact or the chain of command. "Scenarios in a Jar" was enhanced so that it included both typical clinical situations and COVID-19 specific topics such as the following questions:

- A patient requests that no students be part of their treatment, as you get them from the waiting area.
- A patient requests you to take off your mask - they want to see the treatment team's faces. How do you respond?

- In the middle of the day, you start to feel unwell. What are your next steps? Who do you tell? Where do you go?

2. "Elevator spiel"

The main objective of this interactive activity is to equip students with a 30-second explanation to communicate to LM, patients, and peers their scope of practice in CP1. The activity commenced with students displaying on a white board what they are allowed to do and not allowed to do in their practicum (Figure 1). These are high level ideas, such as scope of participation and supervision for clinical activities. From this, students were asked "What are you allowed to do in this practicum?" Feedback was provided by CF and their peers and then students were asked to tailor their spiel. This activity equipped the students with their own voice, framed by both visual and verbal confirmation of scope of practice in their practicum.

3. "Storytelling"

This workshop explored how narrative writing can foster compassionate care and how human compassion and technical expertise are inherently and intricately interconnected among healthcare professionals [11]. Each CF facilitated the session in their respective clinics. The students were introduced to the objectives of the workshop and were given 5 min to prepare an unedited short story with the theme of "an unsent thank you letter". This unsent thank you letter is addressed to a person that the student would like to send a message of appreciation to. We informed the students in our respective clinics that we would be sharing the stories with each other. This workshop allowed both students and faculty to write and hear each other's stories.

Student Wellness: To maintain the students' mental well-being and to ensure a positive clinical experience, the university's psychologists provided a pandemic-tailored mental wellness workshop during orientation. Since this was the cohort's first exposure to the clinical environment, direct student supervision by the LM and CF offered coordinated mentoring.

Throughout the semester, weekly check-in with the students and sometimes online Zoom meetings with the Calgary cohort was built into the schedule to ensure support. The CF team also organized an expressive art therapy workshop. The students were provided canvases and various art materials where they could freely, creatively, and safely express their perspective during their clinical experience. Each of the students shared their artwork and explained the meaning behind the images that represented their feelings and experiences.

Method

Close to the end of the practicum, all registered students were asked to complete a 9-item survey questionnaire to gather

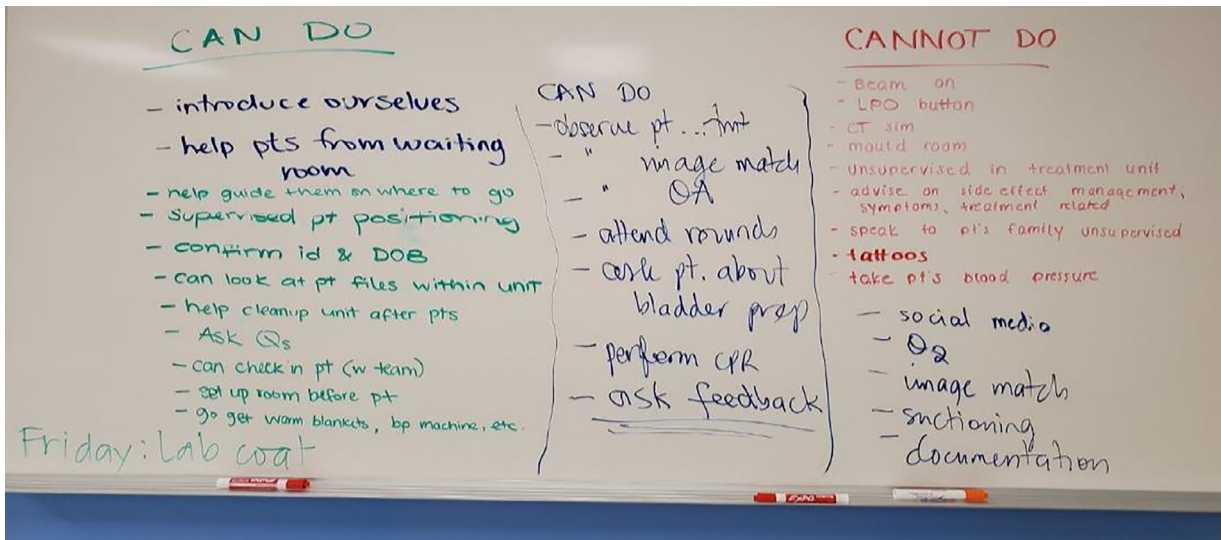


Figure 1. “Elevator spiel” activity with the students.

their feedback on the effectiveness of the orientation, clinical activities, and overall course implementation. The survey also asked the students about the impact of the COVID-19 pandemic on their confidence and preparedness going into the clinical environment and to rate the support they received. The survey aimed to assess the iteration of the course and how to further improve the practicum. All 8 students from both sites completed the electronic questionnaire. The responses to the survey were tabulated and independently analyzed by the CF from each site for emergent themes. The student survey questionnaire is available as an [Appendix](#).

