

## A Review on Global Challenges of Pandemic Disease to Medical Educators

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### Abstract

Students have the opportunity to apply their medical knowledge and skills for the benefit of their professional development and the social welfare of their community, engaging in different roles according to the level of expertise achieved in the training process. "We are currently experiencing a transcendental moment in clinical education because, in addition to the uncertainty that the medical student typically faces during an educational procedure, he or she has to face the fear of contagion and disease during the health contingency for COVID-19. The novel coronavirus (COVID-19) pandemic of 2020 has had profound impacts on medical education, both domestic and abroad. In this consensus paper from the American College of Academic International Medicine, we systematically discuss the impact of the pandemic both immediately and long term on international medical education, bedside teaching, procedural teaching, didactics and curriculum, accreditation, and mental health of medical teachers and learners. We discuss some strategies that have been implemented to mitigate the negative impact of the pandemic while providing reasons for hope in the future.

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### Introduction

A pandemic is the worldwide spread of a new disease. The past two decades have witnessed changes in how humans live. Travel and trade, rapid urbanization, limited access to health care as well as environmental degradation and other trends all create the conditions for epidemics to thrive and grow. At the same time, the science and knowledge around infectious hazards are constantly evolving, demanding better response to health emergencies. This introductory level online course aims to equip frontline responders with the latest know-how to manage outbreaks of known and emerging epidemic-prone diseases in the 21<sup>st</sup> century. It offers the most relevant scientific, technical and operational knowledge through video presentations and self-tests [1].

### Impact

The emergence and rapid spread of COVID-19 is creating major strains on health systems and economies. During this time, focus has been on how to contain the COVID-19 pandemic. The measures adopted to slow the spread have disrupted health professions' education. Students may acquire the virus during the course of training and may potentially spread the virus even

when asymptomatic. This is why educational institutions were shutdown both for safety of students and communities [2-4]. Social distancing measures impede students from assembling in learning labs, lecture halls, or small-group rooms [5]. Due to closure of institutions, both laboratory learning in labs and clinical learning is affected. Also, students' core and elective clinical postings have been cancelled or deferred. Ultimately assessment and academic progress may be delayed. Students have missed the chance to learn about practical response in this pandemic. Some of the medical students feel that they have been sidelined in the fight against COVID-19 [6]. Faiq S, et al. mentioned that medical schools are indeed training the future 'essential personnel' and must help prepare students to address the next pandemic. Students can learn from the mistakes that we may make during the current pandemic and how to avoid similar situations down the line [7]. As conferences all over the world have been postponed, many medical students have also lost the opportunity for personal development through conference presentations and deliberations [8]. Community posting of the students have also been deferred; they are missing the opportunity to learn healthcare in the community. All over the world, COVID-19 has

forced management and faculty to examine all elements of the medical program [9]. The COVID-19 situation has been evolving rapidly both globally and locally. Medical schools, with their clinical partners' knowledge and input, should vigilantly assess their local situation constantly to make determinations about their medical students' participation in direct patient contact activities [10].

**Positive impact of pandemic disease on education [11]:** Though the outbreak of COVID-19 has created many negative impacts on education, educational institutions of India have accepted the challenges and trying their best to provide seamless support services to the students during the pandemic. Indian education system got the opportunity for transformation from traditional system to a new era. The following points may be considered as the positive impacts -

- **Move towards blended learning:** COVID-19 has accelerated adoption of digital technologies to deliver education. Educational institutions moved towards blended mode of learning. It encouraged all teachers and students to become more technology savvy. New ways of delivery and assessments of learning opened immense opportunities for a major transformation in the area of curriculum development and pedagogy. It also gives access to large pools of learners at a time.
- **Rise in use of learning management systems:** Use of learning management Systems by educational institutions became a great demand. It opened a great opportunity for the companies those have been developing and strengthening learning management systems for use educational institutions.
- **Enhance the use of soft copy of learning material:** In lockdown situation students were not able to collect the hard copies of study materials and hence most of the students used of soft copies materials for reference.
- **Improvement in collaborative work:** There is a new opportunity where collaborative teaching and learning can take on new forms. Collaborations can also happen among faculty/teachers across the world to benefit from each other.
- **Rise in online meetings:** The pandemic has created a massive rise in teleconferencing, virtual meetings, webinars and e-conferencing opportunities.
- **Enhanced digital literacy:** The pandemic situation induced people to learn and use digital technology and resulted in increasing the digital literacy.

