**Facilitating Scholarly Activity: Research, Quality Improvement, Medical Education, and Advocacy**

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# Introduction

Pediatric residency programs must create an environment that fosters scholarship for their trainees. Program directors should role model a scholarly approach to their work, ensure that residents have the infrastructure to participate in scholarly activity, and verify that faculty are participating in and disseminating their scholarly activity. The definition of scholarly activity is very broad and includes traditional research efforts, quality improvement and/or patient safety initiatives, creation of educational resources, and contribution to professional organizations, among others. Each year, PDs report scholarly activity for residents and faculty to the ACGME through WebADS.

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## Where can I find expectations and standards for my program and my trainees?

Guidance for the philosophy of governing bodies with respect to scholarly activity can be found in the following locations:

1. ACGME Pediatric Requirements IV.D
   1. Here you can find the broad ACGME definition of scholarship and instructions for reporting resident and faculty scholarly activity.
   2. The ACGME executive team rarely gives citations or areas for improvement with respect to resident scholarly activity – these are typically directed towards faculty scholarly activity. The best way to avoid these is through comprehensive, timely, and accurate reporting through WebADs.
2. The Clinical Learning Environment Review (CLER), a branch of the ACGME, creates expectations for an optimal learning environment to achieve safe and high-quality patient care. Pathways relevant to scholarly activity include:
   1. Health Quality 1: Education on quality improvement
   2. Health Quality 2: Resident/fellow engagement in quality improvement activities
   3. Health Quality 3: Residents/fellows receive data on quality metrics
   4. Health Quality 4: Resident/fellow engagement in planning for quality improvement
   5. Health Quality 5: Resident/fellow and faculty member education on reducing health care disparities
   6. Health Quality 6: Resident/fellow engagement in clinical site initiatives to address health care disparities
3. ACGME Pediatric Milestones 2.0
   1. Systems-Based Practice 2: Quality Improvement
      1. Level 4 - Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project
   2. Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice
      1. Level 4 - Critically appraises and applies evidence, even in the face of uncertainty and conflicting evidence to guide care tailored to the individual patient
4. American Board of Pediatrics Entrustable Professional Activities
   1. EPA 11: Manage information from a variety of sources for both learning and application to patient care
   2. EPA 14: Use population health strategies and quality improvement methods to promote health and address racism, discrimination, and other contributors to inequities among pediatric populations

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# Resident and Faculty Scholarly Activity

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*Resident Scholarly Activity*

Per the ACGME Program Requirements for Graduate Medical Education in Pediatrics: “Residents must participate in scholarship … Scholarly activities may include basic, translational, and clinical research and/or projects in patient safety, quality improvement, patient engagement, health equity, and medical education, among others.”

Programs report resident scholarly activity for the previous academic year annually during the ACGME Annual Update. Categories include:

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| Category | ACGME Description | Author Notes |
| Peer-reviewed manuscripts (PMID) | PubMed IDs (assigned by PubMed) for articles published during the previous academic year.  PubMed ID (PMID) is a unique number assigned to each PubMed record. This is generally an 8-character numeric number. The PubMed Central reference number (PMCID) is different from the PubMed reference number (PMID). PubMed Central is an index of full-text papers, while PubMed is an index of abstracts. | These articles are typically peer-reviewed articles that are published in established medical journals. The PMID can be found by searching for the article on the NIH National Library of Medicine PubMed website: [PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/) |
| Other Publications | Number of articles without PMIDs, non-peer reviewed publications, peer-reviewed publications which are not recognized by the National Library of Medicine, and activities related to item-writing during the previous academic year. | An example of an article in this category would be a pediatric blog post on the hospital website or writing test questions for an exam. |
| Conference Presentations | Number of abstracts, posters, and presentations given at international, national, or regional meetings during the previous academic year. | If your institution has a local Scholarly Activity / Research Fair, consider having your residents participate. |
| Chapters Textbooks | Number of chapters or textbooks published during the previous academic year. | If a faculty member is invited to contribute to a textbook, consider inviting a resident to assist with writing. |
| Participated in Research | Participation in funded or non-funded basic science or clinical outcomes research project during the previous academic year. | This is subject to interpretation. The authors believe that robust Quality Improvement that assesses quantifiable clinical outcomes counts in this category. |
| Teaching / Presentations | Lecture, or presentation (such as grand rounds or case presentations) of at least 30-minute duration within the sponsoring institution or program during the previous academic year. | Case presentations can include Morning Report or formal discussions of patients in a didactic setting. This category should be checked “Yes” for almost all residents. Consider advocacy presentations or media engagement in this category, as well. |

Careful record-keeping throughout the year ensures that this process goes smoothly. One possible avenue is to instruct residents themselves to track their scholarly activity. Residency management suites often allow residents to enter scholarly activity in categories such as Abstracts, Chapters, Community Projects, Grants, Presentations (national, regional, local), Publications (peer-reviewed and non-peer reviewed), and QI Projects. Residents can also log their conference presentations to their colleagues and faculty, such as Morning Report. In addition, residents should track their scholarly activity on their Curriculum Vitae (CV).

