Canadian Medical Education Journal
Revue canadienne de l'éducation médicale

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Cinq stratégies pour mieux structurer les stages cliniques pendant une pandémie

K Jean Chen, Samuel Wilson and Warren Cheung

Volume 14, Number 2, 2023

URI: https://id.erudit.org/iderudit/1102008ar
DOI: https://doi.org/10.36834/cmej.74000

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Publisher(s)

Canadian Medical Education Journal

ISSN

1923-1202 (digital)

Explore this journal

Cite this document

Chen, K., Wilson, S. & Cheung, W. (2023). Five ways to get a grip on designing medical student clerkship clinical rotations during a pandemic. *Canadian Medical Education Journal / Revue canadienne de l'éducation médicale*, *14*(2), 137–142. https://doi.org/10.36834/cmej.74000

Article abstract

During the COVID-19 pandemic, the task of preparing students for workplace-based clerkship and supporting learners' ongoing professional identity formation became incrementally more challenging. The former design of clerkship rotations was re-challenged and revolutionized going forward, as COVID-19 accelerated the development and implementation of e-Health and technology-enhanced learning (TEL). However, the practical integration of learning and teaching activities, and the application of well-thought-out first principles in pedagogy in higher education, remain difficult to implement in today's pandemic era. In this paper, using the transition-to-clerkship (T2C) course as an example, we outline the steps taken to implement our clerkship rotation, discussing various curricular challenges from the lenses of various stakeholders, and practical lessons learned.

Canadian Medical Education Journal

Black Ice

Five ways to get a grip on designing medical student clerkship clinical rotations during a pandemic

Cinq stratégies pour mieux structurer les stages cliniques pendant une pandémie

K Jean Chen,[1] Samuel Wilson,[1] Warren Cheung[1]

[1]University of Ottawa, Ontario, Canada;

Correspondence to: K Jean Chen; email: jeanchen789@gmail.com

Published ahead of issue: July 11, 2022; published: Apr 8, 2023. CMEJ 2023, 14(2) Available at https://doi.org/10.36834/cmej.74000

Abstract

During the COVID-19 pandemic, the task of preparing students for workplace-based clerkship and supporting learners' ongoing professional identity formation became incrementally more challenging. The former design of clerkship rotations was re-challenged and revolutionized going forward, as COVID-19 accelerated the development and implementation of e-Health and technology-enhanced learning (TEL). However, the practical integration of learning and teaching activities, and the application of well-thought-out first principles in pedagogy in higher education, remain difficult to implement in today's pandemic era. In this paper, using the transition-to-clerkship (T2C) course as an example, we outline the steps taken to implement our clerkship rotation, discussing various curricular challenges from the lenses of various stakeholders, and practical lessons learned.

Résumé

Pendant la pandémie de la COVID-19, la tâche de préparer les étudiants aux stages d'externat et de soutenir la construction de leur identité professionnelle est devenue plus difficile. La structure traditionnelle de l'externat a été remise en question et révolutionnée, car la COVID-19 a accéléré le développement et la mise en œuvre de la technologie des soins en santé et de l'apprentissage assisté par la technologie. Cependant, l'intégration des activités d'apprentissage et d'enseignement, et l'application de principes pédagogiques éprouvés dans l'enseignement supérieur restent difficiles à mettre en pratique dans le contexte actuel de pandémie. Dans cet article, prenant le cours de transition vers l'externat comme exemple, nous décrivons les étapes que nous avons suivies pour organiser notre stage d'externat et les défis rencontrés sur le plan du cursus par les diverses parties prenantes, et nous présentons les leçons pratiques que nous en avons tirées.

Curriculum's contextual nature means that it must adapt to changing societal needs while also considering the mode of delivery to the learner. The COVID-19 pandemic greatly changed the context of higher education by driving the integration of online coursework. To better understand and improve on gaps in our local medical curriculum, a Targeted Needs Assessment (TNA) of third-year medical students was conducted pre-pandemic to seek feedback on the Transition to Clerkship (T2C) curriculum design. The TNA was quickly expanded to also identify necessary curricular changes in light of the pandemic. The T2C curriculum previously emphasized integration of pre-clinical theoretical competencies with experiences in procedural skills and hospital workflow, combining didactic and simulation teaching. Our needs assessment identified that clerkship rotations should include an outcome-based education (OBE) approach, to allow for increased self-directed learning, to enable integration of pre-clerkship and clerkship training, and to deepen immersive professional socialization. The realities of medical education in a pandemic era, however, continue to provide new challenges in integrating these previously determined recommendations into practice.

