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EFFECTS OF COVID 19 ON RESIDENT'S WELL-BEING AND EDUCATION

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ABSTRACT

Background: Objective: Lower respiratory tract infection (LRTI) outbreaks triggered by the new strain of the coronaviruses or corona virus family emerged in Wuhan Town, Hubei Province of China since December 2019. Many proven as well as suspected cases of covid-19 were also registered in different provinces, administrative regions and towns of china. This virulent virus was named by the WHO as 2019-nCoV (1). Despite the general vulnerability of Chinese people, the National Health Commission on 20th January 2020 listed pneumonia induced by new infections with coronavirus as a Class B contagious diseases and treated it as a Class A contagious diseases (2). Around the same period, the first-level approach to serious public health crisis was launched by all states, regional governments and communities directly under the Central Government but the strictest preventive and control initiatives were enforced. NHC China briefly identified pneumonia induced by the contact of the virus as a novel coronavirus illness on 21st February 2020 (3). What originally looked like a localized infection in December 2019 in China's Hubei state, it soon became apparent that COVID-19 had pandemic potential. But it was nearly two months until the WHO proclaimed a truly global pandemic. The number of causalities in Italy now surpasses those recorded (80,000) in China, and the epidemic in Iran may have caused seed cases in Pakistan and Afghanistan (4).

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INTRODUCTION

Lower respiratory tract infection (LRTI) outbreaks triggered by the new strain of the coronaviruses or corona virus family emerged in Wuhan Town, Hubei Province of China since December 2019. Many proven as well as suspected cases of covid-19 were also registered in different provinces, administrative regions and towns of china. This virulent virus was named by the WHO as 2019-nCoV.(1) Despite the general vulnerability of Chinese people, the National Health Commission on 20th January 2020 listed pneumonia induced by new infections with coronavirus as a Class B contagious diseases and treated it as a Class A contagious diseases.(2) Around the same period, the first-level approach to serious public health crisis was launched by all states, regional governments and communities directly under the Central Government but the strictest preventive and control initiatives were enforced. NHC China briefly identified pneumonia induced by the contact of the virus as a novel coronavirus illness on 21st February 2020.(3)

What originally looked like a localized infection in December 2019 in China's Hubei state, it soon became apparent that COVID-19 had pandemic potential. But it was nearly two months until the

WHO proclaimed a truly global pandemic. The number of causalities in Italy now surpasses those recorded (80,000) in China, and the epidemic in Iran may have caused seed cases in Pakistan and Afghanistan.(4)

Precisely emphasizing on persons coming from impacted nations and their direct contacts have little level of monitoring. This method is questionable to be adequate by itself and tentative mathematical models indicate that group transmission could have begun in India and Pakistan in early March (unpublished data). The most successful measure that has been enforced is that all countries in the world have significantly restricted or suspended air traffic and placed quarantine procedures on citizens traveling by road or air from countries like China, Italy and Iran with COVID-19 epidemic. Testing and containment facilities, however, continue to be limited and of dubious quality.[1]

The duty of the surgeons, as well, is to provide prompt, high-quality surgical treatment that provides the best results for patients. But if, throughout the COVID-19 pandemic, surgical teams are not properly shielded from virus spread, the ability of our health services to deliver critical treatment could fail when further doctors are pushed into quarantine. Furthermore, the ethical choice to avoid fear and turnover is to support those who work for the chronically sick and wounded.

We rely on existing clinical practice in this analysis to identify important concerns for operating therapeutic teams on patients with alleged or confirmed COVID-19. This has greatly impacted the physical and mental wellbeing of our residents who are the front liners against this threat whether they are resident physicians or resident surgeons.

Viral particles were contained in nasal swabs, pharyngeal swabs, sputum, pulmonary swabs, bowel tissue, hair, and stool (5). In isolation spaces, textures and also surgical shoe coverings were often checked positively. The virus will even transmit by particulates and pathogenic organisms, and live as an aerosol for at minimum 3 hours, and also for days on materials (6). Surveys of other viruses find viral load through the use of electrocautery in nearly all tissues and fluids examined, including even surgical smoke.[2] In terms of these potential threats, we discuss the main factors below for the safety of surgical teams.

