

Nephrology Workforce Research

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tion of American Medical Colleges and Health Resources and Services Administration. He also helped establish the University at Albany's Center for Health Workforce Studies before joining GWU.

"The goal of our research is not to find 'the answer' but to provide the nephrology community with better data and information so that they can make better, more informed decisions," Salsberg told *ASN Kidney News*.

He noted that one of greatest challenges for nephrology—as well as workforce planners—is an evolving delivery system. "This reflects the organized efforts to change the delivery system, such as through reimbursement changes to control costs and increase value, as well as the development of new interventions and staffing mixes," Salsberg said. "This makes it very difficult to project future needs."

The initial report, *The US Nephrology Workforce: Developments and Trends*, was published in advance of ASN Kidney Week 2014. The analysis of the current state of nephrology prompted discussion and debate at the meeting. Many of the conversations centered on the question of whether the United States is overproducing nephrologists and if so, how it should be addressed. Salsberg believes that by closely examining recent trends and developments and assessing the impact of alternative scenarios the research can help stakeholders make more informed decisions.

Challenges for the future generation

GWU's next report on nephrology fellows, including data from its 2014 fellow survey, was scheduled to be published in December 2014 as of press time. Its release comes after the disappointing AY2015–2016 National Residency Match Program (NRMP) Specialties Matching Service (SMS) nephrology Match. Half of nephrology training programs and nearly a third of nephrology fellowship positions went unfilled. This represented a 6 percent and 24 percent increase in just one year.

"The results of the NRMP specialty match for the 2015 appointment year were discouraging," Salsberg said. "It may

be that the number of new nephrology fellows has increased more rapidly than the demand for new nephrologists."

"It would appear that the changing delivery system and the bump up in the number of nephrology fellows being trained each year has contributed to a soft job market nationally," Salsberg noted. "However, it is important to do additional research to assess the possibility of regional or local shortages at the same time we have more than enough in other areas. Similarly, we need to look at the subspecialty areas in nephrology to better understand if supply/demand is different for different subspecialty areas."

At the same time as the nephrology Match results were released, a new modeling analysis by the Centers for Disease Control and Prevention determined that Americans have a high lifetime risk for CKD and that its prevalence will continue to increase (2).

The dismal Match results and other challenges nephrology faces are in no way unique to the specialty. "Many other specialties have faced similar issues," Salsberg told *ASN Kidney News*. "One of the better known examples is

ogy fellowship training program directors, division chiefs, ASN Workforce Committee members, and other key leaders and stakeholders.

The Task Force will need to quickly assess the future viability of the Match, identify ways to ensure the Match's integrity, and attempt to clarify the ideal number of offered fellowship positions (based on recent estimates of the demand for nephrologists throughout the United States).

"While there is no authority to decide who should reduce fellowship positions if that was decided to be a wise course, the specialty should try to identify the values and goals of training that are important to assuring the nation access to high quality kidney care," Salsberg said.

By the spring of 2015, ASN and the academic nephrology community will need to decide whether the specialty will continue in NRMP SMS Match. As of press time, the Task Force members and its charge weren't available, but are expected to be announced shortly.

For 2015 the GWU researchers will expand their focus to examine the care delivery system, geographical distri-

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the case of anesthesiology in the early 1990s. When reports came out that new anesthesiologists couldn't find jobs, the number of U.S. medical school graduates (USMGs) applying to enter the specialty dropped by more than half over about three years. Some programs closed, others cut back. After several years of lower production, demand rose and anesthesiology again began to attract a very high percentage of USMGs."

ASN Nephrology Match Task Force

The AY2015–2016 Match results prompted the ASN Council to form the Nephrology Match Task Force. The Task Force will be comprised of Councilors, nephrol-

ogists, and training programs, among other topics. Current and future GWU reports, as well as ASN's brief analysis of the AY2015–2016 NRMP SMS nephrology Match are available at <http://www.asn-online.org/education/training/workforce/>. ●

Reference

1. Salsberg E, et al. *The US Nephrology Workforce: Developments and Trends*. Washington, DC: American Society of Nephrology; 2014.
2. Hoerger TJ, et al. The future burden of CKD in the United States: A simulation model for the CDC CKD Initiative. *Am J Kidney Dis* 2014, in press. doi: <http://dx.doi.org/10.1053/j.ajkd.2014.09.023>.

Personalized Medicine Program Gets Green Light

Suppose you're seeing a new patient with kidney disease, high blood pressure, and high cholesterol. What if you could order a single lab test that would assess all known gene variants that might affect his response to common drugs—not just medications he's currently taking, but also common drugs that may be prescribed in the future? That's the approach being studied by The University of Chicago's Center for Personalized Therapeutics and other centers nationwide.

The goal is to develop a "medical system model" to overcome barriers to personalized medicine, incorporating patient-specific pharmacogenomic results into everyday patient consultations. The model is being tested now in the Center's ongoing "1200 Patients Project" (ClinicalTrials.gov no NCT01280825). Peter H. O'Donnell, MD, is principal investigator.

The 1200 Patients Project is designed to perform "broad, preemptive pharmacogenomic testing" for a large number of germline polymorphisms with known effects on drug responsiveness or toxicity. The test, performed in a Clinical Laboratory Improvement Amendments (CLIA) setting, reports on genes affecting widely used medications including aspirin, hydrochlorothiazide, various classes of blood pressure-lowering drugs, statins, and warfarin. The cost of testing is less than \$500 per patient—about the same as for most individual CLIA genotype tests.

An important part of the model is delivery of the results to

physicians via an interactive Web portal, or "genomic prescribing system" (GPS). The GPS presents results in a color-coded traffic light system: green means a favorable result, yellow means caution, and red means high risk. Physicians can also access further information and a patient-specific interpretation of the test results, for a "virtual pharmacogenomic consult."

The 1200 Patients Project has been launched to evaluate the feasibility and utility of incorporating a preemptive pharmacogenomic testing approach into routine medical care. Eligible patients were receiving routine care or treatment for conditions such as heart disease, inflammatory bowel disease, autoimmune disease, or others. All were regularly taking at least one, but no more than six, prescription drugs, with a life expectancy of at least three years.

Last year, O'Donnell and colleagues published results from the first year of the 1200 Patients Project in a special issue of *American Journal of Medical Genetics*. At that time, 812 patients had participated and 608 had been successfully genotyped. Of 268 clinic encounters at which genotyping results were available, participating study physicians accessed the GPS in 230 visits.

A total of 367 result signals were delivered via the GPS. Green lights accounted for 57 percent of results, yellow lights for 41 percent, and red lights for 1.4 percent. In 100 percent of the high-risk red light alerts, physicians clicked through to access the clinical details. They also clicked on 72 percent of

yellow lights, as well as 20 percent of red lights.

The information delivered via the GPS was routinely used in consultations, and patient interest in being tested was "nearly ubiquitous." O'Donnell and coauthors write, "We demonstrated that delivered pharmacogenomic alerts had widespread applicability to our patient population and to the drugs they are routinely prescribed." At the time of the report, the investigators were accruing about 30 patients per month, with increased participation expected over time.

So far, the results demonstrate the successful implementation of preemptive pharmacogenomic testing in a program that is appreciated by physicians and patients and routinely used in clinical care. Of course, the ultimate goal will be to determine how preemptive testing and pharmacogenomic decision support will affect key clinical outcomes—including high-risk prescriptions, adverse events, and nonresponse to prescription drug therapy. ●