**Negative impact of pandemic disease on education [11]:** Education sector has suffered a lot due to the outbreak of COVID-19. It has created many negative impacts on education and some of them are as pointed below:

- **Educational activity hampered:** Classes have been suspended and exams at different levels postponed.

Different boards have already Post poned the annual examinations and entrance tests. Admission process got delayed. Due to continuity in lockdown, student suffered a loss of nearly 3 months of the full academic year of 2020-21 which is going to further deteriorate the situation of continuity in education and the as students would face much difficulty in resuming schooling again after a huge gap.

- **Impact on employment:** Most of the recruitment got postponed due to COVID-19 Placements for students may also be affected with companies delaying the on board of students. Unemployment rate is expected to be increased due to this pandemic. In India, there is no recruitment in Govt. Sector and fresh graduates fear withdrawal of their job offers from private sectors because of the current situation. The Centre for Monitoring Indian Economy's estimates on unemployment shot up from 8.4% in mid-March to 23% in early April and the urban unemployment rate to 30.9% (Educationasia.in). When the unemployment increases then the education gradually decreases as people struggle for food rather than education.
- **Unprepared teachers/students for online education:** Not all teachers/students are good at it or at least not all of them were ready for this sudden transition from face to face learning to online learning. Most of the teachers are just conducting lectures on video platforms such as Zoom, Google meet etc. which may not be real online learning without any dedicated online learning platform.
- **Reduced global employment opportunity:** Some may lose their jobs from other countries and the pass out students may not get their job outside India due to restrictions caused by COVID-19. Many Indians might have returned home after losing their jobs overseas due to COVID-19. Hence, the fresh students who are likely to enter the job market shortly may face difficulty in getting suitable employment. Many students who have already got jobs through campus interviews may not be able to join their jobs due to lockdown. The Indians who have been doing their jobs abroad may lose their jobs.

### The impact of pandemic disease on international education and collaboration

**Travel restrictions:** One of the most concrete barriers to international educational offerings during the pandemic has been travel restrictions. By April 2020, domestic and international travel restrictions were introduced by over 130 countries due to the COVID-19 pandemic [1]. These restrictions affected the international academic medicine community as teachers, clinicians, researchers, and public health specialists alike were either unable to reach international sites, or unable to return to their countries of origin. With 90% of air travel grounded and quarantine a reality, an inherent dilemma was created between domestic and global missions for these professionals. Mandatory

quarantine for 2 weeks both on arrival and upon return from any international destination effectively halted international educational endeavors. Finally, United States (US) Department of State mandates pulled educators back into the US, citing that: 1. Educators and learners abroad may face unpredictable circumstances, quarantine, and sudden travel restrictions; and 2. Adequate health care may not be available overseas for these educators and learners, and therefore, these personnel were asked to return to the US as soon as possible [2].

**Travel risk:** For the AIM community who chose to continue to travel, the COVID-19 pandemic has made travelling a risky event. Each person carrying the Sars-CoV-2 virus infects approximately 3 new people through respiratory droplets, and the role of aerosol transmission is emerging. The risk of getting or unwittingly transmitting COVID-19 without any prophylaxis, treatment, or vaccine has made travel concerning for most of the AIM community. At the time of this manuscript, many countries internationally and states in the US have begun loosening restrictions on travel although virus cases are regionally on the rise. This is deeply concerning to the safety and well-being of the global community, as this is how the virus became a pandemic in the first place.