Structure Frequent Communication Before Key Event:

Transportation of a covid-19 patient before thorough preparation and procedures places doctors and nurses at high risk for viral transmission (7). Common, coordinated huddle-shaped contact plays an important part in reducing the danger. A new report identified the importance of having partners together to discuss secure travel of patients and the method of delivering the person to the operating theatre table (8). The pauses will involve doctors, anesthesia department, intensive care unit (ICU) attendants and nurses, respiratory therapists, medical personnel in the operation room, health facilities, protection, and infectious management leaders. To optimize this procedure, hospitals have established transport procedures for the operating team and carry out transport models to plan for a large variety of potential victims. Open contact between the surgeon and the peri-operative teams helps the community to move high-risk patients from those in the beds to the operation rooms (OR) and return to the unit with decreased risk.

Assume that all the Operation rooms (OR) are contaminated:

SARS-CoV-2 live for days on several operation theatre (OT) materials, like plastics and polished steel (6). OT use internal pressure airflow in normal circumstances, however, this carries the risk of contaminating nearby operating rooms (ORs) and corridors; thus, ORs with suction

capability are suggested. If ventilation rooms are not accessible, it is essential to provide ample time for full room air transfer between cases-typically on the range of 30 minutes. This period is focused on the amount of shifts in air every hour as the Centre for Disease Control and Prevention(CDC)explains (9).

In react in time-sensitive web sites, objects such as medical maps, pagers, and mobile phones have to be placed out of the OR with eventualities. Furthermore, something that was inpatient touch, including the ward pad, would still be deemed polluted. To procure materials like threads, surgical staplers, and energy packs, a committed runner will be placed outside the theater if necessary. This removes any need for unnecessary travel by the moving nurse into and out of the area, which thus reduces the use of personal protection equipment at both entry which departure to the area. After the event, all single-use machinery (even unopened) in the room is thrown out, and then only what is now needed and completely appropriate for the event can be taken in .

Choose Protective Equipment Effective Against Aerosolized Particles:

Normal surgeon's personal protective equipment (PPE) comprises of a facial protector, surgical cap, waterproof robe, double gloving, and shoe covering. Nonetheless, there is some dispute on the form of pulmonary protection — N95 respirator, driven air-purifying respirator (PAPR), or surgical face mask — that would be used in patients with COVID-19 for surgeries(8). PAPRs are typically used where Health Care Workers (HCWs) cannot reach sufficient compatibility for an N95; standards and mask requirements indicate correlation with inhaled agents. A surgical face mask is capable of resisting the gross ingestion of particles, whereas a well-equipped N95 respirator may even absorb aerosols (10). Centre of Disease Control and Prevention(CDC) of both America and China and the Association of Spanish Surgeons; explicitly prescribe the usage of N95 respirators in COVID-19 patients for operation with AGPs. Australia's health department promotes the usage of N95 for "high-level communication" with patients affected (11). A recent survey in the Chinese Journal of Surgery provided recommendations for life-saving emergency operation in COVID-19 patients explicitly specifying the usage of N95 masks for the operative staff (12). However, WHO recently launched PPE guidelines for healthcare workers that did not indicate that surgical operations involve N95 respirators. The lack of laparoscopic surgery or electrocautery on the elective list might be misinterpreted by certain audiences to mean that certain surgical operations are not aerosol producing (13). The meta-review quoted in the WHO guidance explicitly indicated that its research contained virtually no surgical events as it concentrated on laryngeal aerosol sprays — but only open thoracotomy was collected as a data item.

During a period when there is little evidence on COVID-19 dissemination, active protection with full PPE for Aerosol generating procedures (AGPs) (which involves N95 masks) is compatible with recommendations from numerous professional associations as well as the minimal details from earlier work accessible.

Adapt Surgical Technique to Reduce Exposure Risks:

This is uncertain if laparoscopy raises the possibility of access to infectious particles aerosolized by surgeons.

Insufflation of carbon dioxide, battery products, and high-speed surgical instruments are generating large aerosols. Although aerosols may be stored in the abdomen during laparoscopic surgery, they can disperse broadly when released under force — as with discharge of pneumoperitoneum (14). Measures will be taken to reduce the risk of unintentional disclosure and the usage of proven technologies to remove CO2.

