The Emerging Genetics Workforce: A Study of Physician Geneticists’ Professional Lives
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ABSTRACT

PURPOSE: The purpose of this study is to explore the current practice and geographic location trends of physicians certified in clinical genetics, clinical biochemical genetics, and medical biochemical genetics during the 2011, 2013, and 2015 certification cycles.

METHODS: Physicians’ personal data was collected from public internet domains including the American Board of Medical Genetics and Genomics (ABMG) provider database, the CMS National Plan and Provider Enumeration System, publicly available professional-biographies, and university affiliations. The search results were cross-referenced for the greatest accuracy. Geographic location data was plotted onto maps.

RESULTS: Approximately 27% (n=69) physicians board-certified in genetics are currently practicing in non-traditional roles. The physicians practicing outside of the traditional genetics field were categorized as follows: Obstetrics and Gynecology (27%, n=19), Research (20%, n=14), Maternal-Fetal Medicine (13%, n=9), Neurology (7%, n=5), Internal Medicine (7%, n=5), Pediatrics (6%, n=4), or other fields (19%, n=13).

CONCLUSION: Although geneticists practicing in non-traditional roles make contributions to other medical disciplines, these physicians are helping to perpetuate the growing deficit of practicing clinical geneticists. Further discussion is warranted on recruiting geneticists and geographic location issues to improve the quality of medical genetics services.

INTRODUCTION

Without question, it is an exciting time to be a geneticist. With the wide expansion of genetic testing available, including whole exome sequencing, in clinical practice diagnostic yield for previously undiagnosed conditions has increased considerably. In both the care of diagnostics and therapeutics, clinical geneticists are responsible for much of the disease-specific aspects of care. As ability to diagnose and treat improve, the demand for genetics services increases. Unfortunately, supply is not keeping up with demand. This workforce shortage has been long discussed. An October 2004 report of the American Society of Clinical Genetics stated, “The situation is critical and underscores the increasing role of geneticists beyond traditional roles into oncology, cardiology, and neurology.”

METHODS

Primary Practice Designations

2011-2015

<table>
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<th>Year</th>
<th>Clinical Genetics</th>
<th>Other</th>
<th>Cycle Total</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>55</td>
<td>24</td>
<td>79</td>
</tr>
<tr>
<td>2013</td>
<td>71</td>
<td>21</td>
<td>92</td>
</tr>
<tr>
<td>2015</td>
<td>57</td>
<td>24</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>69</td>
<td>252</td>
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DISCUSSION

To our knowledge, this is the first study attempting to identify a geographic maldistribution of practicing clinical geneticists and examine the number of board-certified geneticists practicing in disciplines other than clinical genetics. We hope to identify some of the underlying issues causing the decline in the number of practicing clinical geneticists and their choice in practice locations, and what can be done to improve the current situation.

Certified Geneticists Practicing in Non-Traditional Roles

• More primary care physicians have expanded their basic genetic knowledge. This along with the growth in genetic technology has begun to redefine the clinical genetics specialty. Presently, physicians and residents will mostly:
  - Provide counseling and testing for the most common disorders
  - Educate and treat genetic counselors and other professionals
  - See patients referred by primary practices requiring specialized genetic services

Clinical Geneticists in Specialty Domains

• Practice in specialties requiring specialized genetic services

Geneticists in Specialty Domains

• Practice in specialties requiring specialized genetic services

Geographic Maldistribution

• The number of certified clinical geneticists has been declining with each certification year despite the growing demands.

• 22 states had less than five physicians in the 3 most recent certification cycles.

• Rural areas and small cities have limited access to genetic services.

• As expected, personal lifestyle preferences may contribute to practice location including location desirability, distance from family, available financial resources, distance from training locations, more.

Potential Solutions

• Medical schools that cover the costs of tuition for those with strong desires to practice in rural areas.

• Loan repayment programs specifically for clinical geneticists practicing in rural or underserved locations.

• Alter current recruitment methods by increasing exposure during medical school.

• Implementing a mentorship program: 43% of genetics residents reported that genetics was a field of interest in medical school.

• Encourage medical school graduates in genetics residencies to remain in genetics.

• National Department of Health and Human Services and National Institutes of Health.

CONCLUSION

In summary, the growth of genetic knowledge demands more experts in clinical genetics, yet the trend is troubling. In the past, many are practicing outside a traditional genetic practice. Fewer people are certified every cycle, and in recent years, nearly a third appear to be practicing outside a traditional role. The growing number of non-traditional roles benefit from the training and make important contributions to other medical disciplines. There also continues to be a large number of registered trainees in genetic programs, which may partially be due to the growth of genetic services, particularly in remote or rural locations. Future efforts can be made to relieve these problems by increasing exposure to clinical geneticists, restructuring recruitment, and providing incentives for practice.

REFERENCES