



PULMONARY & CRITICAL CARE MEDICINE

DEPARTMENT OF INTERNAL MEDICINE

UNIVERSITY OF MICHIGAN HEALTH SYSTEM

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Re: Why Lauren Ferrante Has Earned the Early Career Achievement Award

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To My Colleagues:

There is a specter haunting critical care research and practice. We all know age and aging matter fundamentally to both our science and our care. We know—or at least suspect—that age actually outperformed qSOFA in its ability to predict outcomes of potentially septic patients in the Sepsis III development cohorts. We know—or at least suspect—that many patients fear disability and long-term nursing home placement as they are fear short-term mortality.

And we know that critical care research and practice's tools for thinking about aging are crude. We hear about simple age cut-offs being used to triage ICU care. We hear mumblings about "physiologic age" that have little empirical content or see stumbling (albeit prosing) efforts to incorporate "frailty" into care. We worry about clinical trials that only recently looked past mortality as an outcome, and the guidelines dependent on that evidence.

I propose Lauren Ferrante for the Critical Care Assembly Early Career Achievement Award because Lauren has looked at this specter—and the

specter is not "aging", but rather our *ignorance about aging*—and chosen to fight it with a multi-pronged theoretical, empirical, and institutional assault that has already changed my practice in simple and deep ways. Let me talk about each of these contributions in turn, then discuss the other criteria for the award.

Theoretical Contributions to Science of Critical Care

Dr. Ferrante's fundamental theoretical pivot in critical care research has been to deeply master decades of gerontology research, and creatively repurpose its tools to make the ICU better. It is easy to gloss over how large an achievement this was. To be frank, early geriatrics knew a few things from birth: one of those was that the ICU was bad for old people, and that the core task of geriatrics was keeping old people out of the hospital, and definitely out of the ICU. This is *not* a propitious basis for mutually respectful collaboration with the ICU.

Nonetheless, Lauren was able to build the scientific and cultural bridges to learn to scientifically assess functional recovery, to learn to think about palliative care integration (as so many of us), yet to retain a foundational belief in the capacity of critical care to heal. She has achieved a scientific synthesis that unites gerontology's deep respect for trajectories of illness and recovery, focus on non-mortal outcomes, and the essential role of families and communities with a deep understanding of physiology, the particular therapies and institutional settings in which we manage that physiology, and a refusal to accept either nihilism or naivete about caring for older patients.

Empirical Contributions to Science of Critical Care

Let me comment on three empirical contributions Lauren has already made. First, in a pioneering series of papers, she provided us the richest and most nuanced data available about trajectories of recovery. Recognizing that most ICU cohorts are inception cohorts, and that key knowledge gaps existed about the effect of premorbid function in critical illness, Dr. Ferrante worked to build a cohort of critically ill older adults within a rich longitudinal study of older persons who had undergone monthly functional assessments over the course of many years. In an already classic paper, Dr. Ferrante leveraged these prospective functional assessments to identify distinct functional trajectories before and after an ICU admission, determine the probability of transitioning between these trajectories in the setting of a critical illness, and demonstrate that an older adult's pre-ICU functional trajectory was as impactful as mechanical ventilation in its association with 1-year mortality (PMID:25665067). Subsequent papers built on this work to demonstrate the powerful impact of geriatric vulnerability factors, such as frailty and cognitive impairment, on the post-ICU functional outcomes of

older adults. Through the use of rich longitudinal data, Dr. Ferrante demonstrated the association of prospectively measured pre-ICU frailty with post-ICU disability, new nursing home admission, and mortality (PMID:29559308), with a follow-up study demonstrating that pre-ICU frailty and pre-ICU cognitive impairment interact in their effects on post-ICU disability (PMID:30883191).

Second, Dr. Ferrante made novel discoveries about factors associated with functional recovery that provide actionable targets for older adults in the ICU. While that evaluating the rate of recovery and the association of a comprehensive array of factors associated with functional recovery among older adults who survived a critical illness, Dr. Ferrante demonstrated only approximately half of older ICU survivors achieve functional recovery over six months, with a median time to recovery of three months. This analysis included patient-related and geriatric factors that are not typically evaluated in critical care studies, and demonstrated that hearing impairment and vision impairment, respectively, were the two factors most strongly associated with a lack of post-ICU functional recovery (PMID:26840348). These factors represent novel targets for interventions among older ICU patients. Lauren took the fundamental geriatric insight about the importance of assistive devices, and applied to the ICU. Her powerful observational finding about the delirigenic potential of withholding hearing aids and glasses changed my practice. She already has intervention trials in the field to test the translation of this set of observations into a new standard of care.

Third, Lauren is already mentoring a next generation of critical care scholars, and the results are spectacularly interesting. She recently published two deep papers about the ways in which neighborhood social context (PMID: 34636807) and social support (PMID: 34491282) influence recovery. My fellows on clinical service wanted to read these as much as they wanted to read about key recent RCTs of dexamethasone and precedex. But not only did Lauren and her mentee show a key new epidemiologic finding—they did so very intentionally in the context of research showing that social isolation is *modifiable*. That is, they not only showed that we had a new risk factor for bad outcomes—they showed we have a new potential tool in our armamentarium to fix it. How amazing is that?

