modifiable window for preventive interventions in asymptomatic or presymptomatic stages, when intervention may be of greatest benefit.

Based on the high incidence and poor prognosis of comorbid HF in patients with COPD, comprehensive chronic disease management for HF and COPD needs to be prioritized. In addition to growing calls to close the persistent implementation gap for guideline-directed medical therapy for both conditions (14), prevention of HF in patients with COPD before the development of overt signs and symptoms needs to be addressed and may include targeting of shared risk factors and mechanistic pathways. Shifting focus upstream to optimize both respiratory and heart health earlier in the life course is urgently needed to curb the growing burden of COPD and HF. ■

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Lung Transplantation Disparities among Patients with IPF: Recognition and Remedy

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In 1963, after decades of experiments on laboratory animals, the first lung transplantation in a human being was performed at the University of Mississippi. The procedure can hardly be considered a success (the patient survived a mere 18 days), and for the next 2 decades, pulmonary transplantation led to consistently poor outcomes (1). In the 1980s, however, the introduction of cyclosporine, together with refined surgical techniques, revolutionized the field, and for the first time, some patients experienced long-term survival after pulmonary transplantation (1). By 1992–2001, median survival after adult lung transplant was 4.7 years, and by 2010–2017, it had risen to 6.7 years (2). These amount to precious years of added life, and improved quality of life, for some patients with end-stage lung disease.

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However, even as the benefits of lung transplantation became apparent, so too did inequities in the allocation of these life-preserving organs. In 1988, 9% of lung donors were Black, yet not one Black person was among the nation's 33 lung transplant recipients (3). By 2021, the share of lung transplants received by Black patients had risen to 10%, still lower, however, than Black people's share of the general population (13%) or of lung donors (18%) (3). Although such statistics are revealing, careful investigations of patient populations with defined chronic lung disease are needed to confirm and understand lung transplant disparities—and help us mitigate them.

In this respect, in this issue of *AnnalsATS*, Swaminathan and colleagues (pp. 981–990), examine predictors of outcomes among patients with idiopathic pulmonary fibrosis (IPF) and provide important new insights, albeit with a focus on transplant disparities by socioeconomic status (SES) rather than race (4). The investigators analyzed the IPF-PRO Registry, a multicenter registry that enrolls patients diagnosed with IPF within the past 6 months using standard criteria. They examined the association between clinical, social, and healthcare-access–related predictors with two endpoints—death and lung transplantation—that were appropriately treated as competing risks in multivariable time-to-event models. Some of their observed associations were unsurprising, such as a lower likelihood of transplantation (and a higher risk of death) among older patients and a greater likelihood of lung transplantation among those enrolled at lung transplant centers (hazard ratio [HR], 4.31; 95% confidence interval [CI], 1.76–10.5). Most concerning, however, was their finding that, for every $10,000 increase in patient's median ZIP code income, the rate of lung transplantation rose by 22% (HR 95% CI, 1.13–1.31). Sensitivity analyses restricted to those likely eligible for transplant, and those evaluated for lung transplant, showed a consistent association between SES and lung transplantation. Careful adjustment for multiple clinical factors (including lung function) makes it unlikely that this disparity is the result of differences in disease severity.

This valuable analysis hence confirms a substantial equity gap in access to lung transplantation among patients with this progressive, incurable lung disease. The study does have limitations. The SES metric reflects income at the area, not individual, level. The IPF-PRO Registry is not necessarily representative of IPF patients nationwide, it includes few non-White patients, and the reason why patients were not referred or why they did not receive transplants is unclear. Nevertheless, a clear pattern emerges from the data: Poorer patients with IPF are substantially less likely to receive a lung transplant than those who are more affluent.

