

The Strategy Management of a SARS-CoV-2 Outbreak in an Eastern European Hospital

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The new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is an ongoing global challenge with unpredictable future evolution. Different epidemiological and clinical strategies currently are being evaluated, and the optimal treatment modalities are still to be determined [1]. Developed healthcare systems have been struggling to cope with the additional medical requirements and the lockdown measures, adopted by many countries, are presenting a substantial economic burden [2].

Countries with more fragile economies and medical systems are facing difficult choices [3]. Romania possesses a progressive yet fragile healthcare system. The national lockdown was declared on 25th March 2020, in order to gain time for better logistic healthcare preparations.

This brief report aims to describe the challenges of managing an in-hospital SARS-CoV-2 outbreak in an academic hospital of national importance. Our institution is the primary national centre for liver transplantation and liver surgery, a major centre for bone marrow transplantation and one of the two national centres for renal transplantation. It shares common buildings with the major national cardiovascular and emergency cardiac surgery centre.

In Romania, hospitals have been assigned to a fully COVID-19 or non-COVID-19 dedicated activity. The distinctiveness of this national organisation was that the non-COVID-19 hospitals implemented strategies to identify the SARS-CoV-2 cases as early as possible and transfer them to COVID-19 assigned hospitals. Safety measures were implemented accordingly by our institution: use of PPE, environmental cleaning, personnel training, an outside hospital epidemiological triage zone with temperature scans and clinical questionnaires, an in-hospital “red zone” for all medical specialities for suspected or untested cases and a “green zone” for patients with no clinical symptoms and a negative PCR test (Seegene NIMBUS).

Furthermore, PCR testing for all medical personnel was initiated on 13th April 2020, as part of a screening program.

Our twenty-four-bed ICU was one of the two “green zones” staffed by both medically and surgically experienced personnel, as well as liver transplantation intensive care and anaesthesia expertise. The medical team consisted of nine attending physicians, fourteen residents, thirty-nine registered nurses and thirty-four auxiliary personnel. The work was organised into shifts for the entire medical staff who worked for twelve hours, followed by 24 or 48 home-resting hours. During night shifts, one attending-physician and one resident were in charge of the ICU. The standard PPE for the “green zone” consisted of permanent surgical masks for personnel and patients, non-sterile gloves and gowns for patient care. Where and when aerosols-producing manoeuvres were carried out, e.g. tracheal intubation, face-shields and FFP2 or FFP3 masks were used.

Until 21st April 2020, eight attending-physicians, seven residents, eleven registered nurses, and three auxiliary personnel tested negative during the screening. On 22nd April 2020, from a total of thirteen people tested, one registered nurses “I” (case no I) and one auxiliary personnel “II” (case no II) were positive. The test results became available the next day and showed the personnel to be asymptomatic.

Fourteen registered nurses and auxiliary personnel and ten attending-physicians and residents had been present at work on that day. All the team members who were present at work with the registered nurse “I” and auxiliary personnel “II” on that day were considered contacts and were isolated at home waiting to be tested. One hospital personnel who had been in contact with the registered nurse “I”, tested positive on the 24th April during the scheduled screening. All other hospital contacts were tested twice, first on 27th April, when another registered nurse was tested positive. Another auxiliary personnel, who initially tested negative

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on 27th April, became symptomatic on 29th April and subsequently tested positive. In total, five contacts were positive and underwent hospitalisation according to national rules. Two of them remained asymptomatic, and three developed mild symptoms of coronavirus disease. Five family members were tested positive. All ICU patients, who were considered contacts, tested negative on 27th April. All the other members of the department were screened again, and all tested negative. No other infection cases have been identified since this event, and the medical activity continued with only a short twenty-four hours pause for environmental decontamination. An epidemiological inquiry was initiated to collect information about the staff's behaviour during their work shifts.

This particular hospital outbreak seems to have originated from outside the hospital, the asymptomatic personnel being the source of infection - an already reported problematic issue [4]. Interestingly, the infection did not spread to the patients or hospital doctors.

The wearing of surgical masks seems to have been a protective measure which contributes to the discussion of which PPE is effective or not [5]. The occurrence of viral transmission was identified as happening during a lunch break when the registered nurse and the auxiliary personnel were in contact. Stricter rules and sup-

plementary training were implemented after this event. No other personnel outbreak in our department has been since identified.

Our experience suggests that systematic testing in institutions of high strategical importance might help in the early identification and outbreak control of COVID 19. Also, it stresses the importance of vigilance regarding social non-medical activities inside the hospital.

■ CONFLICT OF INTEREST

None to declare.

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