The CF independently reviewed the collected data and grouped the responses into relevant themes. The CF held several meetings to discuss the survey and agreed on the following grouping of themes: support on physical safety and wellness in the clinic, impact of continuous masking on learning outcomes, and timeliness of communicating revised safety protocols.

Discussion

The collected data from the student survey revealed three relevant topics with respect to communication, safety, and wellness during the COVID-19 pandemic.

Support for physical safety and wellness in the clinic

The students reported that they felt well-supported by the orientation activities such as body mechanics, communication workshops, information sessions with the university psychologists, and treatment unit observation. Beneficial activities included the COVID-19 modules and PPE workshop with an emphasis on masking with the IP&C officer. Other identified sources of valuable feedback were the CF and LM on the treatment unit during their observation.

Simulated communication activities during orientation were deemed helpful in preparing the students for the clinical environment. These safety conversations were “*scenarios in*

a jar”, “*elevator spiel*”, and “*storytelling*”, wherein the students were provided with a variety of clinic scenarios and practiced communication strategies using role-play with each other under the guidance of the CF. These safety conversations and practices were also reinforced by their brief exposure on the treatment units during orientation week. The students acknowledged the importance of the COVID-19 modules and PPE activities with practical application of skills that contributed to their confidence in implementing safe practices.

Impact of continuous masking on learning outcomes

While some students indicated that the course learning outcomes in the clinic were not impeded by the pandemic, half of the students identified difficulties in communication with patients. Continuous masking was perceived by some as slightly uncomfortable and made communication more challenging. This was intensified when a face shield became an additional requirement and, to compensate for this, students conveyed their messages by consciously speaking louder and focusing more on non-verbal communication. Despite the limitation of continuous masking, the students found the experience informative as exemplified by the following:

“...impacted communication a bit, but I think it was good because it made us have to really focus and work on communication.”

Timeliness of communicating revised safety protocols

This clinical course was implemented in July-August 2020 in the midst of the pandemic when the conditions and restriction practices were rapidly changing. The students indicated that the delivery of revised safety information was sometimes delayed due to lack of institutional email access during their first clinical placement. They expressed that any new information was communicated by the treatment unit staff. The staff’s role as student LM was a valuable source of feedback to correct any unsafe student practices on the treatment unit. One

student indicated that the radiation therapists along with the students navigated the safety information together.

“Sometimes I found new or revised safety information was unclear and even therapists sometimes did not know exactly what the protocols were.”

The responses to the questionnaire highlighted the impact of orientation and clinical activities on the students’ safety practices to adapt to the demand of the COVID-19 pandemic. This was demonstrated by the scaffolding design of the workshops such as communication skills application, and simulated role play with peer observation reinforced by immediate CF and peer feedback. This was bridged by treatment unit observation for initial skills application and LM’s feedback contributing to the students’ confidence and familiarity with clinical processes. These sessions leveraged different learning styles, tailored to the current COVID-19 pandemic situation and were spread out over the week to build skills and integrate the students’ voice.

Use of PPE was more specific in this iteration of CP1, in terms of keeping students safe during a pandemic in the clinical environment. Integration of students back into the clinic required a more thoughtful and intentional focus on safety. Although the students had previously learned the mechanics of donning and doffing in the didactic setting, it was performed without ramifications. By contrast, the students’ activity with the IP&C officer was applied in the context of the pandemic precautions and it was completed in the clinical environment where they would observe this as common COVID-19 practice.

The survey brought to light the need for enhanced communication with other departments for a smoother student experience. COVID-19 protocols had altered clinical procedures such as face-to-face patient rounds and patient consultation, which consequently impacted some of the student shadowing observations.

The CF team recognized the modification of orientation week where students were divided into two groups in separate clinical environments. CF were mindful to be timely when exchanging clinically relevant information. The CF kept each other abreast of revised practices that were being implemented at a rapid pace. To address the communication gap, the CF team utilized a multi-pronged approach to inform students of local safety protocols through direct verbal communication for time sensitive changes and emails to involved parties. CF recognized that LM in the clinical environment are crucial to provide timely information to students. Adaption of new safety protocols can also vary between different treatment units and areas of a large tertiary cancer center.

COVID-19 allowed the internal quality assurance of the clinical practicum to be evaluated in a different way. Some of the suggested tips and tricks for future clinical course iterations included the following:

- Integration of mental wellness session for student support

- Didactic and practical workshop on PPE in the clinical environment
- Embedding art and narrative workshops scaffolded throughout the practicum
- Using multiple methods of communication with the students for updates
- Frequent team meetings as a form of check-in with the students

The survey results elicited new insights on each individual activity, which contributed valuable support in developing versatile students for any medical situation. In light of these survey results, communication, IP&C, and wellness activities were added to the senior clinical placement. Future iteration of this redesigned course will require mindful incorporation of these recommendations to further facilitate student transition from didactic to clinical learning.

