COVID-19 Pandemic in Northern Portugal: Anesthesiology Trainees' Experience

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The first confirmed case of COVID-19 in Portugal took place on March 2, 2020.

On March 11, 2020, the World Health Organization declared a global pandemic in response to the rapid spread of the novel coronavirus SARS-CoV-2.

In the two weeks that followed the first case in Portugal, our country went into a state of emergency and all elective surgery and consultations were canceled.

Despite the early declaration of a state of emergency, the Portuguese Health Ministry did not accurately predict the impact that COVID-19 would have on our country's health management, either in terms of equipment or human resources. The days that followed were lived in and out of hospitals with great anxiety. Thus, each institution sought to create an organized response between different medical departments to maximize the efforts of all.

The SARS-CoV-2 pandemic had a tremendous impact on the provision of health care at an international level, requiring constant changes and adaptations not only in the clinical approach and scientific point of view, but also in the organizational angle, reflected by reallocation of human resources, changes in institution areas, and creation of circulation circuits. Anesthesiology was no exception.

We present how four different hospitals in North Portugal dealt with the COVID-19 pandemic.

Training Experience at a Second-Level Hospital: CHTMAD

By Francisco Teixeira, MD, Patricia Pereira, MD, Cristina Peixoto, MD, Delilah Gonçalves, MD, Daniela Roriz, MD, Joana Brandão, MD, Rita Graça, MD, and Jose Carlos Sampaio, MD

CHTMAD is a second-level hospital and has the singularity of being divided into three different units with the main one situated in the center of the county and the peripheral ones located 100 km apart from each other. At the beginning of the pandemic, all residents were called to the main unit and forced to stop their rotations. Some were reallocated to the intensive care unit (ICU) and emergency room, while others provided support to the emergency department in areas dedicated to respiratory patients. Overall, residents were asked to step up their roles and provide specific medical care with little knowledge or resources.

The inevitable postponement of anesthesiology training was met with fear and uncertainty. Final examinations were postponed, and last year residents were asked to work as medical specialists with senior consulting supervision. Congresses, exams, and courses were cancelled worldwide, and we all felt stuck without knowing how to achieve residency goals. Suddenly, e-learning platforms and online events proved to be the most safe and appropriate solution for continuing medical education.

In our department, anesthesiology residents took a central role in health promotion and education: we organized online sessions on the use of personal protective equipment (PPE) and developed protocols, checklists, and audiovisual support on COVID-19's latest news and developments. Additionally, owing to the worrisome shortage of equipment, we used simple plastic materials to create face shields and aerosol shield boxes for safe airway management.

Because elective surgical activity stopped and emergency surgery was restricted to a few patients, hands-on training was almost nonexistent. Due to PPE scarcity, we were denied being in the operating room (OR) uncountable times.

Later on, in mid-spring, we slowly returned to our rotations and were allowed back in the theatre with every precaution. We were glad to recommence our training but rotations needed to be rescheduled and flexible. As the epidemiological scenario worsened, we were once again asked to provide support to the emergency department and respiratory/infectious wards. This time, however, without stopping our rotations and giving up on non-working hours, compromising study or leisure. In intensive care units, training was directed mainly to COVID-19 patients, because anesthesia residents are well-experienced with airway management and ventilation techniques. This inevitably compromised trainees' education in managing the critically ill patient from other causes. In the future, we may need to extend our training in such areas.

Regional anesthesia (RA) proved to be a fundamental skill for the common anesthesiologist, and we developed our know-how in this area with the most-experienced staff training the less-experienced.

Residency Training in a Second Level Hospital during COVID-19 Pandemic – Anesthesiology Department of Hospital Senhora da Oliveira, Guimarães

By Rita Cardoso, MD, Daniela Sepúlveda, MD, Sara Ferreira, MD, and Joana Magalhães, MD

Fear of the unknown was dominant in the beginning of the pandemic in our hospital, but soon we learned how to turn fear into strength, confidence and … protocols. Most of the OR and recovery room were converted into ICUs. Along with that, residents were redeployed toward these departments for several months, in particular into the emergency room as a full-time activity, meaning "internship suspension without deadline." With clear advantages in airway management, ventilation, and safety protocols, anesthesia residents soon had to deal with COVID-19 patients. The experience in the ICU was bittersweet: inspiring and hard. The main feeling was mostly of impotence. We worked in a war field, trying our best to reach and treat everyone, with the greatest humanization and professional love we had. Shifts were exhausting, both physically and mentally: patients stayed for weeks after ICU admission, families couldn't see their loved ones, and, often, bad news was communicated by phone. The shadow of fear of getting sick or contaminating our own family was always present.

Alongside, the international medical community was deeply inspired and focused. Webinars, online courses, and e-learning platforms helped us to keep up with the latest COVID-19 updates while maintaining anesthetic care. However, due to the marked reduction in the number of surgical procedures, performed preferentially by experienced anesthesiologists, the educational opportunities were scarce. Concerns about the trainees'

confidence and acquisition of technical and nontechnical skills in some specific areas were raised. Additionally, the withdrawal of face-to-face courses, meetings and conferences, represented an important loss of learning and acquiring skills *in loco*.

Nevertheless, our anesthesiology department is a reference center in regional anesthesia (RA). Using ultrasound-guided techniques in these patients and others, helped us with the resumption of (almost) normal OR activity and residency rotations, expanding RA indications, and improving our skills. We had to manage our internship baseline plan and keep emergency room shifts… Working hard in emotionally and clinically challenging scenarios brought, among us, as junior doctors, an acid taste of hopelessness, fear, and anxiety, significantly impacting our mental balance.

