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USE SIMULATION TO IMPROVE THE EFFECTIVENESS OF PPE IN COVID-19

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Medical simulation is the most dynamically developing field of medical education to prepare medical personnel to work with the patients [1]. Its main advantage is the possibility for learners to make mistakes, draw conclusions, and learn without fear about patient safety [2, 3]. Medical simulation is a tool using simulators — from simple trainers, through advanced mannequins, so-called patient simulators, and standardized patients (actors) to the virtual training centers. The simulator is a device that allows us to reproduce clinical cases in safe conditions. Learning from experience requires the use of clinical scenarios and appropriate preparation of an environment in which the staff will be obliged to practice and validate procedures [3–5].

Proper use of personal protective equipment (PPE) by health and social care workers, in the context of the current COVID-19 pandemic, is very important to stop the infection spreading process [6, 7]. On May 1, there were 3 323 935 confirmed cases with 1 051 651 recovered patients and, unfortunately, 234 471 deaths. In Poland, which has more than 38 million inhabitants confirmed 13 105 cases (+228 last day), 3 491 (+255 last day), and 651 (+7) death. Since the beginning of the Pandemic in Poland used 354 628 test (16 600 was made last 24 h) [8–10].

Use simulation to improve the effectiveness of PPE in COVID-19 we should think about a few areas, such as:

IN SITU SIMULATION

The biggest role in times of pandemic medical simulation fulfilled and continues to fulfill when creating in situ training. This type of simulation is a training that takes place in a patient care environment often using providers and staff who are currently on shift [11]. This allows achieving a high level of fidelity and realism, which is particularly important when training teams and/or individuals in a given unit. They are often used in case of emergency or so-called 'never event'. Many studies have shown that technical knowledge and skills are essential for patient care. However, non-technical skills related to crisis management, medical team leadership, patient to staff communication, and medical staff communication also have an impact on the outcome of treatment quality improvement and are improved during in situ simulation [12–14].

The European Center for Disease Prevention and Control (ECDC) guidelines themselves provide training for employees on all procedures for using PPE, with particular emphasis on its removal. Employees of health care units and medical institutions

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must demonstrate appropriate competence during training and practical exercises before they take up the care of patients. Trained observers (supervisors) should be used to monitor the proper use of PPE, including the safe donning and removal of available personal protective equipment.

Besides, observers should supervise (including issue instructions). Each stage in the use of PPE should be based on the use of checklists. In situ simulation helping to identify systems issues and latent patient safety threats [13–15]. To analyze the situation, it is helpful to record the entire process, which should include a record of all data occurring at the same time. Then it is very important to conduct a debriefing process (discussion of the event), which helps to conclude the simulation [12, 14, 15].

MODEL OF DEBRIEFING

Debriefing is a situation analysis that allows participants to reflect on their experience and give it meaning. This specially conducted session to discuss the scenario immediately after it is completed is a common tool in medical simulation because an independent experience can be unsystematic or inappropriate. It is a very important part that allows recreating and discussing it. The teacher who conducts the simulation scenario can record and later reconstruct the exercise session. There is no 'gold standard' to discuss the course of the simulation in situ. Most of the debriefing after the in situ session is done through a simplified discussion (55%) and a simplified summary with feedback combined with a review of the recorded simulation session (31%) [13]. It is also important to allow a large part of the participants to make a self-assessment, which allows more topics to be covered in a limited period [16]. The minimum time spent on debriefing is equal to the length of the scenario itself [17].

VIDEO RECORDINGS

The use of University Medical Simulation Centres around the world has allowed the recording of numerous procedures related to the insertion and take-off of PPE. This is of great importance in the process of educating a wider group of people, especially during remote education in times of social isolation. Any training that is provided is intended to assure conditions in which medical personnel can apply the latest guidelines and proceed in a rational, safe manner based on scientific reports [18]. COVID-19 personal protective equipment training courses include a combination of video instructions and interactive attitudes that allow the participant to reproduce the material repeatedly to master the techniques correctly (COVID-19 I SIM Program Trains for Proper and Efficient Use of PPE) [18]. It is important to critically address any areas of PPE use that may lead to contamination and disruption of security levels during the training.

RESEARCH ON THE USE OF SIMULATION IN WORKING WITH PPE IN OTHER DISEASES

Infectious diseases with a high risk of mortality require special training to master the required competence and to prevent the transmission of infection. It is not clear which type of equipment best protects in a given situation and which equipment should be removed as safely as possible after use. It is also unclear what is the best way to train workers to follow the guidelines for this equipment. In the context of COVID-19, previous experience with PPE such as Ebola or SARS can be supported [19, 20]. Most studies have shown the effectiveness of training based on simulation. Studies are showing that active training in the use of personal protective equipment reduces non-compliance with procedures during insertion and removal of more than passive training.

In conclusion, it should be noted that using simulation in situ to improve the effectiveness of PPE in COVID-19 can improve teamwork and the work of individual team members. During the PPE training, we can freely verify the activities undertaken by each individual. This allows us to draw conclusions and improve the attitude of a particular person. The basis for a successful simulation is to discuss the quality of the activities undertaken.

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