## The Impact of COVID-19 on Bedside Medical Education

**Impact on students:** Domestically, COVID-19 has had impacts on bedside medical student education. As students have been considered non-essential personnel, and as hospitals with large volumes of COVID positive patients have limited Personal Protection Equipment (PPE), students have been removed from the patient care arena for safety purposes and resource conservation. This experiential loss will have profound cognitive and skill impact on the next generation of medical students who are in the clinical learning environment. Furthermore, it has the potential to disenfranchise them from their calling as physicians as the patient-physician experience is critical in the development of training milestones and core competencies.

Medical student education, beyond the opportunity to learn from patients at the bedside, has also been affected by reduced “live” exposure with colleagues, where they learn not only clinical and core skills, but also professionalism and communication skills, not easily taught without human interaction and role modeling. This includes non-verbal communication and leadership skills that are often learned by trainee observation. It is unclear what the long-term impacts of this will be.

The lost experiential and Undergraduate Medical Education (UME) skills will undoubtedly lead to weaker physicians if we maintain a traditional model without innovation. How do we make up this educational shortfall? Should medical schools be lengthened? Do we have to reduce expectations or graduation requirements? The solutions will need to be multifactorial and adaptable to our changing landscape. Educators are opening up virtual GME opportunities for junior learners and re-focusing touch points with mentorship. Students are utilizing shared learning creations from around the world to supplement gaps and blind spots.

**Traditional roles of the medical student:** Coronavirus disease 2019 (COVID-19) has upended medical education. Owing to widespread uncertainty and disagreement about the appropriate roles for medical students during a pandemic, student participation in clinical care has varied across institutions. Some schools forbid any patient interaction, whereas others have recruited students for hospital-based roles or even graduated medical students early so that they can serve as frontline clinicians [12-14].

The AAMC frames its guidance by highlighting that “medical students are students, not employees. They are not yet MDs” [15]. Although true, this framing fails to acknowledge that medical students have roles not only as learners, but also as clinicians-in-training. The primary role of medical students is to learn medicine. However, students are also clinicians who care for patients. They interview patients, call consults, respond to pages, communicate with families, write notes, assist with procedures, and help with care coordination and discharge planning.

During the COVID-19 pandemic, medical students acting solely as learners introduce unnecessary risks for patients and other clinicians. Medical students can act as additional vectors for viral transmission, consume Personal Protective Equipment (PPE) of which there are serious shortages and place additional burden on teaching physicians. Medical education alone does not justify these risks [15].

However, allowing medical students to serve in clinical roles may benefit patients overall. There is precedent for this kind of involvement. During the Spanish flu outbreak of 1918, medical students at the University of Pennsylvania cared for patients in the capacity of physicians [16]. In a 1952 polio epidemic in Denmark, groups of medical students were tasked with manually ventilating patients [17]. In the current pandemic, medical schools in the United States, Italy, and the United Kingdom are graduating medical students early on the condition that they serve as frontline clinicians. The health care system should not wait until it reaches a breaking point to invite medical students to serve. Medical students are adept at many clinical roles. Allowing them to serve may improve patient care long before the health care system reaches a personnel crisis, and in some cases may even help prevent such crises from occurring. In this article, we suggest several roles for medical students to play in offsetting the burdens caused by COVID-19.

**Clinical roles for medical students during the COVID-19 pandemic:** We presume that the AAMC's guidelines stem primarily from concerns about the risks for infection to patients and students, PPE shortages, and associated liability issues. These risks undoubtedly warrant careful consideration, but they can be mitigated. We believe that allowing students to perform clinical tasks may, in specific instances, confer benefits to patients that outweigh the risks associated with students' involvement.