In the end, we all learned how to improve our self and team protection, safety, organization, knowledge, and empathy as doctors and, above all, human beings.

How We Prepared During the COVID-19 Pandemic - Hospital de Braga, E.P.E.

By Carla Ferreira, MD, Joana Veiga, MD, Rafaela Silva, MD, and Lara Ribeiro, MD

In Braga, our department focused on the elaboration of a COVID-19 strategic planning, which included specific sub-groups and "chats" dedicated to different areas: compilation of relevant information, PPE, airway management equipment, simulation/education group for anesthesiologists and other specialties, external aid for PPE, and comfort goods for health professionals, such as food and places to rest outside their home.

PPE scarcity was a major concern! At an early stage, the public was called on for donations to purchase or recycle materials for the creation of masks, protective suits, or face shields. Fortunately, with great generosity from everyone and a good dose of imagination, we have ensured PPE for all professionals.

There was also a need to change the circuits in the main OR and obstetric theater between COVID-19 and non-COVID-19 areas and to provide training for the professionals involved.

The anesthesiology team also was reorganized; some specialists and residents were moved to intermediate and intensive care units, while others changed their schedules to reduce the chances of simultaneous infection.

We developed a type of newsletter with short daily summaries to share information among all the staff.

A new level II medical care unit also was created to reduce pressure on the intensive care unit and keep patients with COVID-19 in noninvasive ventilation under close surveillance. Anesthesiologists were recruited to support units with patients with severe COVID-19 disease because of their expertise in critical care and, in particular, in ventilation, while residents, unfamiliar to nursing routines or prolonged contact with patients and families, started dealing with patients on non-invasive ventilatory support on a daily basis. This close and prolonged contact was the biggest challenge as residents witnessed patients' physical suffering, dependence on others, fear of the future, and questioning whether they will ever leave the hospital alive.

RA was considered the best option for patients with COVID-19 (as it minimizes the risk of contagion), and, as the routine surgical and anesthesia care resumed, it was used in COVID-negative patients too. In the last case, locoregional anesthesia techniques allowed a faster postoperative recovery with less physiological impact and better pain control, framed in opioid-free or -sparing strategy. Therefore, and in this perspective, new ultrasound equipment was purchased to allow a widespread use of RA.

Despite all, mutual support made us feel like a real team. We still remember warm-heartedly, the way that daily newsletters ended with "Good work and good rest to all! May the force be with you…"

Anesthesiology Residency during the COVID-19 Pandemic: What Has Changed? - CHUSJ

By Diana Fonseca, MD, Patricia Lima, MD, and Joana Mourão, PhD

Apprehension was generalized at the beginning of this exceptional year. Despite this, residents quickly mobilized themselves to different tasks to face this challenge, having in consideration their previous experience or year of residency. Protocols, training sessions on PPE, and voluntary allocation to shifts in occupational health service, general urgency (namely in the area intended for suspected or confirmed COVID19 patients' evaluation), or postanesthetic care unit (by then transformed in intensive care unit) were some of the tasks to which residents contributed in our hospital.

For a period, elective surgeries were canceled or rescheduled and there was a need to carefully prioritize patients. This had a great impact mainly in patients but also in hospital units and namely for residents, who saw their training and skills acquisition opportunities reduced during this phase. Moreover, due to concerns of disease dissemination, there was a need to limit the number of healthcare professionals present in all surgical procedures to the minimum number required (including residents) and some curricular internships, namely optional, have been suspended.

Despite this, minimum requirements in curricular internships were assured for most cases in parallel with the above-mentioned tasks to help in the health care response to COVID-19.

Undertaking surgeries in COVID-19 patients has undoubtedly proved to be an enormous challenge to guarantee the best possible treatment for the patient without compromising the safety of all involved health care professionals. In this matter, the definition of hospital contingency plans, investment in training actions (such as informative and training sessions on PPE), and elaboration of specific protocols for guidance of anesthetic acts in the pandemic context were crucial.

In addition to changes in clinical practice, exams were postponed and opportunities to attend courses and congress were very limited once the vast majority of them were cancelled. Yet, online modalities quickly emerged as an alternative and, in our opinion, were a wondrous tool to complement our formation and professional development. Also, our training meetings were continued online.

Conclusion

In our country, medical education was affected. The COVID-19 pandemic unleashed, undoubtedly, a challenging and difficult period for all health care professionals, particularly for residents.

Trainee education and skill learning is essential to assure future medical staff is capable of providing the best medical care and passing through their knowledge to new generations.

Working hard under the threat of a little-known disease, in emotionally and clinically challenging scenarios, left profound marks on each of the frontline professionals. The unpredictability of clinical evolution (almost hourly), the lack of equipment to guarantee standards of care for all, and the scarcity of human resources and death were lived circumstances that will not be forgotten among us.

Nevertheless, with the adequate support and the enormous dedication and effort made by all to embrace this revolutionary year, we believe that it was possible to generally preserve the quality of learning and acquaintance while simultaneously helping in the "fight" against this pandemic. Teaching and learning must continue, and our capacity to adapt to new circumstances has emerged. Congresses in online formats and national and international webinars became an important source of knowledge, easy and affordable compared to pre-COVID-19 times

We are now conscious that constant paradigm shifts are inevitable when dealing with such a serious health crisis.

Congratulations to all who contributed with their efforts for the good resolution of these difficult times, where residents had a fundamental role.

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