Top Ten Things to Know
Interdisciplinary Models for Research and Clinical Endeavors in Genomic Medicine

1. The completion of the Human Genome Project has unleashed a wealth of human genomics information, but it remains unclear how best to implement this information for the benefit of patients.

2. The standard approach of biomedical research, with researchers pursuing advances in knowledge in the laboratory and, separately, clinicians translating research findings into the clinic as much as decades later, will need to give way to new interdisciplinary models for research in genomic medicine.

3. These interdisciplinary models should include scientists and clinicians actively working as teams to study patients and populations recruited in clinical settings and communities to make genomics discoveries—through the combined efforts of data scientists, clinical researchers, epidemiologists, and basic scientists.

4. This scientific statement outlines the opportunities and challenges in broadly implementing new interdisciplinary models in academic medical centers and community settings and bringing the promise of genomics to fruition.

5. A major goal of interdisciplinary efforts in genomic medicine is to identify novel associations between molecular signatures—whether within the genome or the expressed genome—and clinical phenotypes—including responses to medications, onset of diseases, and disease outcomes—that can be leveraged for the improved diagnosis, prognosis, and treatment of patients.

6. Some of the challenges entailed in translating novel research findings into clinical tests are whether research findings from genomic studies are verifiable and generalizable across patient populations, whether the tests are clinically actionable, and cost-effectiveness and assessment of test characteristics.

7. Given the need for large numbers of individuals to enable adequately powered genomic studies, collaborative efforts spanning many institutions have become the norm. While these frameworks have proven to be quite successful in advancing genomic research, they have several limitations. Some of these can be addressed by re-centering genomic research endeavors within hospitals and healthcare systems.

8. Approaches built on a partnership that brings together the expertise of researchers and clinicians with the trust of the public will be instrumental in facilitating large-scale research efforts, fostering shared governance, and shaping the future of informed consent and return-of-result processes in the evolving era of genomic medicine.

9. Ideally, these genomic data would be integrated into the electronic health record and for patients who have opted-in, the data would be accessible to researchers for use in genomic studies for both the investigation of the root causes of diseases and the identification of molecular profiles that predict disease risk.

10. As outlined in this scientific statement, research findings in this space will yield novel insights into disease and improved methods to use the patients’ genomic data for the prediction, prevention, diagnosis, prognosis, and treatment of those patients and, ultimately, pave the way for improved cardiovascular and stroke care for the entire population.