Curriculum delivery during the pandemic necessitates proportionally more virtual, asynchronous learning strategies. As a result, preparing students for workplace-based clerkship and supporting learners' ongoing

professional identity formation became incrementally more challenging. To ensure that our learning environment supports our learners, we placed value on professional socialization and on-site learning. Despite logistical challenges imposed by the pandemic with everchanging public health protocols, hands-on active learning sessions were maintained with great effort and advocacy of involved faculty members and leaders. This was especially crucial when considering andragogy principles, where multimodal delivery was preferred to accommodate adults' varying learning preferences.[1,2] To maintain learner engagement while respecting COVID-19 restrictions, our curriculum delivery took on new structure: one-week of virtual learning that allows adult-centred pacing and to instill motivation, followed by one-week of experiential, immersive clinical learning at the hospital or community clinics, and ending with one week of outcome-based, small group sessions at the Simulation Centre.[3,4] This article describes five ways to get a grip on the process of clerkship rotation design during times of great disruption.

1. Listen to the stakeholders, especially the learners

The rapid need to adhere to COVID-19 pandemic restrictions necessitated an abbreviated, targeted needs assessment in clerkship rotation revision. TNA allowed us to focus our energy to face the unique challenges posed by the pandemic, by considering necessary changes in curricular goals, educational strategies, implementation, and evaluation.[5] This was undertaken to capture changing attitudes in medical education in the pandemic era. Data on students' reported needs were collected through rotation evaluation data and interviews.

Highlighted stakeholder: learners

Medical students prize authenticity and immersion in their learning. Unfortunately, pandemic restrictions were handed down out of necessity from isolated central leadership. To accommodate, students from past and present were provided a voice in clerkship revision. Through their feedback, efforts were made to ensure that immersive Patient-Centred Activities (PCA), where students participated in clinical placement during the first weeks of the Clerkship year, remained uninterrupted. Students overwhelmingly deemed PCA as a milestone moment of their medical education.

Wellness was another issue frequently raised in focus groups approaching curriculum revision. With wellness in mind, assessment that is frequent and low stakes, with opportunities for feedback, was identified as a novel method to enhance learner engagement and performance.[8,9] The pandemic provides a contextual driver for the addition of simulation, which offers a new venue for formative assessment and direct observation, to supplement the pre-existing assessment through clinical placement in PCA.

Highlighted stakeholder: hospitals and faculties

While prioritizing learner needs, learning outcomes were reviewed to ensure that T2C had an important role in the overall undergraduate medical education curriculum at large. Broad educational goals and rotation aims demonstrated to stakeholders what T2C hoped to achieve. When integrated into the curriculum matrix, they helped the convenor in getting hospital buy-in. This step was especially crucial, since the COVID-19 pandemic had put extra stress on hospital-based services, which had become increasingly departmentalized and reluctant to accept learners. Presentation of the T2C curricular aims and curriculum matrix to hospital, departmental and university leaders allowed us to achieve the necessary buy-in, finding clinical placements for all 126 students in less than one month. While this approach prioritized the learner, medical education leadership must remain cognizant of hospital pressures. The pandemic placed further stress on our Internal Medicine and Critical Care services. As critical stakeholders in students' medical education, their realities were considered when assigning students' clinical placement.