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*Faculty Scholarly Activity*

Per the ACGME Program Requirements for Graduate Medical Education in Pediatrics, faculty in residency programs must demonstrate accomplishments in and disseminate scholarly activity.

Programs report faculty scholarly activity for the previous academic year annually during the ACGME Annual Update. Categories of faculty scholarly activity include the same categories as resident scholarly activity, with the addition of the following:

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| Category | ACGME Description | Author Notes |
| Grant Leadership | Grants for which faculty member had a leadership role (PI, Co-PI, or site director) during the previous academic year. |  |
| Leadership or Peer-Review Role | Active leadership role (such as serving on committees or governing boards) in international, national, state, or regional medical organizations or served as reviewer or editorial board member for a peer-reviewed journal during the previous academic year. |  |
| Formal Courses | Responsible for seminars, conference series, or course coordination (such as arrangement of presentations and speakers, organization of materials) during the previous academic year. This includes developing training modules for medical students, residents, fellows and other health professionals (eg. simulation). Program didactics and/or conferences are not considered formal courses. | Giving a few didactic lectures does not count by itself. If a faculty member gives a fair number of lectures in one specialty, consider appointing that person as the coordinator for the lecture series, which would count. |
| Domains | Which of the following domains has this faculty member demonstrated accomplishments in the previous academic year?  Research = Research in basic science, translational science, patient care, population health, medical education, or other areas  Grants = Peer-reviewed Grants  Quality = Quality Improvement and/or patient safety Initiatives  Reviews = Systematic reviews, meta-analysis, review articles, chapters in medical textbooks, or case reports  Curricula = Creation of curricula, evaluation tools, didactic educational activities, or electronic educational materials  Committees = Contribution to professional committees, educational organizations, or editorial boards  Innovations = Innovations in education  None = None of the above | Per the ACGME, programs must demonstrate accomplishments in at least three of these domains. |

Below are some additional tips for faculty scholarly activity.

1. For faculty-driven scholarly activity, it is great idea to invite residents to participate. For example, if a faculty member submits a grant, writes an editorial, or contributes to a textbook, consider inviting a resident to assist with writing. This will reward both the faculty member and resident and contribute to ACGME requirements.
2. The definition of Conference Presentations is broad. For example, presenting a workshop or Enhanced Learning Session at a national conference counts.
3. Local initiatives can be counted as scholarly activity. For example, creating an electronic course or module, implementing a curriculum for the medical school, and presenting to other local GME programs can count.

In general, tracking Faculty Scholarly Activity is more difficult than tracking Resident Scholarly Activity. Careful record-keeping throughout the year is important. One method is to ask faculty to track their scholarly activity on the CVs and to send the program administration their CVs once a year. Other methods may include: 1) Work with hospital administration to avoid duplicative record-keeping efforts. For example, if there is a merit-based clinical reporting structure, this structure can also record scholarly activity in a way that can be accessible to the residency program. 2) Use online survey software to solicit scholarly activity. 3) Obtain information from administrators in Promotions or in individual divisions.

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# Types of Scholarly Activity

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*Research versus Quality Improvement*

The distinction between Research and Quality Improvement is one of the most frequently asked question IRB officials receive from prospective investigators. The confusion arises because both require systematic investigation, collection of data, and analysis. The main difference is in the goal of the endeavor. In short, Research is the formulation of a question and the subsequent discovery of new knowledge, while Quality Improvement is the implementation of established knowledge in order to improve patient care. At the end of the project, research usually produces statistical results with confidence intervals and p-values, while QI generates run charts. Importantly, both research and QI are presentable and publishable. If there are further questions, your local institutional IRB can clarify.

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*Research*

Research is defined as “systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge”. When considering scholarly activity, research is often the first endeavor that comes to mind. However, good research takes significant time and resources and may be incompatible with the clinical demands placed on a pediatric resident. Some programs have research tracks or require research; others fulfill requirements for scholarly activity in other ways.