This finding is consistent with other analyses that have identified disparities in lung transplantation by both race and SES. One early study found a trend toward a lower likelihood of lung transplantation among waitlisted Black (versus White) patients with IPF (5). A later investigation found that waitlisted Black patients were less likely to receive transplants before, but not after, the 2005 implementation of the lung allocation system (LAS) in the United States (6), although a more recent analysis demonstrated that non-White race remains associated with lower odds of transplantation in the LAS era (7). These studies, however, examine cohorts of waitlisted patients and, hence, do not reflect disparities in transplant referral, eligibility, or listing. In contrast, Goobie and colleagues recently identified a socioeconomic gap in lung transplantation among a more general cohort of IPF patients at one U.S. registry site but did not find such a gap in a Canadian cohort (8). In another registry-based study, Ramos and colleagues found that patients with cystic fibrosis in the United States had a higher risk of death and a lower risk of transplant relative to those in Canada, a difference driven by low rates of transplantation among patients with cystic fibrosis in the United States with public insurance; they also observed racial disparities in transplantation (9). Together, this literature provides troubling evidence of inequity in lung transplantation that tracks disparities in transplantation of other organs.

Troubling, yet unsurprising. Health care is often rationed by patients' ability to pay in the United States. Uninsured and underinsured individuals with chronic lung disease may avoid evaluation because of cost or may present too late to benefit. Patients' financial means are also explicitly considered in determinations of transplantation eligibility in the United States to ensure that they can afford post-transplantation care. In 2018, the story of a woman who was denied heart transplantation until she had fundraised $10,000 gained widespread attention on social media (10). However, even if financial means were not considered, economic deprivation sits upstream of multiple factors that make poor people "poor transplant candidates." Limited transportation can lead to a track record of "noncompliance" with medical visits; underinsurance often leads to "nonadherence" to medication regimens. Low SES is tied to renal disease (11), cardiovascular disease (12), and social isolation (13)—each of which can undercut transplant candidacy. In some respects, structural racism may function similarly.

Change is clearly needed. For one thing, cost barriers that impede access to the full spectrum of pulmonary care, including lung transplantation, are unethical. The notion that full coverage of tacrolimus or transbronchial biopsies presents a "moral hazard" of patient overuse is risible. In 2021, federal legislation provided full Medicare coverage of post–kidney transplantation medications. Although the legal framework is distinct (Medicare has uniformly covered patients with end-stage renal disease since 1972), the pulmonary community should advocate for reforms that achieve full coverage of lung transplantation care. Universal population coverage, however, is more broadly needed to ensure equitable care for all patients, including those with advanced lung disease. Notably, one analysis identified an association between the Affordable Care Act's Medicaid expansion and the listing of Medicaid patients for lung transplantation (14).

In addition to such reforms, however, transplant teams should also look inward. Their position, to be fair, is not an easy one: Lung transplantation can actually expedite death in a poorly chosen recipient, even if social injustice is, in a sense, to blame. Nevertheless, centers should rigorously subject their criteria, particularly nonmedical criteria, to ongoing scrutiny. Every effort should be made to seek out creative answers to social and economic barriers to transplantation, including through the

provision of resources and referrals (15); and equity in transplant (including by race/ethnicity and socioeconomic status) should be an explicit and monitored goal within institutions.

Nevertheless, oppressive social structures will, invariably yet unfairly, make some less able to withstand the removal and replacement of their lungs than others. Achieving full equity in transplant, hence, also requires the realization of a more equitable society. ■

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Getting What You Pay For

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Health policy has a long and often unfortunate history of unintended consequences resulting from changes intended to improve health care quality and efficiency. This record extends to the intensive care unit (ICU), where researchers and policymakers have long sought to define who benefits from ICU admission and create policies that promote ICU utilization for only those who will benefit. Ethical and logistical barriers to randomization challenge prospective research defining who benefits from ICU care; as such, most research is retrospective and, thus, inherently plagued by confounding by indication.

In the United States, ICU admission is not specifically regulated. There are guidelines from professional organizations (1) and reimbursement policies delineating how physicians can bill Medicare for critical care services (2). But, the way hospitals use ICU beds varies greatly, as demonstrated by the substantial heterogeneity even among patients with the same diagnoses (3–5). ICU admission is also affected by organizational

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