The danger might not, though, be specific to laparoscopy. In both laparoscopic and open procedures, viral and bacterial particulates were detected in the surgical feathers. The use of a smoke escape system, though, is following pre-existing OR guidelines which can limit sensitivity to aerosols in both open and laparoscopic procedures. Despite compelling results, where all accessible and laparoscopic methods are scientifically acceptable, the best solution may be the one that is more common to the surgeon and eliminates surgical time.

Trainee safety must remain a priority:

Trainee health and welfare will be a central aspect of all educational programs. Unnecessary communication threats related to schooling will be eliminated. Face-to-face training experiences for online learning will be adapted5. Apprentices will be advised to remain at home if they are ill and have a doctor connection to seek advice on isolation and testing. The learner will be trained on the proper usage of protective gear (PPE) and ensuring that N95 masks are up-to-date in shape. Interaction with patients in an emergency should be with proper PPE and social distancing should be encouraged. Efforts will be taken to exclude trainees from non-essential clinical practices and to reduce the amount of users rounding up on duty on any particular day. Programs will be conscious about not only surgical trainees safety but also behavioral health too. Workers participation will promote safe habits as best as possible among their tenants and role model. Resources would be freely accessible to help all facets of occupant Health.

Physical Well being of Residents:

Due to the disproportionate burden of this disease and dual fear of exposing themselves to this virus and deterioration of physical health due to workload residents are unable to work properly. In China, more than 3,000 health care workers have been infected and the death toll includes health workers who died not from the virus itself, but cardiac arrest and other conditions caused by overwork and exhaustion.

The availability of fresh food, water, proper safety, and sleep is the basic need of the hour for all residents. Distribution of working hours is the real challenge for all health providing administrative authorities. When residents work 14 or 16 hours per day then they may not think about their basic needs and sometimes they think they haven't work in the last hours due to physical exhaustion. Ample supply of eatables and other immunity boosters with balanced working hours increase the efficacy of all front-liners.

Use a "Buddy System" for Donning and Doffing:

Medical professionals can potentially be more likely to contract by changing their PPE than when caring for an infectious patient (15). Anyone in the OR will be able to properly put on (donate) and remove (doff) PPE to prevent self-contamination. To ensure correct protocol, appropriate gowning and doffing techniques can be checked with physicians, patients, and OR staff before that first event. Based on recent virus infections, a "buddy program" was proposed, in which services support and supervise a colleague's doffing (16). In our practice, the simultaneous usage of video-related guidance and the supervision of a counterpart(17).

Mental well being of Residents:

Feeling under pressure and mental stress is likely the experience of many residents working in COVID-19 global pandemic. Without combating with psychological stress residents can't efficiently perform their duties.

Some also faced the avoidance and neglect from their families and society due to fear or stigma that enhanced the stress level for health care providers and decrease their working efficiency and destroy mental health. A study published March 23rd in the JAMA found that, among 1,257 healthcare workers working with COVID-19

patients in China, 50.4% reported symptoms of depression, 44.6% symptoms of anxiety, 34% insomnia, and 71.5% reported distress.

Without managing the psychological well being of residents we can't win the war against this Global Pandemic. To avoid these residents must turn to their colleagues or other trusted person for psychosocial support who may have faced the same problems. Use other means of communication to interact with your dear ones and family members which enhance your morale and boost your professional abilities in this crisis. Avoid unhealthy activities like the use of Tobacco or Alcohol and other drugs which destroy your mental health. In the end, you are the person most likely to know how you can de-stress yourself and you should not be hesitant in keeping yourself psychologically well. This is not a sprint; it's a marathon.

On the other hand, those who lead the health professionals at administrative levels should continue to show compassion and empathy towards all front lines and acknowledge these fears that can impact resident stress and mental well-being.

Modification of Learning in Pandemic:

The COVID-19 is a global pandemic without precedence and surgical practitioners were required to reconsider almost every aspect of their routine work. Elective surgery is discontinued and hospitals are significantly cut down irrespective of the health insurance infrastructure or regional borders. Surgical trainees work side by side alongside other representatives of the health care team to address the ever-changing condition. Whilst the full extent of COVID-19 remains to be seen in North America, we can not disregard the effect on the surgical performance of this current and changing "natural" regime.

