Impact of COVID-19 on Medical Education and Assessment: Lessons Learned

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Medicine is learned by the bedside and not in the classroom

William Osler

Impact of COVID-19 on Medical Education

- Unprecedented and far reaching
- Presents unique challenges to medical schools
- We have been here before
  - Effect of SARS on medical education in China at the turn of the century
  - Officially cancelled formal teaching on wards and delayed exams
  - Canada: the impact of the SARS restrictions led to the cessation of clinical clerkships and electives for students for up to 6 weeks
- Many improvements to medical education are a natural consequence of disruptive moments
- Embrace the safety and well-being of students in the context of providing patient-centred care

Faculty Development

- Rapid shift to working from home for academic duties online
- Embraced open-access resources
- COVID-19-related webinars
- Faculty previously resistant to technology-enhanced learning now have evidence of its ability to meet the needs of students who value adaptive and self-directed study
- Motivated learners and educators tasked with providing technological support for those less savvy

Going from Sage on Stage to Guide by the Side

- From lecturer to learning facilitator
- Efficient and effective use of technology requires an understanding not only of these platforms and their features but also of their inherent limitations
- Adaptations to social distancing in medical education include
  - Creative uses of video conferencing software, social media platforms
  - Free Open Access medical education tools
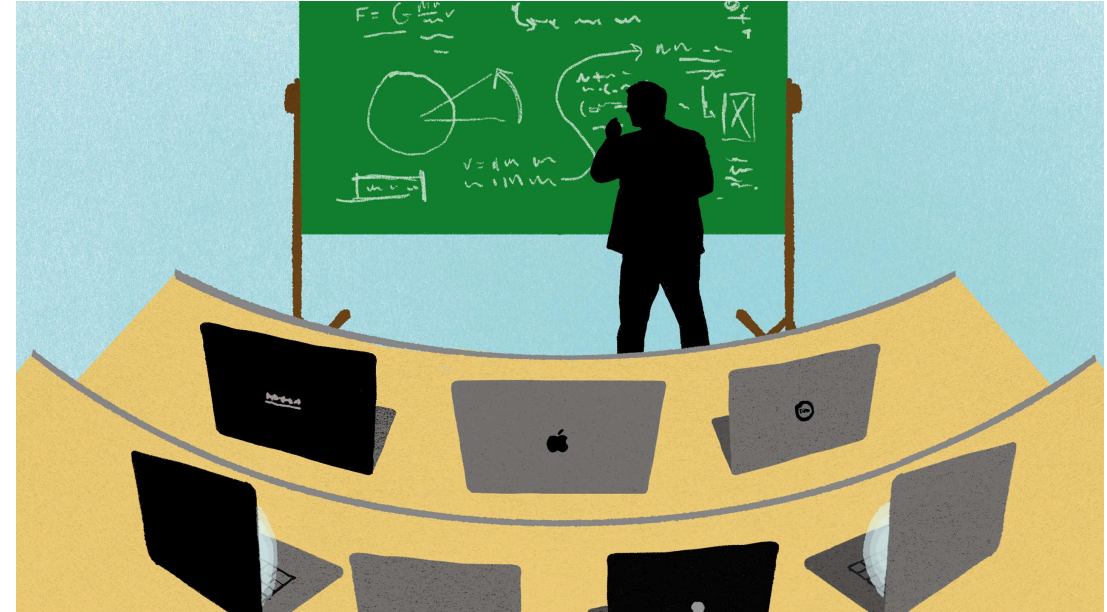
Mitigating Stress on Students

- Uncertainty and anxiety about personal safety and continuity of learning experience

- How will pandemic impact their graduation timeline, financial liability, and housing insecurity

- Rapid-response teams helps to empower students and faculty

- Effective communication is especially critical

Medical Curricular Adaptations

- Flexible in terms of delivery and administration, building on the existing pedagogical design

- Governance structure of the curriculum should be maintained to ensure compliance with accreditation standards

