

# Anaesthesia skills and simulation training during the COVID-19 pandemic

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## Why was the idea necessary?

The COVID-19 lockdown and social-distancing guidelines introduced in March 2020 have implications for health professions education. Face-to-face teaching was suspended in some cases, and the groups of students allowed in physical spaces severely curtailed by social-distancing rules.<sup>[1]</sup> The COVID-19 restrictions were also instituted in the clinical practice areas and theatres of academic hospitals in Bloemfontein, South Africa. This resulted in limited access to routine clinical and emergency cases for fourth- and fifth-year medical students of the University of the Free State (UFS). As part of their anaesthesia rotation, students needed access and exposure to these clinical and emergency cases to fulfil the minimum training requirements set out in their curriculum. These cases included ultrasound techniques and administration of general anaesthesia, as well as the administration of spinal anaesthesia, airway management and cardiopulmonary resuscitation (CPR). Owing to COVID-19 restrictions, fourth- and fifth-year students were not allowed in theatres, where they had usually been exposed to these cases.

## What was done? (Intervention)

To overcome this lost clinical exposure, the Department of Anaesthesia, in collaboration with the Clinical Skills and Simulation Unit, developed a programme for fourth- and fifth-year medical students. The programme consisted of guided skills and simulation sessions. These sessions covered the following four clinical areas: CPR and airway management, spinal anaesthesia, general anaesthesia, and ultrasound.

The fourth- and fifth-year residency in the Department of Anaesthesia consisted of nine students for each year group over a 1-week period. These nine students visited the skills and simulation unit twice during the week (fifth-years on Tuesdays and Thursdays and fourth-years on Wednesdays and Fridays). Each visit consisted of four sessions. Session one involved all nine students training on CPR and airway management for one hour. The group was then split into three smaller groups to engage in guided sessions. These sessions were ultrasound skill, spinal anaesthesia skill and a simulation of the administration of general anaesthesia. The small groups spent one hour on each session and rotated through all the sessions while adhering to and observing COVID-19 social-distancing protocols.<sup>[2]</sup>

The facilitators for the four sessions were medical officers and registrars (anaesthesia specialist trainees) assigned by the Department of Anaesthesia. Train-the-trainer videos and material were provided to each facilitator during a train-the-trainer session before the first undergraduate residency. This was done to ensure consistent quality and content of the sessions. Each session had its own predetermined outcomes as defined by the Department's curriculum. The theoretical background lectures that the students usually received in a classroom before their residency were moved to an online

learning platform (Blackboard) for remote learning. Students used the online learning platform to familiarise themselves with the theoretical background of the four clinical areas before they attended the skills and simulation sessions.

CPR, airway and spinal anaesthesia skills were conducted on part-task trainers, while ultrasound was performed on a standardised patient using an ultrasound machine. The administration of general anaesthesia simulation used a high-fidelity manikin (SimMan 3G (Laerdal Medical, USA)). The general anaesthesia simulation was divided into three phases which included the induction phase, the maintenance phase, and the emergence phase. After each phase, the simulation was paused, and the students and facilitator debriefed and created an opportunity for feedback and questions. Multiple scenarios were created, and a group could encounter an adverse event during any of the phases. Students were given a technical overview of the manikin and how to use it before the first simulation experience.

It was anticipated that there might be a difference in knowledge, skills and confidence between fourth- and fifth-year students, with fifth-year students having had clinical exposure in 2019, and fourth-year students having no exposure to the clinical area. After the first two weeks, it was found that this difference was bigger than anticipated. This led to a slight deviation in the simulation where the facilitator guided the fourth-years during their simulation experience instead of only observing them.

## Lessons learnt

From informal feedback from students and facilitators, it was learnt that students could immerse themselves in the sessions as they were directly responsible for each decision and not just observing a case. This sense of ownership of the decisions made improved students' confidence, clinical reasoning and skills.

## What will be kept in practice?

As COVID-19 restrictions eased in the hospitals, students had more time back on the clinical platform. However, it was decided to keep aspects of the skills and simulation sessions as they proved useful tools for students to practise skills in a safe environment and afforded them the opportunity to be decision-makers during the simulation. Although skills and simulation training are already strategies followed for medical students at the UFS, these specific sessions were not part of the day-to-day simulation activities for fourth- and fifth-year students. The fourth-year part of the programme was changed to keep the ultrasound session. The fifth-years' programme was mostly kept intact, although students continued visiting the Skills and Simulation Unit only once per week instead of twice as the clinical platform became available again.

## What will not be done?

The spinal anaesthesia practical session was removed from the fourth- and fifth-year programme as the skill is being taught in the clinical area. It was also decided to remove the administration of general anaesthesia simulation for the fourth-years. This was done as a result of a decision by the Department of Anaesthesia to increase their clinical time to give them an opportunity to observe more cases.

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## Evidence of innovation



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