Does the purpose of flattening the curve automatically imply a failure in surgical training? The purpose of surgical learning is to have resident doctors with a base for surgical expertise, professional judgment in surgical patient care, and technological competency. Residents are faced with growing uncertainty and are taking graded accountability throughout their preparation.

Around the same period, consumer pressure for increased transparency, supervision and patient protection has been forcing organizations to re-examine their teaching procedures. Experience indicates that perhaps the normal smooth-paced response to shifting training designs will prove inefficient in the face of a rapidly rising world crisis that is pressuring many apprentices to stay at home and a larger number to change their exposure from surgical patient caret to preparedness for seriously ill patient care.

Harness the opportunities to learn from the COVID-19 pandemic:

Lets hope, the COVID-19 global pandemic would be a just-in - a-lifetime occurrence for new surgical trainees.

Efficient social distancing from the surgical culture does not preclude the trainees from acquiring the requisite management skills through the regular responses to COVID-19. The fast instability of new data, guidance, and concerns. Outreach and good leadership skills may be built by the use of modern channels (e.g. social networking, blogs)6 which not only affects surgical colleagues but ultimately even members in the health community, politicians and legislators. Training programs for trainees within and outside the hospital should be created, enabling remote education. Reorganization the process through the use of house personnel to provide required assistance in different fields would be expected and thus built to maintain and retain the surgical workforce whilst offering innovative educational opportunities.

Approaches for reallocation of trainees will be established that recognize the residents 'training requirements, expanding on areas of expertise and meeting clinical needs. For example, senior surgical trainees may improve their skills in intensive care by extended positions in emergency departments while novice residents may further grow their diagnosis, triage, and urgent care resuscitation expertise.

Trainees will not lose the chance to develop their knowledge learned in disaster management, resource distribution and other aspects of strategic or critical care practice. Trainees learn from their surgical instructors providing an example. Via positive leadership role modeling in reaction to the pandemic, surgeons will encourage and facilitate efficient and relevant skills in potential surgery.

Restructure surgical Training and Curricula:

A standardized school system for people need not be discarded given the public health issue. Owing to lockout or staff consolidation, visiting physicians who are very well but not fully involved in clinical practice may make themselves eligible to facilitate and enroll in remote surgical preparation. During the outbreak, programs would cooperate and optimize the creation of curricula. Virtual learning encourages services and experiences to be exchanged amongst various organizations, which offers incentives to establish extended professional partnerships outside the normal limits of a single organization. This will deliver practically informative seminars and novelistic workshops. Both trainees will invest in the virtual platforms. Although simulated or hands-on technological vocational training may be challenging, creative solutions to such tasks, such as visual analysis activity training, can be sought. Teaching and research can be extended about medical expertise, diagnostic and clinical methods including both oral and written forms.

Programs will provide enhanced training in non-technical expertise for the professional advancement of trainees, including the availability of resources and classes relevant to the creation of collaboration, conflict management, communication and trainees as teachers. In terms of study and student success, job preparation, or financial awareness, skill advancement should be sponsored too. Residents reaching graduation can tend to prioritize completion of case reports, readiness for board exams, and job transfers (e.g. paperwork credentials / licensing). A significant factor for both services is the limited willingness of learners to engage in instructional activities due to overlapping medical and personal interests, such as continuing "frontline" health treatment or dealing with the very specific impacts of sickness, caregiver obligations, and financial concerns. All reorganized curricula inside a conventional surgical hierarchy should be responsive to the insecurity of trainees during a crisis.