- Gentler impact on pre-clinical students
  - Libraries and anatomy laboratories shut down
  - All in-person classes (e.g., case-based learning, lectures, discussion groups) transitioned to remote teaching via Zoom, literally within several days
  - YouTube teaching videos, mobile apps, and previously recorded didactic sessions

Clinical Students

- Clinical clerkship (core and elective rotations, years 3 and 4) postponed till the summer (and now completed)
- Replaced with flexible learning experience projects
  - Conducting COVID-19 contact tracing
  - Staffing telephone hotlines and call centres
- Virtual patient software (InSimu)
- Proactive academic advising and student counselling
- Telehealth patient encounters
- Final-year students completed last remaining rotations on COVID free wards and graduated on time in June 2020

Challenges and Mitigating Strategies

- In-person clinical experiences are difficult to replicate virtually, and missed experiences present challenges

- Live virtual clinical skills sessions

- Mitigating strategies should be principle based, forward looking, and compassionate

- Modifications to the assessment framework
  - Written and Multiple-choice examinations delivered online via Wiseflow
 - Final-year clinical exams in simulation lab

What did/will Students Lose?

- Less effective emergency remote teaching esp. in clinical years
- Undivided attention of their clinical teachers
- Opportunity for personal development through conference presentations ??

What Do Students/Faculty Gain?

- Persistence and adaptability, resilience, grit, and tolerance for uncertainty

- More effective online instruction catalyzed by the urgency of the pandemic

- Free Open Access medical education tools
  - E.g., blogs, websites, and videos
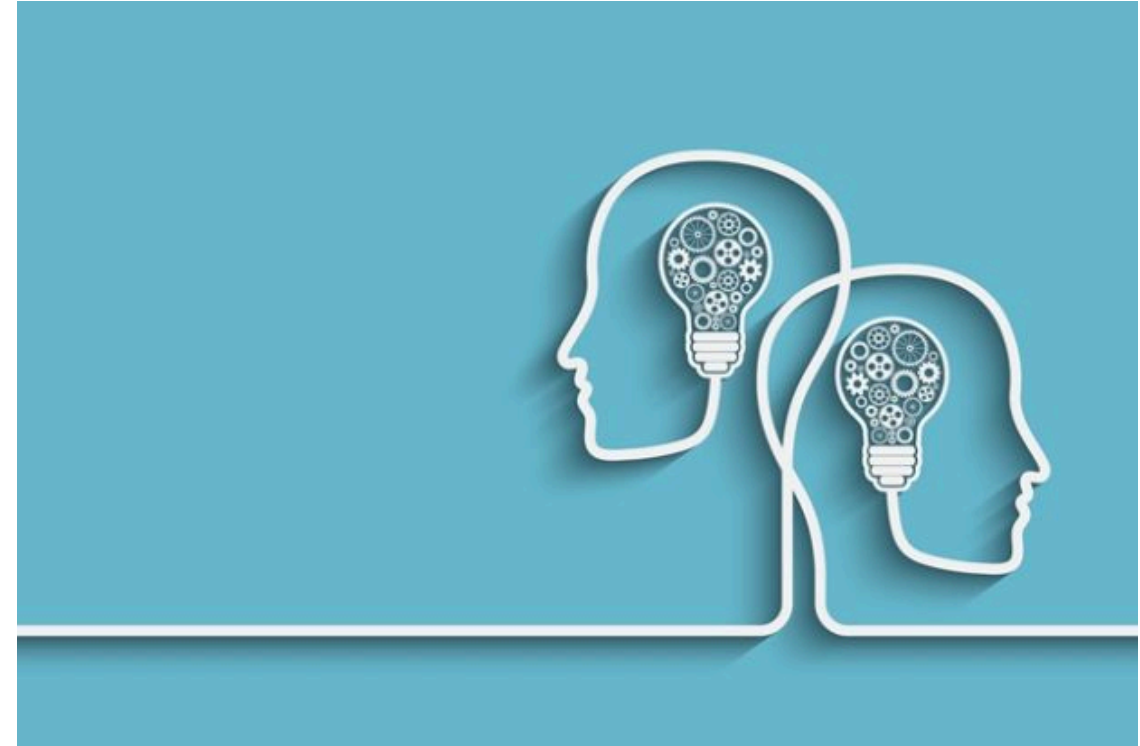
Zoom/Teams etc etc