2. Link theory and practice to support change

While the pandemic was unprecedented and necessitated our curriculum revision, these changes were strengthened and supported by pre-existing pedagogical best practices and educational theories. While the Canadian medical education landscape shifts towards *curriculum as product* in the form of Competency-Based Medical Education (CBME), University of Ottawa's clerkship program was also built on theories of *curriculum as process*, *curriculum as praxis*, and *curriculum as a body of knowledge to be delivered*.[10-14] Each theory provided a foundation in building our revision. As previously discussed, curriculum design must be done to suit the learners. Clerks are at a unique stage of their medical training and have acquired much knowledge. As students progress from school-based education in pre-clerkship, to workplace-based learning in clerkship, they move from a curriculum based on product

(content and specified outcomes) to one that emphasizes a process and experiential learning approach.[15]

To bridge pre-clerkship content, *curriculum as a body of knowledge* was blended with *curriculum as product* where content was selected to match its objectives.[16] While OBE and *curriculum as product* were attractive in designing T2C for its analytical formulation of learner and program outcomes (for example, its utilitarian nature serves the current Canadian medical school climate of heightened accountability), OBE has been argued to be reductionist.[11,17] Therefore, *curriculum as process* and *praxis* were explored, placing greater weight on immersion within a multidisciplinary setting.

Curriculum as a body of knowledge, product, process, and praxis were not separate considerations but were reviewed holistically to identify each approach's curricular relevance and merit. This allowed us to adjust to the overall needs and aims of learners and program pragmatically. The emphasis on PCAs during workplace learning and small discussion groups via synchronous videoconferencing platforms highlighted the interaction between students and teachers.[18] By weaving in near-peer panel discussions, our revision viewed the course through a social lens to empower students' self-efficacy.[19,20] Anticipatory anxiety was reduced through a clerkship program grounded in social learning theory.[21-23] The revised clerkship required learners to be authentically engrossed in the hospital setting with early integration into community of practice; students were obligated to be active in situated learning and legitimate peripheral participation through the mandatory PCA clinical placements.[24] Through realistic setting and collaborative learning, learners constructed their own learning; their performance scaffolded by peers and preceptors by reflectively discussing their PCA experience and clinical case-based learnings in small groups.[25,26] This scaffolding afforded by pre-clerkship's *curriculum as content* and *product* empowered clerkship learners with more independence in participating in our *curriculum as process* and *praxis*. While seemingly polarizing, the *content/product* and *process/praxis* models were amalgamated: factual learning that focused on outcomes and content led to a longitudinal praxis approach that focused on experiential learning, which subsequently segued into core clerkship and transformative learning.[27,28]

3. Protect the learning environment

Social distancing has been an important public health measure to reduce the spread of COVID-19. This added a new layer of challenge in delivering core clerkship trainings. Many sessions were substituted with synchronous virtual learning, with many students suffering from "Zoom fatigue" as a result. The definition of medical school was challenged in 2020. Is it still a physical space of formal education? How is problem- and case-based learning affected when discussions take place in break-out rooms across the province and across time-zones? How can the students and speakers read the room during lecture delivery when students' cameras are turned off due to bandwidth concerns? Novel strategies have been explored to address these challenges. For example, one local study demonstrated effective knowledge retention and overwhelming student approval of educational videos (e.g. video podcasts) when paired with a knowledge quiz.[29] This type of motivating formative feedback was applied in T2C. Virtual reality simulation has also been explored as an adjunct to bedside teaching. T2C added additional in-person skill- and simulation-training that were highly valued by students.

Our curriculum revision demonstrated that "medical school" as defined by the physical space must be preserved. Its role as the focal point of student-student, and interdisciplinary interaction cannot be understated. Medicine is a relationship-based profession. We expect an increasing use of synchronous and asynchronous virtual education-delivery models in the 20-pandemic era, and we expect a move towards flexibility in curriculum delivery where time-spent does not equate to material-learnt. By leveraging simulation and virtual reality technologies, T2C optimized time spent face-to-face while ensuring the safety of students, patients, and instructors. Risks were partially mitigated through skill-knowledge acquisition at home (synchronous virtual delivery and virtual reality) and use of dedicated training spaces (simulation centre) before clinical placement. Judicious use of technology helped address concerns with virtual learning in a largely hands-on and physical learning field. The concepts of medical school as a physical and temporal space dedicated to collective exchanges of ideas in higher education seems even more critical in 2022 and beyond.