The American Board of Pediatrics offers two research pathways, the Accelerated Research Pathway (ARP) and the Integrated Research Pathway (IRP). These pathways are designed to accommodate and encourage candidates who are committed to an academic career as physician scientists with a strong research emphasis in pediatrics. More information can be found on the ABP websites for the [IRP](https://www.abp.org/content/integrated-research-pathway-irp) and [ARP](https://www.abp.org/content/accelerated-research-pathway-arp-details).

If a resident wants to pursue research outside of these ABP-approved pathways, the authors’ approach is to:

1. Support the resident
   1. Help the resident find a research mentor early in training, ideally in the PL1 year.
   2. Find time for them to conduct research, either by having them schedule a scholarly activity elective, preferably during the PL2 year, or during longitudinal academic time.
2. Encourage the resident to embark on projects that can be completed during their limited time. In general, basic science research, multicenter studies, and prospective randomized clinical trials are beyond the time constraints of most residents. The authors recommend single-center retrospective studies for most residents. Ambitious residents can embark on prospective studies with good mentoring and support. Other residents can certainly conduct a case series or case report. However, while case reports can still be presented at most national conferences, they are more difficult to publish.
3. One important reason to pick a small project during residency is so that the resident can complete it, submit an abstract to a national or regional conference, present it, talk about it during job or fellowship interviews, and hopefully publish a manuscript. The authors’ experience is that residents who embark on overly ambitious projects are unable to complete them and then have no deliverables to show in their PL3 year.

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*Quality Improvement*

Quality improvement is defined as “systematic and continuous actions that lead to measurable improvement.” Since QI involves rapid-cycle improvement, the timeline for conceptualizing a project, conducting a few PDSA cycles, and analyzing data are more easily compatible with the clinical demands of a pediatric resident.

For this reason, the authors have implemented Quality Improvement curricula in their residencies based on Institute of Healthcare Improvement (IHI) principles. In these curricula, residents may create their own QI project, continue a previous resident’s project, or contribute meaningfully to a larger hospital-based or clinic-based project. Though specific timing and deadlines may vary between programs, a general timeline is:

PL1: Have an idea for a project; find a mentor; create a Charter, consisting of a Title, Aim Statement, Background, and Outcome, Process, and Balancing Measures

PL2: Plan and conduct at least one PDSA cycle; collect data

PL3: Analyze data; create a Run Chart and/or Control Chart; write an abstract and present at local Scholarly Activity Fair and/or a national or regional conference. In addition, prior to becoming certified in General Pediatrics, residents can “bank” Part 4 points towards their first ABP MOC cycle by participating in approved quality improvement activities. The authors highly encourage their residents to do this.

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*Medical Education Research*

Many residents are interested in implementing a medical education project for their scholarly activity. Medical education scholarship generally is either scholarly evaluation of educational programs or educational research. Both should be considered as robust scholarship and should be approached with the same degree of mentorship as other scholarly projects. Scholarly evaluation of a program or curriculum can be done systematically; residents should plan this ahead of implementation of any new curriculum and should strive towards the highest level of effect. In contrast, educational research is a systematic collection and analysis of data that examines medical education and learning processes. This type of research is approached similarly to more traditional research frameworks.

The authors would encourage PDs to find core faculty who have experience in publication of curriculum reviews or educational scholarship to help mentor interested residents. All residents should have a baseline expectation to create education to present to their peers in the form of didactics – this is great for their CV but is not necessarily research.

The authors recommend the following review articles for learners who are interested in medical education scholarship:

1. Li ST, Klein MD, Balmer DF, Gusic ME. Scholarly Evaluation of Curricula and Educational Programs: Using a Systematic Approach to Produce Publishable Scholarship. Acad Pediatr. 2020 Nov-Dec;20(8):1083-1093. doi: 10.1016/j.acap.2020.07.005. Epub 2020 Jul 9. PMID: 32653690.
2. Zackoff MW, Real FJ, Abramson EL, Li ST, Klein MD, Gusic ME. Enhancing Educational Scholarship Through Conceptual Frameworks: A Challenge and Roadmap for Medical Educators. Acad Pediatr. 2019 Mar;19(2):135-141. doi: 10.1016/j.acap.2018.08.003. Epub 2018 Aug 20. PMID: 30138745.

