

The National Institutes of Health Physician-Scientist Workforce Working Group Report: A Roadmap for Preserving the Physician-Scientist

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We all tend to get jaded by the deluge of “reports” that emanate from our professional societies, Federal regulatory bodies, funding agencies and non-governmental organizations; however, sometimes a report is published that should be required reading for every member of the field. One such report is the “Physician-Scientist Workforce Working Group Report” (PSW-WG) published by the National Institutes of

Health (NIH) in June 2014.¹ Led by David Ginsburg, Sherry Mills, and Susan Shurin, the PSW-WG distilled a complex set of pushes and pulls that have adversely affected the physician-scientist workforce in the U.S. over the past two decades and created a set of excellent recommendations for the NIH to follow in order to stem the increasing loss of this critical national resource. While the recommendations are both practical as well as innovative, change will require a commitment not just from the NIH but also from all of those who benefit both directly and indirectly from the fruits of the labor of the country’s physician-scientist workforce.

That there has been a decline in the PSW over the past two decades is axiomatic. The increased debt burden of medical school graduates, the length of most MD-PhD programs and postdoctoral research opportunities, the capriciousness of NIH funding, and the pressures to meet clinical benchmarks have been well-recognized threats to the PSW. However, the PSW-WG report raises additional salient impediments to the pursuit of a career in research: the increasing complexity of research methodology, a shift towards team science that can make promotion more challenging, the increasing time commitment to maintain board certification, and the decreasing number of mentors and role models in academia. Ironically, in the face of substantive challenges, the PSW-WG reported a significant rate of success for graduates of the nation’s MD-PhD programs as 67 percent of MD-PhDs trained at a cohort of MD-PhD programs were employed at academic medical centers and universities. Similarly, physician-scientists who had received a K or LRP (Loan Repayment Program) award had an excellent success rate for their first RPG (Research Project Grant) award.

However, not all physician-scientists were as successful. The report points out that in a cohort of individuals who received their first postdoctoral appointment to a T32 grant between 1999 and 2008, only 25 percent applied for an independent award and only 10 percent were successful in obtaining funding. Furthermore, in 2013 only 609 students entered an MD-PhD program in the

U.S. and there was a significant decline in MD applicants for K awards—a trend that will make it increasingly difficult to maintain the current, albeit small, number of physician-scientists in the U.S. Nonetheless, the report’s data in aggregate suggests that if we can create innovative and supportive programs and avoid the increasing number of pitfalls, we can begin to repopulate the pool of physician-scientists in a research career who are pursuing scientific discovery.

Recognizing the challenges, the PSW-WG made the following recommendations:

- 1) NIH should sustain strong support for the training of MD-PhDs
- 2) NIH should shift the balance in National Research Service Award postdoctoral training for physicians so that a greater proportion are supported through individual fellowships, rather than institutional training grants.
- 3) NIH should continue to address the gap in RPG award rates between new and established investigators.
- 4) NIH should adopt rigorous and effective tools for assessing the strength of the biomedical workforce, including physician-scientists, and tracking their career development and progression.
- 5) NIH should establish a new physician-scientist specific granting mechanisms to facilitate the transition from training to independence.
- 6) NIH should expand loan repayment programs and the amount of loans forgiven should be increased to more realistically reflect the debt burden of current trainees.
- 7) NIH should support pilot grant programs to rigorously test existing and novel approaches to improve and/or shorten research training for physician-scientists.
- 8) NIH should intensify its efforts to increase diversity in the physician-scientist workforce.
- 9) NIH should leverage the existing resources of the Clinical and Translational Science Awards (CTSA) program to obtain maximum benefit for training and career development of early-career physician-scientists.

While each of these recommendations is of critical importance, it must be recognized that it is highly unlikely that the NIH alone can accomplish the goals set forth in the PSW report. As the PSW-WG noted, the NIH budget has decreased nearly 22% over the past decade while the costs of research have increased considerably and it is highly unlikely that we will see a marked increase in NIH funding in the near future. Thus, we must convince the numerous stakeholders who benefit from the research that emanates from the academic medical center-based

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physician-scientist workforce that the health of both the U.S. population as well as the health of the U.S. economy will rely in large part on the ability of this group to discover new cures for human disease.

Who are the key stakeholders outside of the NIH that need to step to the plate to help solve the issues described by the PSW taskforce? First are our universities. Changes must be made in tenure policies to accommodate team science, to delay the tenure clock for faculty with child care responsibilities, and to create part-time faculty positions that include benefits. Second, the American Board of Medical Specialties must create certification pathways that accommodate physician-scientists and take into consideration their sometime narrow areas of expertise. The PSW taskforce recognized that the current recertification algorithms are particularly onerous for a young faculty member who has both research and clinical responsibilities. Third, private insurance companies should provide financial support for the investigative efforts by physician-scientists focused on informatics, pragmatic trials and outcomes research. Currently, this support comes almost exclusively from Federal and institutional funds yet the private insurers will reap the rewards. The best example is the Patient-Centered Outcomes Research Institute (PCORI) data sharing networks (PCORnet). Linking 11 Clinical Data Research Networks (CDRNs) that originate in healthcare systems, 18 Patient-Powered Research Networks that are operated and governed by groups of patients and a Coordinating Center led by Harvard Pilgrim Health Care Institute and the Duke Clinical Research Institute, the PCORnet will provide physician scientists with real world data and provide the opportunity to shift from investigator-driven clinical research to patient-centered studies. The Accountable Care Act funded the creation of PCORnet; however, many participating academic medical centers including our own have incurred substantial costs in creating the requisite infrastructure and staff for this enormous project. Private payers

will clearly take advantage of the new data—and as such should shoulder a portion of the costs.

Finally, the pharmaceutical and device industries must also contribute to the training and support of the physician scientist workforce because it is this group of scientists that have identified the targets, created the blockbuster drugs and devices or led the clinical studies that have changed the face of American medicine. Indeed, many physician scientists have pursued careers in industry and the leadership of the pharmaceutical industry is filled with physician-scientists. The pharmaceutical and device industry is happy to share the rewards, but far too often provides little support for the early experiments and disappointments that occur along the road of drug development. This will only change when universities stop being pusillanimous and demand substantive upfront payments for intellectual property rather than back-loading royalty payments since payments received a decade later have little impact on the ability of an investigator to carry out research in the short term. The new NIH Research Evaluation and Commercialization Hub grants which will provide early seed money through a university-NIH partnership will help as they will provide important seed capital targeted to early-stage discoveries.

The Physician-Scientist Workforce Working Group has provided a roadmap that the NIH can use to impede the demise of the physician-scientist in the U.S. and to create incentives that will begin to repopulate and expand this critical national resource. It is now up to us to help in this critically important effort and to work to enlarge to pool of stakeholders who will contribute to the effort.

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REFERENCE

1. *Physician-Scientist Workforce Working Group Report*. Bethesda, MD: National Institutes of Health; 2014.