



Thoracic surgery in Shanghai—size does matter

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In a recent issue of *Shanghai Chest*, the Shanghai Chest Hospital has once again shared their impressive numbers in their annual report of 2021 (1). For the first time, they exceeded 20,000 cases per year, even under the heavy burden of the coronavirus disease 2019 (COVID-19) pandemic. With a total number of 20,405 thoracic procedures, they showed not only an increase in total thoracic procedures over the last decade, but also in minimally invasive [18,915], and, more specifically, in robot-assisted thoracic surgery procedures [1,006]. The average length of hospital stay shortened continually compared to previous years, and in-hospital mortality rates were as low as 0.06%.

The Shanghai Chest Hospital, as part of the Shanghai Jiao Tong University School of Medicine (SJTUSM), together with 12 other SJTUSM-affiliated hospitals has treated more than 42 million in- and outpatients in 2021. These are extremely high numbers, which is not surprising for a city that is one of the three greatest metropolises in the world, hosting over 26 million inhabitants. This has created an opportunity and necessity to develop two dedicated ultra-high-volume centers (UHVCs) in Shanghai with expert medical specialists, specialized supportive staff, and nursing units. Both the Shanghai Chest Hospital and Shanghai Pulmonary Hospital cannot be compared to any other (high volume) hospital in the world. In 2016, they reported over 10,000 major thoracic surgeries per year, which has doubled

over the past 5 years (2). With these numbers, they both leave other hospitals in populous countries such as India far behind.

While the reported numbers are fanciful for European and American hospitals, databases from the American Society of Thoracic Surgeons (ASTS) and European Society of Thoracic Surgeons (ESTS), which provide a foundation for quality improvement initiatives and benchmarking, might be able to produce a similar cumulative case load across different centers and countries. As such, the general thoracic surgery database established by the ASTS reported in 2023 781,000 thoracic procedures from 274 participant hospitals since its inception in 2002 (3). The ESTS reported in 2017 outcomes of 83,035 (malignant) lung operations, which were registered between 2007 and 2017 by 170 European contributing centers, spread across 22 countries (4). When interpreting these data and using them for benchmarking, one must consider though that techniques have been changing overtime and therefore the proportion of for example minimally invasive procedures (i.e., uniportal video-assisted thoracoscopic surgery) reported might not reflect the reality of present day. Additionally, registration in these databases is on a voluntary basis and thus not all European and American hospitals register their cases in their respective databases. Nevertheless, using quality indicators, providing standardized, evidence-based measures

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of health care quality as in such databases could be the next step in further tracking clinical performance and outcomes. Furthermore, the experiences learned by thoracic surgeons in China, where lung cancer also predominates the thoracic surgical disease population, are very relatable to surgeons around the rest of the globe, and sharing and comparing data provides plenty of opportunities in training and clinical research.

In 2021, the Shanghai Chest Hospital has spent a great deal of time on research and engaged in more prospective single- and multicenter controlled randomized trials compared to earlier years (1). It is therefore not uncommon for a UHVC to also publish their own journal, the Shanghai Chest, for which they can be commended. UHVCs, such as the Shanghai Chest Hospital, where 100 patients are surgically treated on a daily base, can speed up and improve the efficacy of clinical trials. As such, the Shanghai Chest Hospital is not limited by a constrained number of study participants and is supported by countless research ventures as part of the SJUTSM. Furthermore, big data that comes with research in these centers could potentially yield substantial cases of rare diseases and numbers on racial/ethnic variations in patients, and therefore studies and treatments could be further differentiated where applicable and necessary.

The Shanghai Chest Hospital has continuously achieved remarkable numbers in patient treatment and safety. By publishing their results year in year out, they can be considered a leader in health care transparency. To potentially accelerate scientific output, joint research projects with the rest of the world could be undertaken and could provide a plethora of advantages to not only the entire thoracic surgical community, but also to the future of our patients. All in all, the impressive statistics of the Shanghai Chest Hospital in terms of number of procedures and in-hospital mortality rate cannot be met by most hospitals in the world and shows that size actually does matter.

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