Pediatric Hospitalist Research Productivity: Predictors of Success at Presenting Abstracts and Publishing Peer-reviewed Manuscripts Among Pediatric Hospitalists

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KEY WORDS
career development, research skills, health service research, leadership

ABBREVIATIONS
AAP: American Academy of Pediatrics
OR: odds ratio
QI: quality improvement
SOHM: Section of Hospital Medicine
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INTRODUCTION
The evolution of pediatric hospitalists within our health care system and their focus on inpatient care of children has included hospitalist involvement in many important areas such as quality improvement (QI), administrative/leadership, education, development of practice guidelines, and research. The traditional model for academic success suggests that faculty must publish in their given field to succeed within academic medicine. Although not all pediatric hospitalists are

abstract

OBJECTIVE: To identify factors associated with research productivity among pediatric hospitalists.

METHODS: We performed a cross-sectional online survey of pediatric hospitalists recruited from the American Academy of Pediatrics Section on Hospital Medicine from May to August 2009. We used abstract presentations at a national meeting (intermediate outcome) and ≥2 first-author peer-reviewed manuscripts (primary outcome) to measure research productivity. Information was also collected on environmental and physician characteristics. Stepwise logistic regression was performed to identify independent associations with research productivity.

RESULTS: Two hundred fifteen pediatric hospitalists completed the survey. The respondents included 82% in an academic environment, 15% fellowship trained, 25% with additional degrees, and 67% with no protected time for research. Fifty-six percent presented an abstract, and 17% had 2 or more publications. After adjusting for potential confounders, pediatric hospitalists were more likely to have presented an abstract if they had fellowship training, an additional degree, were “very interested” or “interested” in performing research, or worked in a free-standing children’s hospital or children’s hospital within a hospital. Pediatric hospitalists were more likely to have 2 or more publications if they had an additional degree or had presented an abstract.

CONCLUSIONS: Among pediatric hospitalists, obtaining an additional degree and presenting an abstract at a national meeting are associated with research productivity. A minority of this group of pediatric hospitalists had fellowship training, degree training, or 2 or more first-author manuscripts published even though the majority are in an academic environment. These results suggest that structured training and a focus on abstract presentations at meetings could be a programmatic solution.

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expected to publish research, the role of developing new knowledge within the field of pediatric hospital medicine is important to patient care, traditional measures of academic success for faculty, and the evolution of the field of Pediatric Hospital Medicine.5-7

Similar to other emerging pediatric subspecialties, pediatric hospital medicine has undergone an evolution from clinical care to creation of new knowledge through research and publications in peer-reviewed journals. Pediatric Critical Care Physicians and Pediatric Emergency Physicians developed pediatric-specific peer-reviewed journals in their fields in 2000 (Pediatric Critical Care Medicine) and 1985 (Pediatric Emergency Care). The purpose of these journals is to disseminate new knowledge to care providers.8,9 In 2011, Pediatric Hospital Medicine was fortunate to gain its first peer-reviewed scientific journal, Hospital Pediatrics, but success of this journal will in part depend on pediatric hospitalists’ success in creating novel research ideas for publication in this and other peer-reviewed journals.

Some pediatric hospitalist programs have focused efforts on creating dedicated time and resources for providers to pursue additional research training through mentorship programs, master’s degrees, PhDs, and fellowship training, but the extent and effect of such training on research productivity has not been evaluated.2,10 The purpose of this study was to identify environmental and/or physician characteristics associated with measures of research productivity among pediatric hospitalists. We investigated both abstract presentations at a national meeting (intermediate outcome) and 2 or more first-author peer-reviewed manuscripts (primary outcome).

METHODS
A cross-sectional survey of pediatric hospitalists was performed to determine demographics, characteristics of work environment, and success at presenting abstracts and publishing first-author peer-reviewed manuscripts (Appendix). The primary goal of the analysis is to compare respondents with success at research productivity (presenting abstracts at national meetings and publishing first-author peer-reviewed manuscripts) versus respondents not yet successful at these benchmarks. The study was approved by the University of California, San Francisco Institutional Review Board.

Survey Design and Recruitment
The survey was developed by the authors and the American Academy of Pediatrics (AAP) Section of Hospital Medicine (SOHM) Research Subcommittee. The survey was piloted at 3 separate sites for clarity in questions present in the survey tool. Survey Monkey was used to administer the survey.11 The respondents were recruited from the AAP SOHM from May to August 2009 through the AAP SOHM Listserv and among pediatric hospitalists present at the 2009 Pediatric Academic Society Meeting. The Listserv has 1100 unique e-mail addresses with 380 members considered active, having posted to the listserv at least once in 2009 (K. Powell, MD, PhD, personal communication. September 2010). Pediatric hospital medicine is a new field and, as such, is unlikely to contain a large number of individuals with success at research. The Listserv created a convenience sample, but recruitment also included surveying hospitalists at the Pediatric Academic Society meeting to recruit as many pediatric hospitalists with potential research productivity as possible. This would increase our likelihood of determining independent predictors with multivariable analysis on a less common outcome.