Adapt current educational milestones:

Surgical competence and training exams are internationally delayed. The humiliating effect of this move on senior trainees is evident: The gratification of achieving years of preparation and personal commitment has been forever postponed for many people. When the whole medical education group mobilizes behind the reaction to COVID-19, to enable qualified trainees to qualify and enter the workplace, reasonable changes should be made to the structure and scheduling of the exams, where necessary. Therefore, considering the can resources and requirements, educational criteria can need change. The American Board of Surgery and Royal College of Surgeons lead the way this spring and summer by proposing disability requirements for case log minimums and proposals to reschedule qualification tests. The ACGME instructed Program Leaders and all their

Residency Examination Committees to recall:
"ACGME visit/case minima were not designed to be a surrogate for the competence of an individual program graduate, and are not utilized in that manner by Review Committees. It is up to the program director, with consideration of the recommendation of the program's Clinical Competency Committee, to assess the competence of an individual resident/fellow as one part of the determination of whether that individual is prepared to enter the unsupervised practice of medicine."

Keeping a robust norm for surgical expertise when adjusting trainee standards during a global epidemic would entail a comprehensive regional strategy.

Practical implications of novel Guidelines:
This novel COVID-19 global pandemic would modify the educational environment for surgical students around the world. This has also contributed to major improvements in most hospitals, including restricting the amount of in-house patients, canceling elective surgeries, decreasing the frequency of intensive care operations despite recommendations from the surgical community and cancelation of seminars and professional events to conform with the guidelines for psychological distancing. In addition to these significant improvements, the American Board of Surgery has adjusted the educational standards of graduate chief residents to provide 44 weeks of practice time, with a 10 percent decrease in the overall cases expected 1 Such improvements and guidelines, however, will not address the hours of surgical training material missed because residents are unwilling to take part in formative assessments, training and operating events.

Traditionally, surgical trainee's education has been managed at an administrative stage, with different organizations deciding the appropriate options for teaching and implementation style. There have been various curricula that are more or less similar but some details differ in various institutes. However, despite the current operating climate and the pressures put on the inhabitants of the surgery during most of the COVID-19 pandemic, certain normal methodologies of guidance must be modified. Here we identify some realistic resident education approaches based on institutional learning, educational exam prep and skills creation and emulation that overcome the geographic and spatial constraints of the COVID-19 pandemic.

Operative video-based:
Due to the COVID-19 pandemic, multimedia-based education has been a widely common, successful strategy for both the learning of information and the planning of operating rooms. VBE is the distribution of instructional material via multimedia channels and encourages the simultaneous usage of auditory and visual sensory systems for learners. Recent experiments with dual-coding theory have found that learners have a better chance of memory when instructional information is delivered simultaneously through all channels, as in VBE. This forum is particularly effective for the planning of operative events, particularly in the context of a pandemic where there are few surgical scenarios.

Although specific fellowships may opt to build their VBE packages, this is always welfare-intensive, unaffordable in cost, and can seem overwhelming. Alternatively, it may utilize pre-existing operating video repositories to complement resident schooling. Such services instruct students on correct surgical signs, preoperative research, and anatomy and procedures for operations. With COVID-19 restrictions on outpatient cases and surgical treatment in critical care, the videos provide an instructional option that can be comfortably viewed from the home of a student or call space. Partnerships at the level of multiple institutes will reduce logistical pressures and expenses associated with video creation, and expand

exposure for citizens to instructional content that supersedes conventional organizational silos.

Virtual lectures by web technology:

In amongst all the complexity of a pandemic, certain fellowships may choose to retain an institution's specific educational facility framework. During the growing therapeutic environment, there might even be a need to foster comradeship and interaction. Trainees will continue to "speak" frequently and gain from regional lecturers by delivering interactive lectures via a web-based conference network like ZOOMTM (Zoom Web Communications, Inc, San Jose, CA). Video-based meeting platforms provide lecturers with the opportunity to show their presentations in live time, as well as a video tool for display during the planned instructional hours. This makes for versatile learning and encourages novelistic lectures to bypass conventional residency cycles and constraints of clinical rotation sites. This strategy often offers an avenue for partnerships in multi-institutional surgical training. Programs may exchange live or captured simulated lecture material through several institutions to spread their teaching and training knowledge at the national level.

Surgical residency programs have various sizes and services, so this interactive network may promote the delivery of instructional material to resourced programs so facilities that are most affected by the COVID-19 pandemic. This program can also provide a tangible example of consistency of educational conferences while trainees are in off-site deployments outside the COVID-19 period.