First, medical students can assist with routine outpatient clinical care. Medical students can boost the efficiency of lightly staffed clinics by taking histories, calling patients with laboratory test

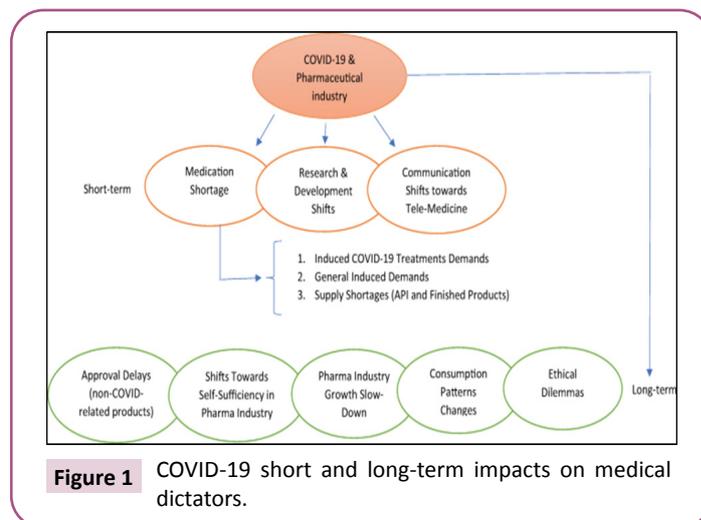
results, providing patient education, documenting visits, and fielding questions about COVID-19. Even in a pandemic, patients with chronic conditions need on-going care. Pregnant women need routine check-ins, and discharged patients require follow-up. Many of these tasks can be performed via telemedicine, so there would be no risk for infectious transmission.

Second, students can provide care on inpatient services that do not have patients with COVID-19. Under the supervision of senior residents or attending physicians, advanced medical students ("sub interns") usually carry their own patients. In the absence of medical students, these patients would need to be covered by house officers, potentially exacerbating the personnel shortage about which the AAMC is concerned. Although this form of involvement would require appropriate PPE, staffing hospital services with upper-level students could maximize the availability of other clinicians to treat patients with COVID-19.

If students are permitted to work in hospitals, they would be at increased personal risk from severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2). However, students are also at increased risk for contracting SARS-CoV-2 while screening visitors entering hospitals, hosting PPE drives, and providing childcare for physicians, all of which they are already being deployed to do, and some of which require PPE. In addition, the risks incurred from student involvement may be lower than the risks to retired clinician volunteers, who are more susceptible to complications of COVID-19 owing to their age. However, given that the personal risks cannot be eliminated, we agree with the AAMC. That any in-person involvement of medical students should be voluntary.

Finally, medical students can remotely assist in the care of patients with COVID-19. They can monitor patients with mild COVID-19 symptoms who are not admitted; expedite care for admitted patients by reviewing charts, drafting notes, and ensuring tests are performed; and follow-up with patients after discharge. Although all of the roles we have discussed would require physician supervision, they would reduce the overall burden on clinical teams. We believe they would, on balance, improve patient care (Figure 1).

In conclusion, as medical schools decide how to proceed in the time of COVID-19, we are wary of attempts to shelter students from voluntary service. Medical students are clinicians who have responsibilities to patients and who should be allowed to full fill their duties as such. In addition to the benefits to patients and the health care system, allowing students to participate reinforces important values, such as altruism, service in times of crisis, and solidarity with the profession. Students are willing and able to fight in this historic pandemic and should be given the opportunity [18].



## Discussion and Conclusion

The significance of medical education and the need for change is being acknowledged both in public and private medical schools. Medical educators have initiated the process of transforming education and improving quality prior to the COVID-19 outbreak. The COVID-19 pandemic has however, changed the landscape of medical education. The situation has forced medical educationists to think 'out of the box' and act innovatively using digital technology. The pandemic presented various challenges like challenges to faculty in shifting from face-to-face to online teaching, challenges to students in shifting to online learning, challenges in conducting assessment, challenges in accessing internet and using technology, challenges to institution in organizing online teaching learning activities during lock down. It is said that challenges bring opportunities. COVID-19 may also bring opportunities. The pandemic has forced and motivated us to transform education method, modality and process, which may demand greater effort initially, but provides teacher, faculty and facilitator impetus to keep pace with current trends in technology, e.g. digital gadgets, programs and software, modified forms of media with innovative audio visual aids. This is a new experience or opportunity to learn, understand and update about new needs and new modes of delivery of medical education for all stakeholders involved and may also have long-lasting impact on healthcare.

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