Measured Outcomes
Outcomes assessed in our survey by self-report include history of presenting an abstract at a national meeting (plenary, platform, or case reports) and the number of published first-author peer-reviewed manuscripts. The outcome variables of abstract publication (intermediate outcome) and peer-reviewed publications (primary outcome) were chosen because they represent clear academic accomplishments. We considered abstract presentations as a potential intermediate outcome for publishing a manuscript. Although the authors know of no national standard for number of publications needed to advance within an academic career, it is often the case that promotion is determined, at least in part, by the number of publications authored by the faculty member. Additionally, publication of a peer-reviewed manuscript represents advancement of the science in a given field. The first author was chosen specifically because of its established position as the author primarily responsible for development of the project idea, editing of the manuscript, and ultimately submission to a journal.12 The cut point of 2 first-author peer-reviewed manuscripts was chosen by consensus of the authors based on the assumption that 2 publications would make a faculty member a reasonable candidate for application to external funding.

Survey Questions
The survey respondents were asked individual characteristics and demographic questions about current academic appointment, age, gender, years in practice, fellowship training, additional
degrees, and research interest ("not interested," "interested," or "very interested"). Current academic appointment is categorized as "staff physician," "fellow/instructor," "assistant professor," and "associate professor/full professor" to create categories of reasonable size but also continuing to convey relevant academic rank. Age was categorized into groups to simplify reading and generate categories with an adequate distribution of respondents to enable univariate and multivariate analysis. Information on additional training in research was collected in a separate question for both fellowship and additional degrees. Fellowship training was ultimately combined to a dichotomous variable because of the low numbers in the individual categories (Academic Generalist versus Pediatric Hospital Medicine Fellowship versus other subspecialty). Additional degrees was also dichotomized because of a limited number of respondents in each cell but initially included Masters of Science in Clinical Research, Masters of Public Health, and PhDs.

Self-reported data were also obtained about environmental factors that could affect research productivity, including presence in an academic environment ("yes" or "no" based on respondent perception), hospital type (community hospital, children’s hospital within a hospital, and free-standing children’s hospital), percentage of protected time for research (based on respondent perception), expectation by his/her institution to perform research ("yes" or "no"), and participation in hospital QI committees. The question specific to hospital QI committees was asked because this clinical endeavor has the potential to create material for presentation at national meetings or as peer-reviewed manuscripts.

**Analysis**

The primary comparison for the analyses was between respondents that succeeded at publishing 2 or more first-author peer-reviewed manuscripts versus respondents that had not yet published 2 or more first-author peer-reviewed manuscripts. Analyses of categorical variables were performed with \( \chi^2 \) test for significance. Multivariate logistic regression was performed with the stepwise function. The models were designed to include all independent variables in our survey that could predict success at presenting abstracts or publishing peer-reviewed publications. Criteria for the stepwise logistic regression were determined a priori. Variables were allowed to enter the model with univariate significance <0.3 and permitted to stay in the model if, when added, their significance was <0.35. We specifically excluded the variable of academic rank in our models on outcomes (abstracts and peer-reviewed publications) because of concerns of endogeneity of these variables with the outcome variables. For example, one typically obtains a higher academic rank based on his or her success at peer-reviewed publications. Additionally, in the logistic regression on presented abstracts, the variable of peer-reviewed publications was excluded because a publication is an outcome that typically results from the presentation of an abstract at a national meeting and not vice versa. All statistics were run with SAS v9.2 (SAS Institute, Cary, NC).

**RESULTS**

We had 215 Pediatric Hospitalist respondents complete the survey. A broad range of age and academic appointment level were present (Table 1). A high percentage of respondents were assistant professors (52%), female (63%), and worked in an academic environment (82%). Of the respondents, 15% and 25% have received additional training through fellowships (Pediatric Hospitalist, Academic Generalist, or subspecialty fellowships) or additional degrees (master’s or PhDs), respectively. Despite the predominance of individuals who perceive themselves to be in an academic environment, only 38% felt they were expected to perform research at their institution. Because the method of collection included the AAP SOHM Listserve and recruitment at an academic meeting, the high prevalence of respondents within an academic setting was expected. Of the respondents, 27% were from community hospitals, 67% had no protected time for research, and 73% did not report being “very interested” in research (18% “not interested” and 56% “interested”). These findings suggest that although our survey includes a large percentage of individuals in an academic environment, it also includes individuals with varying research capacity and interest as a comparison group. Academic research productivity as measured by publishing abstracts was fairly high at 56%, but only 17% of respondents had achieved 2 or more first-author peer-reviewed publications.