Conclusion

The COVID-19 pandemic brought new challenges and opportunities for students and CF at the University of Alberta’s Radiation Therapy department. The CF took this unique time to reimagine the clinical course, enhance student support, and engage in new clinical activities. Student wellness and safety guided both the timing and platform for a newly redesigned clinical course and orientation week. The unexpected consequences equipped our students to adapt to a rapidly changing clinical environment. The results of the quality improvement survey highlighted the importance and effectiveness of the activities in both the orientation week and throughout the clinical practicum. The lessons learned and the tips and tricks from this experience have already impacted the succeeding clinical course to support student transition into the clinic. The authors foresee that scaffolding these activities throughout the clinical trajectory would contribute both to student safety and their overall wellness in the program.

Tabulated data is available as supplementary data.

Acknowledgements

The authors would like to acknowledge Heather Gaunt and Kari Osmar for their contribution in the introduction of the communication workshops during the early iteration of this course to align with the program’s student-centered learning philosophy. The authors also wish to thank all the students who participated in the quality improvement survey questionnaire and for their courage and patience during this unprecedented time.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jmir.2021.06.007](https://doi.org/10.1016/j.jmir.2021.06.007).

APPENDIX A. Clinical Placement 1 In Times of COVID-19 Student Survey Questionnaire

Orientation Week:

- Which of the following activities helped to ease the transition from didactic to clinical?
 - Psychology session
 - It's Your Move
 - Elevator Spiel
 - Waiting Room Activity
 - Treatment Unit Observation
 - Storytelling Activity
 - Scenarios in a Jar
- Can you identify a particular activity or conversation that helped prepare you to deal with the safety practices in the clinic especially during this pandemic?

Interprofessional education (IPE):

- Which IPE experience did you learn the most from to attain the course objectives?
- Is there an IPE experience that could have augmented your learning?
- Do you have any suggestions to improve the overall IPE experience in this course?

Overall Course:

- How would you rate the kind of support you received to address your physical safety and overall wellness during this your time in the clinic?
- Were there any course learning outcomes that you perceived to be more challenging due to Covid-19 restrictions?
- How has 'continuous masking' impacted your learning?

- How would you rate the timeliness of new or revised safety information in the clinic?

References

- [1] Alberta Health Services (2020). Fit for Work Questionnaire. <https://www.albertahealthservices.ca/topics/Page17076.aspx>.
- [2] Government of Alberta (2020, June 19). COVID-19 Scientific Advisory Group Rapid Response Report. Chief Medical Officer ordered masks are mandatory provincewide (<https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-COVID-19-sag-mask-use-in-community-rapid-review.pdf>)
- [3] Government of Alberta (2020, June 26). CMOH order 26-2020: 2020 COVID-19 response. <https://open.alberta.ca/publications/cmoh-order-26-2020-COVID-19-response>.
- [4] Livingston E, Desai A, Berkwitz M. Sourcing personal protective equipment during the COVID-19 pandemic. *JAMA*. 2020;323(19):1912–1914. doi:10.1001/jama.2020.5317.
- [5] Rainford LA, Zanardo M, Buissink C, Decoster R, Hennessy W, Knapp K, McNulty JP. The impact of COVID-19 upon student radiographers and clinical training. *Radiography*. 2020. doi:10.1016/j.radi.2020.10.015.
- [6] Arandjelovic A, Arandjelovic K, Dwyer K, Shaw C. COVID-19: Considerations for Medical Education during a Pandemic. *MedEdPublish*. 2020;9(1):87. doi:10.15694/mep.2020.000087.1.
- [7] Choi B, Jegatheeswaran L, Minocha A. The impact of the COVID-19 pandemic on final year medical students in the United Kingdom: a national survey. *BMC Med Educ*. 2020;20(206):286–289. doi:10.1186/s12909-020-02117-1.
- [8] Cheung RY, Au TK. Nursing students' anxiety and clinical performance. *J Nurs Education*. 2011;50(5):286–289. doi:10.3928/01484834-20110131-08.
- [9] Snyder BA. Expressive art therapy techniques: healing the soul through creativity. *J Human Education Develop*. 1997;36:74–82. doi:10.1002/j.2164-4683.1997.tb00375.x.
- [10] Alberta Health Services. (2020, July 6). Restrictions expanded at Misericordia to minimize transmission of COVID-19. <https://www.albertahealthservices.ca/news/releases/2020/Page15545.aspx>.
- [11] Whyte S, Damelin A, Peacock M, Williams G, Osmar K. Stories at work: writing to learn, care and collaborate in radiation therapy. *Int J Whole Person Care*. 2014;1(2). doi:10.26443/ijwpc.v1i2.831.