4. Incorporate judiciously selected peer-reviewed, evidence-based FOAMed

The COVID-19 pandemic accelerated the growth and use of Free Open Access Medical Education (FOAMed). Independent of platform, FOAMed is a globally accessible crowd-sourced educational adjunct providing both synchronous and asynchronous content meant to supplement conventional medical education.[30] Medical education, and its spirit of life-long learning, embraced the FOAMed philosophy. While democratizing learning by collating free and accessible educational resources to all healthcare providers, curricular structure must, however, be maintained to ensure a spiral lattice is provided to guide our medical students' learning. The COVID-19 pandemic showed us FOAMed's value and revealed the result of over-reliance on such heterogeneous open-source means of knowledge delivery. In the clerkship setting, students may reference educational materials "on-the-fly" to supplement their workplace-based learning, especially when uncertain of a medical topic; FOAMed offers readily accessible clinical references, often available on a desktop or cellphone internet browser, enticing clerks for exactly these reasons.[31] Open-access resources must be supported, but such content needs to be contextual and built within the pedagogical space of the curriculum. Commercialization of online materials must be another consideration. COVID-19 accelerated the growth of many mobile and web-based learning platforms. While many schools scrambled for digital material during the earlier stage of the pandemic, such material should remain peer-reviewed, evidence-based, and non-biased to maintain the integrity of higher education.

5. Build in flexibility through a multimodal approach

To develop a revised course during a pandemic required not only rapid adoption of best practices but also consideration of fiscal realities within a tight timeline.[32] From the targeted needs assessment, aims were developed, intended learning outcomes (ILOs) were reviewed and standardized, and multimodal learning activities and assessments were implemented to allow for tailored learning paths. In addition, aims and ILOs directed clerkship content and assisted with selecting appropriate learning activities and assessment methods. Previously, T2C faced the challenges of topic overgrowth with subject experts' requests to cover increasing content; this revision provided an opportunity for appraisal. The pandemic hastened the adoption of hybrid teaching and learning. ILOs were adjusted to reflect changes in technology. The COVID-19 pandemic showed us the importance of flexibility and of providing a multi-pronged delivery, to allow flexibility in time, space, and instructional approaches. This allowed for unexpected learning relevant to T2C's aims and supported curiosity and identity formation.[33,34] Instead of padding lectures into an already inclusive transitional unit, T2C incorporated selective enabling lectures, readings, and asynchronous web-based modules to scaffold interactive workshops.

The COVID-19 pandemic kicked the already "trendy" technology-enhanced learning into high gear. All lectures were converted to synchronous and asynchronous lecture capture. Virtual reality replaced hospital orientation tours. Reusable learning objects were re-designed (e.g., Electronic Medical Record training, prescription writing). Hybrid learning was used for skills sessions that made use of both low- and high-fidelity simulations (e.g. phlebotomy videos and arterial blood gas draw *flipped classroom*) prior to in-person workshops. Balance was explicitly sought to limit the sense of isolation associated with over-reliance on technology via face-to-face learning and a near-peer support mentorship network. Complexities in incorporating technologies were navigated by leveraging pre-existing continuing professional development (CPD) sessions. Multiple educational methods accommodated learning preferences, reinforced learning, and facilitated integration.[5] Critical reflection and reflexivity were imperative skills for our transitional rotation, and so protected time was placed in T2C learner schedules to allow for cognitive integration and reflection.[35,36] Critical reflection was also chosen as a formative learner assessment activity. Debriefing in simulation was emphasized as a form of structured reflection.[37] Students were encouraged to produce narratives that could be either shared or collected into their ePortfolio. The added emphasis on workplace learning, despite the emergence of a world-wide pandemic, was based on learners' felt needs: authentic (not perfunctory) clinical experiences were crucial in preparing students for a career as a physician. The contextualized and clinically integrated educational methods were mirrored by T2C's multiple, low-stakes, workplace, and peer-based formative assessments, which further underscored our emphasis on flexibility.

Conclusion

We have outlined five ways to get a grip on preparing students for clinical practice through a process of curriculum revision necessitated by the COVID-19 pandemic. However, learners' readiness will require support from all stakeholders to ensure that learning environment is protected to deliver a flexible and robust curriculum.

Conflicts of Interest: KJC is the Transition-to-Clerkship rotation director (Anglophone stream) and receives a stipend from the University of Ottawa for this administrative role.
Funding: None to declare.

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