Feature	Description	Example
Screenshare	Allows either the meeting host or participants to share their device screen with other participants	A lecture with slides on basics of glomerular disease.
Whiteboard	Host/participant can create a white canvas seen by all participants.Can be used to draw with various colors, pens, or text. Drawings can be saved at the end of the meeting.	A "chalk talk" on acute kidney injury.
Polling	Host can write 255 character multiple choice questions (single or multiple answer) with 10 choices that can be shared with the group. Each poll can be launched/cleared as needed.	A nephrology board review session during which participants answer practice questions.

Zoom/Teams etc etc

Breakout rooms	The host can separate the group into smaller groups for a specific period of time before recovening as a larger group. Each group can communicate with the host to ask them to join their group to answer questions or discuss.	A medical student session during which they solve acid-base disorder problems in small groups of 4 students.
Annotation	Participants may use the same tools that are available to draw on the whiteboard to annotate on any screen that is shared.	A learner circles the basement membrane deposits on a pathology slide shared from the pathologist's microscope.

Zoom/Teams etc etc

Chat and file share	Similar to instant messaging, participants can share messages with the whole group or individual participants.	Learners pose questions during a lecture on nephrolithiasis. After the lecture, a file with slides is shared with all participants.
Nonverbal feedback	Participants can communicate with the host using preset reactions (eg, yes, no, and raise hand)	A medical student raises their hand to ask a question about hyponatremia.

Zoom/Teams etc etc

Virtual background	The user uploads a photo or uses existing images (eg, outer space) to change their own background.	Create an ice breaker by asking learners to use a background of their favorite place.
Recording	The session is recorded and stored to either the host's computer or Zoom Cloud account. If the screen sharing is used, the screen is recorded with a thumbnail of the speaker in the corner. Chat sessions and an audio transcript of the session are also saved.	A nephrology fellow on night float misses a board review session and then views the session the following week.

Zoom 101

Strategies and Tips to Optimize Virtual Medical Education

Adjust your camera to the eye level and find a quiet area

Encourage learners to connect to both audio and video

To minimize background noise, mute participant,s and encourage them to unmute as needed

If hosting a video conferencing session, start the session a few minutes early. Enable the "waiting room" as needed and admit participants once the speaker is ready

Orient learners to all different options to interact (eg, chat, nonverbal feedback, unmute)

Schedule faculty development or orientation sessions for educators to review use of software before teaching sessions

Place the chat window in a visible location on the screen while teaching, or designate a chat moderator to consolidate and verbalize questions

Set up an "ice breaker" poll and introduce participants to software features

Consider the use of standardized patients via video conferencing platforms

If internet connectivity is poor, consider assigning a cohost to ensure that the meeting remains active

In a setting like "Grand Rounds," consider unmuting all participants at the end of a session to allow for applause

Consider sharing meeting links privately to minimize intrusion by unwanted participants. If shared more publicly, adjust security settings (eg, limit chat, unmuting) to avoid disruptions.

For recurring sessions with the same group, consider using 1 meeting link

New Normal in Uncertain COVID-19 era

- Medical education will likely never be the same

- We must adapt to learning at a distance

- When used optimally and despite their inherent limitations, virtual tools can provide effective and efficient medical education

- Pandemic has provided an unexpected opportunity to push forward innovations in medical education and rigorously study the impact of this emerging educational paradigm on our trainees

Every Challenge is an Opportunity

- Create a better medical school experience with improved flexibility and outcomes that still ensures competence

- Lessons learned from the medical education adaptations during the pandemic can potentially be extrapolated to other crisis situations

Teaching

"Working hard for something we don't care about is called stress, while working hard for something we love is called passion"

S. Sinek