

LETTER TO THE EDITOR**Report of Acute Adaptive Policies to Maximize the Educational Efficacy of the Clinical Hospital Ward during COVID-19 Pandemia****Dear Editor**

The health care system is located in the center of pressure of the COVID-19 burden. Prevention of this pandemic has changed medical education to shut down classes or many routines for which gathering of educational elements in close environments is essential (1, 2). Hospitals, as the main place of clinical education, are now the source for COVID-19 patients or at least asymptomatic carriers (staff and patients) of its highly communicable virus (3, 4). To reduce human-human and human-surface contacts, we should change our education policies concerning the medical students, interns, residents, fellows, faculty members, and administrative staff.

During COVID-19 crisis in Tehran, Shariati Hospital and orthopedic ward have been the referral center of trauma patients among three Tehran University Orthopedic wards. Obviously symptomatic and asymptomatic patients were admitted. The educational team members may also be asymptomatic carriers.

The routine weekly educational program of our orthopedic ward used to include one-hour morning report, five days a week; group discussion for fellows and residents; every day bedside resident rounds; 6-days bedside round run by a junior or senior faculty member; outpatient clinics; and inpatient educational rounds for medical students and interns. To protect the educational team and patients and save the workforce in COVID-19 era, these routines should have been held or run by different strategies (5). High speed internet, electronic devices like smartphone, tablets, and laptops were used by almost all the educational team members. Also, user friendly virtual applications (e.g. Skype, WhatsApp, and telegram) and some software and intranet infrastructure like online computer based exams have created efficient potentials to be implemented rapidly in force major situations like COVID-19 crisis. On this basis our applied strategies included:

To eliminate or decrease direct contacts

Updated personal protection principles, related equipment, and the details about their application were trained through offline videos, pdf files or presentations

in line with hospital policies. Common communication platforms like Whatsapp, skype, Sky room and Adobe connect were applied for all education team members (One common group for all education team). Handwritten documentation was cancelled as much as possible and all records and orders were performed in digital format.

Medical students were exempted from presence in the hospital. Interns were also decreased as much as possible. Each physician (including, faculty member, fellow, resident) was assigned to a single patient according to the risk of patient's problem and condition as well as the physician's experience. The hierarchical system among residents was suspended and all grades were able to contact the responsible faculty members directly.

A flexible virtual program of daily shifts was planned weekly. The responsible on-shift physicians were responsible to manage emergency, orthopedic ward, and the operating room as well as the possible problems in follow-up of previously treated patients at clinic. The flexibility permits each member of the team to be quarantine at home for 14 days after any suspicious contact.

Outpatient clinics remained open just for post surgery follow-up visits. In addition, to minimize outpatient referrals, almost every operated patient had access to their responsible surgeon (resident or faculty member) through virtual communication to ask their questions and receive guidance throughout the post operative weeks.

To continue education

Discrete virtual groups were created for medical students and interns as undergraduate students as well as the residents to continue their specific educational goals under the supervision of related faculty members.

Offline education packages for medical undergraduate groups were created by faculty members on the basis of their curriculum. Nineteen Powerpoint slide show files (each with 30 to 60 min voice explanations) were collected from the orthopedic group faculty members and uploaded on the web based Learning Management System(LMS) of Tehran University of Medical Sciences

Corresponding Author: Leila Oryadi Zanjani, Department of Orthopedics and trauma surgery, Shariati Hospital, TUMS, Tehran, Iran
Email: leila_zanjani@yahoo.com



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[URL: tumsnavid.vums.ac.ir]. The medical students were asked to pass the online classes and submit the answers of descriptive mini quizzes. The fellows and residents were responsible to plan small discussions and quizzes for the students and interns group every day.

Online morning reports were held in Sky room to report last night clinical activities and decision about problem cases. The fellows and residents had 10 minutes planned online or offline presentations on the basis of program. Online and offline questions and group discussions were permitted and moderated in common and specific groups. Virtual book review sessions, based on a determined plan for residents were run by responsible faculty members in skyroom or adobe connect platforms provided by the university. One-hour journal club per week was run in common platform. Grand rounds, however, were not possible to run.

Home based virtual evaluating multiple choice question exams were run for all levels according to their designed program. For medical student we collected a 1000 questions bank classified in 4 levels of difficulty in all subjects of orthopedics. The faculty members and also previous exams were the sources of questions. Ten sets of randomized 60 questions exams were produced by

software for each course of theoretical orthopedics. The medical students could answer their own exam in their private LMS page on the predefined date and time.

Interns' and residents' thesis and proposals evaluation sessions were continued through videoconferencing. The education and research board of the ward had online videoconferencing by planned program. Caution was taken to consider forensic and medical ethical issues related to this unique era.

Leila Oryadi Zanjani MD¹

Amir Reza Farhoud MD²

Saeed-reza Mehrpour MD¹

Roya Nasle Seraji BSc¹

1 Department of Orthopedics and Trauma Surgery, Shariati Hospital, TUMS, Tehran, Iran

2 Department of Orthopedics, Imam Hospital Complex, Joint Reconstruction Research Centre, Tehran University of Medical Sciences, Tehran, Iran

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