Developing Physician Scientists During Pediatric Residency

APPD Spring Meeting 2019

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Learning Objectives

• Describe the training needs of physician scientists
• Discuss elements of residency training for physician scientists with expert-facilitated small group discussions
• Describe residency program models that develop and prepare physician scientists for fellowship and junior faculty positions
Think-Pair-Share

• How do you define a physician scientist?
• What are a few successes your institution has had in supporting physician scientists-in-training?
• Where are the challenges?
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Who are physician scientists?

• Dedicate their careers to advancing our understanding of diseases and developing new therapies and measures to improve health

• Areas of research may include basic/translational research, clinical research, or other areas

• Often, funded investigators

• Also known as: physician-investigators, clinician scientists, clinician-investigators, and clinician researchers
Grant funding for MDs vs. MD/PhDs

Hall et al, Academic Medicine, 2017
Leaky Pipeline for Physician-Scientists

"In the absence of physician-scientists, the bridge between bench to bedside will weaken—perhaps even collapse"
• Addressing demographic changes- 73% women, 2009—gender pay differences, childcare, family-friendly career paths, faculty mentorship

• Structure Conflicts of Interest – institutional constrained funding results in increasing clinical responsibilities competing with research time

• Regulatory Fatigue in Training & Oversight- increased clinical documentation over time, individualized clinical and AGME requirements increase research time/engagement during residency & fellowship

• Generational Issues- lack of transparency in tenure and promotion

• Financial debt of trainees- increased debt burden of graduates

J. of Peds, 2014
“Physician-scientists make a unique contribution to biomedical research and the level of their participation is of high interest to educators, research institutions, and policymakers...”
Patching the Pipeline: Success Outcomes from the NIH Physician-Scientist Fellowship Program

• Pediatric Scientist Development Program (PDSP)
• Career Development Program During Fellowship
• Protected Research Time in Fellowship
• Joint Partnership: Association of Medical School Pediatric Department Chairs, NICHD, March of Dimes, American Academy of Pediatrics, American Pediatric Society, Pediatric hairs of Canada, SickKids Foundation

**Figure.** NIH funding comparison of MD/PhDs and MDs selected for the PSDP with candidates who applied but were not selected. K, K award; R, R award.

Hostetter, Margaret. J. Peds., 2012
The role of residency programs

• Important mission to train physician scientists
• Significant opportunities and challenges throughout physician scientists’ training and careers
• Possible pathways: American Board of Pediatrics’ Integrated Research Pathway (IRP) and Accelerated Research Pathway (ARP)
• Competing needs: clinical training, research training, work-life integration and wellness
• Communication between residency & fellowship programs
## Metrics for developing physician scientists

### Characteristics and Metrics of Success for Three Priorities for Future Pilot Programs to Recruit, Retain, and Sustain the Clinician–Investigator Workforce

<table>
<thead>
<tr>
<th>Research in residency</th>
<th>Research on-ramps for health professionals</th>
<th>Faculty networks</th>
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<tbody>
<tr>
<td>- Research and clinical activities leading to research and clinical competence and board eligibility</td>
<td>- Research opportunities at multiple career stages</td>
<td>- National links between clinician–investigators from underrepresented groups who are few in number at any individual institution</td>
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<tr>
<td>- Medical board approval for research in residency models in different specialties</td>
<td>- Maximized support for candidates from underrepresented groups</td>
<td>- Connections by specialty, gender, or underrepresented group</td>
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<td>- Postgraduate year salary support</td>
<td>- Research doctorate following health professional training</td>
<td>- Nominations by institutions</td>
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<td>- Accommodations for a range of prior research experience</td>
<td>- Research skills taught in master’s programs</td>
<td>- National networking and career sponsorship</td>
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<td>- Mentor development</td>
<td>- Coordination of opportunities across institutions</td>
<td>- Enhanced research efforts</td>
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<td>- Continued research support during fellowship</td>
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<td>- Leadership needs addressed</td>
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### Broad metrics of success

- **Short- and intermediate-term:** Research publications and presentations; proportion of effort in research; participation by diverse groups
- **Long-term:** Research grants (National Institutes of Health or other); jobs that involve research; patents, clinical trials, investigational new drugs, contracts; impact on scientific discovery and health

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Hall et al, Academic Medicine, 2017
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Facilitated small groups

- 2 rotations, 15 minutes each
- Group 1: Mentorship, peer mentorship and personal support
- Group 2: Clinical training and the ARP and IRP pathways
- Group 3: Goals and objectives for research training in residency
- Group 4: Funding and infrastructure
Large Group report-out

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• Group 3: Goals and objectives for research training in residency
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Models of Physician Scientist Residency Programs
Alternate paths for physician-scientists

1. Majority of physician-scientist trainees opt for categorical or ABP-approved pathways (ARP/IRP)
2. “Significant” prior research experience
3. Combined programs (Peds-Neuro, Peds-Genetics, etc.)
4. Non-traditional subspecialty paths
Lessons learned

1. Early identification of subsequent training goals
   - Pediatric subspecialty vs other
   - What paths exist in your program?

2. Consideration of future clinical training
   - Will further training involve clinical time?

3. Clear expectations for research mentors and teams of mentors
   - Look across your institution, but match them with people who know your training program
4. Build a community of scientists
   - What other programs can you partner with?

5. Consider the continuum of training
   - Post-residency experiences (post-doc, MSF)

6. Plan how to support them if they take an alternate route
   - Continuing mentorship after residency
Goal: deconvolute the pathway to becoming and independent and successful Pediatrician-Scientist

Curriculum: Integrated Research Pathway

Mentorship & Support: Residency and Fellowship
Mentorship
• All residents paired with three mentors

Culture Building Events
• Physician-Scientist Career Development noon conference
• Evening physician-scientist networking seminar
• Annual Retreat

Academic Advancement Activities
• Case Report Writing Workshop
• Pilot Grants Program

Domain Synergy of Pediatrician and Scientist

Scientist Practice Environment

Novice Medical Student

Clinician Practice Environment

PGY1

PGY2

PGY3

Continued Mentorship

Expert Pediatric-Scientist

Experiential Workshops and Networking Seminars: Career Development

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<th>Residency</th>
<th>Fellowship</th>
<th>Faculty</th>
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Physician Scientist training across the spectrum

- Bringing together physician scientist faculty, fellows and residents
- Mentoring
- Career development
- Community-building
- Curriculum Development
  - Scholarly Concentration Tracks (with Block Rotations) to support residents and fellows
  - Scholarship Oversight Committees
  - Research Boot Camp for residents and fellows
  - Grant-Writing Series (Internal Grants, K Grants, R Grants)
Physician Scientist training across the spectrum

• Research Resources
  – Clinical Librarian
  – Statistical Support
  – Grant-writing

• Funding
  – Dedicated $10,000 Grant for MD/PhD Residents
  – Internal Grant Funding for Fellows
  – Bridge Funding for Instructors (3 years as people apply for a Career Development Award)
Optimizing research on the categorical pathway

• Up to 10 months of research during categorical training while fulfilling all ACGME requirements
• Allows trainees to take the ABP board exam in October after graduating residency
• With IRP pathway, residents have to complete a full year of clinical fellowship before taking the pediatric boards
• Balance in service and education for the resident and the program
Summary

• Describe the training needs of physician scientists
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Thank You!