Independent learning:

The philosophy of auto-directed instruction is a central concept of surgical education.5 when planning for the COVID19 epidemic; several services are still waiting between canceling elective cases and scaling the embankment of the COVID-19 epidemiological curve. This review period includes the most important tool accessible to a surgeon: time. Trainees should use this opportunity to focus on their learning techniques, set a target, such as enhancing the success of in-service tests or gaining a better comprehension of a specific subject and then using various tools and concepts of adult education philosophy, such as scattered repetition to accomplish that objective. Tangible objectives can allow enhanced auto-regulated learning.

Virtual simulation:

Many community training sessions were canceled to conform to the guidelines regarding social distancing. This may contribute to ability deterioration during virtual training along with reduced operating volumes. Forms and tools, such as felt or silicone "tissue" suturing sets or FLS box coaches, may be rented for professional instruction. Documented or vocal input can be received centrally, either by instructor analysis of submitted recordings or by conducting Zoom meetings in which trainees concentrate their screen on their technological output for actual-time faculty input. Case-cancelations and automated treatments may imply more spare time in hospital for people on the wards. This break is an incentive for technical ability training and by gaining input from their fellow colleagues-standing six feet apart-on their skill results, residents can focus on near-peer learning. In-hospital students may also arrange hours for FES, FLS, and robotic surgery coaches to work independently on simulation laboratories. Through signing up for periods in advance, residents may establish social distance guidelines and require sufficient disinfection of appliances during usage to mitigate transmission of COVID-19.

Post COVID Era Preparations:

By some point, an attempt must be made to revert to "life as normal," which will entail a second period of surgical education reforms. Surgical services will encounter backlogs in clinical and operating events, and there would be a

substantial improvement in the organizational training provided to trainees across programs. Yet again, such improvements could entail a redesign of the clinical and academic curricula to enable tenants to reach critical milestones.

The transition to "standard" may be graded, and health programs may become active until the reestablishment of certain community resources and companies. School delays, for example, can tend to impact the trainees of small children. Programs would continue to be adaptive over a prolonged period to enable transition to another "fresh standard." Financial and physical pressure on trainees would possibly take its toll. Furthermore, the pandemic's physical and behavioral pressures are expected to have lifelong effects on health care staff and trainees. Long after the height of the pandemic has ended, the value of offering health assistance and services for trainees cannot be overrated.

With certain health services in North America, the full effects of the pandemic have possibly yet to come. The whole global pandemic also precipitated the growth of the philosophy of surgical education. In all periods, the goal of the surgical facilities should be to provide the public with the greatest medical treatment while maintaining and retaining the surgical staff. Nevertheless, the surgical curriculum will not be neglected given the burden on our health systems. Prospects for surgical apprentices to broaden their skills with team research, administration of the health care system and management are numerous. Residents would now have the ability to connect to the city on the front lines during some of history's most urgent public safety issues.

Designing education materials:

In designing instructional material focused on the above guidelines, it is important to incorporate good practices in line with adult literacy principles. Following novelistic lectures, adult students historically have lower engagement levels, as concentration spans disappears after 15-20 minutes. In contrast, PowerPoint TM slides will be produced based on established visual design concepts to increase comprehension and to facilitate the preservation of information. Slides will be designed to minimize external processing, control critical processing and facilitate generative computation following Mayer's graphical design concepts. One of the problems confronting educators in virtual education is to encourage active engagement from a remote location, recognized for enhancing results. The usage of electronic audience feedback mechanisms and small-group coaching, such as by ZOOMTM breakout rooms, offers an incentive not just for learners to be involved globally but also for teachers to evaluate student comprehension and information gaps.

In short, a multi-faceted solution to digital surgical training during the COVID-19 pandemic is possible and can address the instructional needs of surgical students in the middle of current restrictions. The complex medical environment generated by this pandemic offers an incentive to implement innovative education approaches and utilize emerging tools in a way that defies remote sensing and temporal conditions. Such versatile guidelines encourage surgical residency programs to retain a robust educational curriculum given the restrictions enforced by COVID-19. As our surgical profession unites to confront this challenge, we are faced with a golden opportunity to promote structural reform through the creation and distribution of shared educational material, leaving behind constraints forever by institution silos.

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