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The Face of the Next Generation in China

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The field of respiratory medicine has evolved considerably in the last 10 to 20 years. Many new treatments have been developed during this time through basic and translational research. Clinical trials have helped to guide new treatment approaches for patients with pulmonary hypertension, lung cancer, critical illness, sleep apnea, asthma, COPD, pulmonary fibrosis and other conditions (1-4). A robust pipeline of young investigators and scholarly clinicians will be required for the major advances to continue.

The American Thoracic Society (ATS) and Chinese Thoracic Society (CTS) are both large professional societies committed to attracting and retaining top candidates in our field (5-7). In the U.S., pulmonary disease and critical care medicine have been integrated for decades as combined fellowship training program. During this time, there have been concomitant major improvements of clinical outcomes as well as physician satisfaction. With sleep medicine becoming the newest member of the field, a wide range of translational and clinical research opportunities have also become available. In China, combined pulmonary disease and critical care medicine fellowships have been developed in recent years and already have shown promising results (8). The fellowships have attracted excellent trainees to the field who are eager to learn more. However, based on existing time and financial pressures, many Chinese physicians are required to speed through countless numbers of patients with little time for scholarship or critical thinking. Similarly, time to read to stay on the cutting edge is being increasingly marginalized with the realities and imposition of high volume clinics. Both in the U.S. and in China, the predictions of the ‘vanishing physician scientist’ are slowly,

yet steadily becoming a reality as grant funding becomes more scarce (9). We believe that something needs to change in the current model and offer suggestions regarding how health professionals can maintain scholarship and help to advance our field.

- a) Reading: Reading is an essential part of what all doctors should do. With the rapid expansion in new knowledge, health professionals can quickly become out of date without sufficient attention to the latest literature in the top journals. Efforts to standardize training and maintain certification have been challenging in the US and around the world. However, there is general agreement that health care professionals must stay current to remain effective. One option for our Chinese colleagues to stay current is through various ATS reading lists and journal clubs, which are available on www.thoracic.org.
(<http://www.thoracic.org/professionals/podcasts-webinars/>)
- b) Teaching: The Latin origin of the word ‘doctor’ means teacher in the literal translation. The next generation of students and trainees can benefit greatly from the experience and knowledge of those senior to them. Teaching can be rewarding personally, but also can keep both the students and the teacher on the cutting edge. These efforts also help to generate a sufficient workforce to manage more effectively the large number of patients who are seeking care. For example, Medical Ethics is a constantly developing field that is only now receiving some attention in China. Physician education on Medical Ethics is becoming increasingly important, especially in the critical care unit where end-of-

life issues can be quite challenging and complex (10). Case studies with teaching can be a very effective way to learn, and to this end participation in ATS-based courses and other web-based or in-person learning opportunities may mitigate existing knowledge deficits and further enhance such important facets of our profession.

- c) Research: Although not all physicians can be scientists, basic, clinical and translational research must all occur for progress to continue. Busy clinicians can often be highly effective at identifying and enrolling patients into clinical trials. Patient registries via electronic medical records and systematic capture of important data can help to quantify trends and provide evidence that new interventions are yielding important improvements in outcomes. A recent focus on implementation medicine and quality has demanded an assessment of what therapies are actually reaching patients and how their outcomes are changing as a result of these interventions. Such approaches will also be critical to applying new technology such as E-Health and remote monitoring systems, which may ultimately help address efficiently the volume of patients seeking care. In China, with large patient populations and many living in rural areas, the development and application of E-Health is especially important. Physicians have distinctive roles in the research field of E-Health.
- d) Reviews: While systematic reviews certainly have an important place in the literature, clinical reviews can also be quite valuable. In many fields of

pulmonary and indeed medicine in general, we lack a sufficient evidence base to draw meaningful conclusions. Thus, clinical experience can be invaluable to guide decisions and to address unanswered questions. Busy clinicians should thus be encouraged to spend time to write reviews and book chapters as they can provide an important source of valuable information based both on evidence and important experience. Of note, there are differences in disease epidemiology and response to treatment among different patient populations. International collaborations between clinicians and scientists will be important to understand these differences.

- e) **Advanced Clinical Training:** Although standardized basic training for all pulmonologists is a laudable goal, we believe that more advanced training in centers of excellence can have a major impact. Areas such as pulmonary vascular disease, interventional pulmonology, lung cancer and others benefit from advanced sub-specialty training. The ATS International Conference provides opportunities in these areas.

We are optimistic about the future of the field of pulmonary, critical care and sleep medicine among our Chinese colleagues. The times are exciting given the major recent progress that has occurred and the transformative advances that are likely to occur in the coming years. As the ATS and CTS strive to attract the best and brightest into our field, they also play a pivotal role in encouraging all of us to maintain scholarly and

academic goals. Only through further teaching, education, advocacy and research is major progress likely to continue.

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