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*Advocacy as Scholarship*

Advocacy in the curriculum is addressed elsewhere in this PD handbook. We would encourage program directors to serve as a champion for residents and faculty who desire to pursue advocacy projects and dissemination of this work as scholarship. There is movement within the academic community to draw upon an expanded definition of scholarship and articulate advocacy efforts as an academic endeavor which is utilized in faculty reviews and reporting to the ACGME. The advocacy portfolio provides guidance for faculty and residents for inclusion on CVs and in reporting. More detailed information on advocacy portfolios can be found [here](https://www.aap.org/en/advocacy/community-health-and-advocacy/community-pediatrics-training-initiatives/), on the AAP Community Pediatrics Training Initiative page, or in the manuscript by Bode et al (Academic Careers in Advocacy: Aligning Institutional Values Through Use of an Advocacy Portfolio. *Pediatrics*, 2022)

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# Presentations and Publications

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*Presentations*

Presentations are a great motivator for scholarly activity in residency. Residents are often excited to travel, attend a conference pertaining to their interests, present their project, and network. Below is a list of presentation opportunities, with approximate deadlines for abstract submissions and dates for major pediatric national conferences. This list is not exhaustive and please be sure to visit the conference websites for the most up-to-date information.

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| **Conference** | **Abstract Deadline** | **Conference Date** |
| Academic Pediatric Association Regional Meetings | Varies depending on Region | Varies depending on Region |
| American Academy of Allergy, Asthma, and Immunology (AAAAI) Annual Meeting | November | February |
| American Academy of Pediatrics National Conference & Exhibition (NCE) | April | October |
| American College of Rheumatology (ACR) | June | November |
| American Society Nephrology (ASN) Kidney Week | November | May the following year |
| American Society of Pediatric Hematology / Oncology Conference (ASPHO) | December | April the following year |
| American Thoracic Society (ATS) | November | May the following year |
| Association of Pediatric Program Directors Spring Meeting (APPD) | December | April the following year |
| IDWeek | May | October |
| North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition Annual Meeting (NASPGHAN) | June | October |
| Pediatric Academic Societies Meeting (PAS) | November | May the following year |
| Pediatric Endocrine Society (PES) | December | May the following year |
| Pediatric Hospital Medicine (PHM) | February | August |
| Society for Academic Emergency Medicine (SAEM) | January | May |
| Society of Critical Care Medicine Annual Congress (SCCM) | August | January the following year |

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*Facilitating Travel*

To help your residents and faculty receive funding & time for travel, we would encourage you to have information about the following:

1. Institutional policies/procedures regarding time away for conferences. For example, the author’s institution allows for 5 conference days away from training over the course of three years. It is important to note when scheduling a resident to attend a conference that those conference days must be logged as duty hours and can contribute to potential duty hour violations, so take care when scheduling.
2. Institutional funding available for residents presenting at conferences. Determine with your GME office and DIO the criteria for presentations. What authorship is necessary to receive funding? What type of acceptance qualifies for funding? Can residents receive funding for multiple conferences?
3. Institutional policies/procedures for faculty funding for presentations.
4. Awareness of society-specific sponsorship or grant funding for trainees. Both the APA and the AAP offer research grants and travel scholarships. In addition, many subspecialty societies have internal funding to grant free or reduced conference attendance (including travel costs) for residents. Examples include:
   1. Society for Adolescent Health Career development award
   2. American Academy of Allergy & Immunology Medical Student/Resident Travel Scholarship
   3. American Society of Pediatric Nephrology Resident Travel Grant Award
   4. American College of Rheumatology Pediatric Rheumatology Residents Program
   5. Child Abuse Helfer Society offers scholarships for conference attendance
   6. IDweek offers travel awards for abstract presenters
   7. The AAP Society for Pediatric Trainees offers a number of grants for research, advocacy and health equity work
   8. The APA has an annual trainee award to fund conference attendance for residents accepted to PAS

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*Publications*

Publications in peer-reviewed journals are a worthwhile goal. The authors’ experience is that well-organized and motivated pediatric residents with good mentorship are able to publish during training. However, it may be unrealistic to require publication for all graduating residents. We would recommend that you determine whether or not your department, section, or office of medical education has additional funding that can be applied to article process charges (APCs) in open access journals. Some institutions are willing to fund these, and others are not. Your institution may have stipulations on funding based on first author status and residents may or may not be excluded from this funding source.

Good luck and remind your team of residents and faculty to collaborate as frequently as possible in order to share the work and share the credit for successful scholarly work!

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# References

ACGME Program Requirements for Graduate Medical Education in Pediatrics, revised 7/1/2023. Accessed 1/9/2024 at [Program Requirements and FAQs and Applications (acgme.org)](https://www.acgme.org/specialties/pediatrics/program-requirements-and-faqs-and-applications/).

Entrustable Professional Activities for General Pediatrics. Accessed 1/9/2024 at [Entrustable Professional Activities for General Pediatrics | The American Board of Pediatrics (abp.org)](https://www.abp.org/content/entrustable-professional-activities-general-pediatrics).