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## COVID-19: the need for continuous medical education and training

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) moved rapidly through China, and the virus had spread to more than 60 countries and infected nearly 90 000 patients by March 5, 2020. Based on data for 72 314 cases of coronavirus disease 2019 (COVID-19), 14% of people have severe disease, 5% have critical illness, and 2.3% die.<sup>1</sup> COVID-19 is not a conventional disease, and rapid changes in the provision of critical care have been needed to meet the needs of patients. Health emergencies such as the COVID-19 outbreak can be a huge challenge for critical-care physicians, who need strong comprehensive skills to respond effectively.<sup>2</sup> Critical-care-related continuing medical education has an important part to play in preparing for and responding to such emergencies.

Availability of resources is vital in the fight against COVID-19.<sup>3</sup> In the early phase of the outbreak, only 436 critical-care physicians and 1328 nurses were available in 37 intensive-care units (ICUs) in Hubei province. In response to this public health emergency, 278 medical teams from 29 provinces in China were dispatched to Hubei province, 32 395 medical personnel in total. The current epidemic highlights the need for every health-care system to have sufficient numbers of adequately trained critical-care physicians.

In Zhejiang province, the number of patients with COVID-19 had reached 1205 by March 5, 2020, of whom 81 had severe disease, with one death. A major feature of the health system in Zhejiang province is the continuous training of critical-care physicians.

	5C-certified physicians (n=18 940)	Total cases of COVID-19	Current severe disease	Mortality
Jiangsu	1808 (9.6%)	631	5 (1.6%)	0 (0%)
Henan	1599 (8.4%)	1271	28 (1.5%)	19 (1.5%)
Guangdong	1428 (7.5%)	1347	46 (3.4%)	7 (0.5%)
Sichuan	1293 (6.8%)	531	18 (3.4%)	3 (0.6%)
Zhejiang	1151 (6.1%)	1205	35 (2.9%)	1 (0.1%)
Shanxi	820 (4.3%)	245	4 (1.6%)	1 (0.4%)
Hebei	800 (4.2%)	312	5 (1.6%)	6 (1.9%)
Shandong	669 (3.5%)	756	14 (1.9%)	6 (0.8%)
Chongqing	653 (3.5%)	576	22 (3.8%)	6 (1.0%)
Yunnan	617 (3.3%)	174	1 (0.6%)	2 (1.1%)
Hubei	610 (3.2%)	65 187	8326 (12.8%)	2615 (4.0%)
Hunan	598 (3.2%)	1016	21 (2.1%)	4 (0.4%)
Beijing	541 (2.9%)	400	12 (3.0%)	4 (1.0%)
Shanghai	386 (2.0%)	336	12 (3.6%)	3 (0.9%)
Others	5967 (31.5%)	4077	159 (3.9%)	38 (0.9%)

Data are n or n (%). Data obtained on Feb 26, 2020, from the National Health Commission of People's Republic of China and the Chinese Society of Critical Care Medicine.

**Table: 5C-certified physicians and COVID-19 cases and deaths, by Chinese province**

From 2009 to 2019, 18 940 physicians were enrolled in the Chinese Critical Care Certified Course (5C) programme, of whom 13 826 (73%) were critical-care physicians. The 5C programme covers 31 provinces in China. Courses in the 5C programme are provided by a multidisciplinary care team; multidisciplinary care is important to decrease mortality among patients in the ICU.<sup>4</sup> The top three provinces in terms of the number of participants were Jiangsu province (1808 [9.6%]), Henan province (1599 [8.4%]), and Guangdong province (1428 [7.5%]); Zhejiang province (1151 [6.1%]) ranked fifth, whereas Hubei province had only 610 participants (3.2%; table). The hope is that such programmes can increase professional knowledge and improve the practical skills of physicians.

Critical-care medicine has a crucial role in public health emergencies. Standardised training such as that provided by the 5C programme helps in the development of critical-care

medicine disciplines and improves the clinical level of practitioners, which means that teams are better prepared to deal with health emergencies in the ICU.

We declare no competing interests.

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Published Online  
March 16, 2020  
[https://doi.org/10.1016/S2213-2600\(20\)30125-9](https://doi.org/10.1016/S2213-2600(20)30125-9)