Institutional Contributions to Science of Critical Care

Lauren Ferrante knows that critical care is a team sport. She is a brilliant leader and motivator of those teams, too. In 2016, she founded the American Thoracic Society (ATS) Critical Care Assembly Aging & Geriatrics Working Group, which subsequently expanded into the ATS-wide Aging in Critical Care Interest Group. The group now includes hundreds of members and working groups on lung aging biology and clinical pulmonary medicine. This group has become a mutually supportive catalyst for a group of young clinician scholars to come together to develop their own science and educate the rest of us. Their activities have ranged from symposia at nearly every ATS through webinars and an ATS Toolkit for Age-Friendly Pulmonary/Critical Care Best Practices, available online. From the beginning, they have closely integrated the National Institute on Aging, pragmatically recognizing that funding is essential; their work spans animal models to population health. They published an early and profound manifesto the *Annals* ATS that has served as a guide for others who want to follow in their footsteps (PMID: 29298089).

Lauren not only bridges out from ATS, she helps bridge other groups to ATS. For example, she serves, since 2016, as co-chair of the American Geriatrics Society (AGS) Medical Subspecialties Section, funded by the John A. Hartford Foundation and Atlantic Philanthropies. The focus of this longstanding section in the AGS is to promote aging-related research, clinical care, and professional development among subspecialists, particularly aging-focused specialist researchers. Her leadership of this group resulted in publications addressing professional development topics including building a high-performing clinical research team (PMID: 29684244) and strategies for dual-physician households (PMID: 31074762). In 2020, she also accepted leadership positions in the AGS mentoring activities (the Rising Star program) that are part of an administrative supplement to the NIA's new Clinician Specialists' Rising Stars in Aging Research Program (Clin-STAR) initiative. Her c.v. documents her extraordinary multiple other contributions in this space.

Other Contributions to Clinical Care

Let me mention just a few other of the remarkable contributions Dr Ferrante has made.

From an organizational, clinical, and educational perspective, she has served on the Ethics Committee of Yale-New Haven Hospital for many years, with over a decade's worth of experience in applied ethics and special expertise in triage ethics. During the first wave of the COVID-19 pandemic, she was a member of the Triage Protocol Drafting Committee, a small group that developed protocol for allocation of scarce resources during the COVID-19 pandemic for the Yale-New Haven Health System (PMID: 32991327). She contributed to the

national conversation around the allocation of scarce resources during COVID as a coauthor on position statements and other published work (PMID: 32374440, 32374466, 32574404). Her ethics expertise and primary role as a physician-scientist are united with her educational work as the Ethics of Biomedical Research instructor in Yale's Investigative Medicine Program.

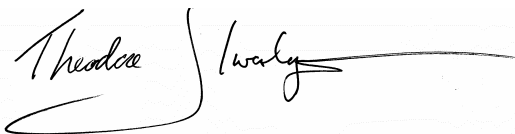
She is also the physician director of the YNHH ICU early mobilization program (and has been since its inception). The STEPS-ICU Mobility Program, a YNHH Quality Improvement Initiative, is an early mobilization program that was implemented in the main campus Medical ICU in March of 2015. Before the STEPS-ICU program was implemented, nearly 60% of MICU patients either had no activity order or were ordered for bedrest; since implementation of the STEPS-ICU program, greater than 95% of MICU patients have had activity orders, and all process outcomes (which are tracked using a dashboard) have improved significantly. Three years ago, she completed a pre-/post-intervention analysis of the program, which demonstrated a significant decrease in ICU length of stay, a decrease in ventilator hours, and an increase in discharges home. Last year, she contributed to the YNHHS ICU Clinical Pathway initiative and developed a mobility pathway for use in all health systems ICUs. She has also completed additional quality improvement projects within the program, including a femoral line mobility pilot project, which included developing an algorithm for mobilization with femoral dialysis catheters or arterial lines, and a CVVH mobility algorithm—yet somehow she makes this all work as a complement to her incredible research productivity..

Finally, I mention in passing that she has also been supporting the Society of Critical Care Medicine, including their Geriatric Critical Care Knowledge Education Group and Post-ICU Syndrome (PICS) Prediction and State-of-the-Art Task Force (PMID: 32947467, 33060502).

Summary

It is my absolute honor to recommend Lauren Ferrante to join the distinguished ranks of the Critical Care Assembly's Early Career Achievement Awardees. Her theoretical, empirical, and institutional contributions to our field already put her in the first ranks. Her deep fusion of gerontology and critical care increasingly produce health services research and clinical epidemiology that addresses our deepest professional and clinical concerns. We have never written together; she is not at my institution; she is not my mentee. I write solely because she is a superstar scholar who already is building institutions that help other young scholars and is already mentoring others. She embodies the best of what our Assembly seeks to recognize.

Sincerely,

A handwritten signature in black ink, appearing to read "Theodore J. Iwashyna". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Theodore J. Iwashyna, MD, PhD
Alpheus W Tucker, MD, Collegiate Professor of Internal Medicine