The univariate analysis (Table 2) suggests that presenting an abstract and publications of peer-reviewed manuscripts are associated with current appointment, additional degree training, interest in research, and protected time for research. Age, fellowship training, presence in an academic environment, hospital type, and expectation to perform research were only associated with presenting abstracts and not publications. Gender was the
only variable associated with having publications but not with presenting abstracts, but this association did not persist in multivariable analysis.

The multivariate analysis results present in Table 3 suggest that age, fellowship training (odds ratio [OR] = 7.9), an additional degree (OR = 4.9), being either “very interested” (OR = 3.3) or “interested” (OR = 4.0) in performing research, and presence in a free-standing children’s hospital (OR = 3.5) or children’s hospital within a hospital (OR = 3.4) are associated with presenting abstracts. The multivariable analysis has similar results for publications of 2 or more first-author peer-reviewed publications for additional degree training (OR = 3.6); however, the association with fellowship training was no longer present. Because of the concern that interaction may be present among fellowship training and additional degrees, we tested a combined single variable (degree only, fellowship only, degree with fellowship, and no degree or fellowship) in our model. This variable did not significantly predict the outcomes of publications as well as the variables added separately and was not chosen for inclusion by our stepwise regression procedure. Additionally, presenting an abstract (OR = 3.8) was the strongest predictor of having 2 or more publications in the multivariate analysis.

**DISCUSSION**

Our research suggests that obtaining an additional degree and presenting abstracts are significantly associated with research productivity among pediatric hospitalists as measured by publishing first-author peer-reviewed manuscripts. Our intermediate outcome measure for research productivity, presenting an abstract, was independently associated with fellowship training, additional degree training, interested and very interested in research, and being present at a free-standing children’s hospital or children’s hospital within a hospital. Neither outcome was independently associated with perception of being...
TABLE 2 Pediatric Hospitalists’ Characteristics Association With Abstract Presentations and Peer-reviewed Publications

<table>
<thead>
<tr>
<th>Presented Abstract, n (%)</th>
<th>( P )</th>
<th>( \geq 2 ) First Author Peer-Reviewed Publications, n (%)</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current appointment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff physician</td>
<td>19 (17)</td>
<td>1 (3)</td>
<td>.05</td>
</tr>
<tr>
<td>Instructor/fellow</td>
<td>8 (7)</td>
<td>3 (10)</td>
<td>.10</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>65 (58)</td>
<td>19 (61)</td>
<td>.10</td>
</tr>
<tr>
<td>Associate/full professor</td>
<td>21 (19)</td>
<td>8 (26)</td>
<td>.20</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&lt;35)</td>
<td>30 (26)</td>
<td>8 (26)</td>
<td>.18</td>
</tr>
<tr>
<td>36–40</td>
<td>39 (34)</td>
<td>12 (39)</td>
<td></td>
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<tr>
<td>41–50</td>
<td>35 (30)</td>
<td>10 (32)</td>
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</tr>
<tr>
<td>(\geq50)</td>
<td>11 (10)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>66 (59)</td>
<td>13 (45)</td>
<td>.01</td>
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<tr>
<td>Male</td>
<td>46 (41)</td>
<td>16 (55)</td>
<td></td>
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<tr>
<td>Years in practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&lt;4)</td>
<td>32 (28)</td>
<td>8 (24)</td>
<td>.45</td>
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<tr>
<td>4–6</td>
<td>37 (32)</td>
<td>14 (41)</td>
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<td>7–9</td>
<td>20 (18)</td>
<td>7 (21)</td>
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<td>10–14</td>
<td>18 (16)</td>
<td>4 (12)</td>
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<tr>
<td>(\geq15)</td>
<td>7 (6)</td>
<td>1 (3)</td>
<td></td>
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<tr>
<td>Fellowship training</td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>31 (26)</td>
<td>8 (24)</td>
<td>.15</td>
</tr>
<tr>
<td>No</td>
<td>89 (74)</td>
<td>26 (77)</td>
<td></td>
</tr>
<tr>
<td>Additional degree (Master’s or PhD)</td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>45 (38)</td>
<td>18 (53)</td>
<td>&lt;.001</td>
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<tr>
<td>No</td>
<td>75 (63)</td>
<td>16 (47)</td>
<td></td>
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<tr>
<td>Interest in research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very interested</td>
<td>42 (35)</td>
<td>18 (53)</td>
<td>.001</td>
</tr>
<tr>
<td>Interested</td>
<td>68 (57)</td>
<td>13 (38)</td>
<td></td>
</tr>
<tr>
<td>Not interested</td>
<td>10 (8)</td>
<td>3 (9)</td>
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<tr>
<td>Academic environment</td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>109 (91)</td>
<td>32 (94)</td>
<td>.07</td>
</tr>
<tr>
<td>No</td>
<td>11 (9)</td>
<td>2 (6)</td>
<td></td>
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<tr>
<td>Hospital setting</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Free-standing children’s hospital</td>
<td>51 (43)</td>
<td>11 (32)</td>
<td>.88</td>
</tr>
<tr>
<td>Children’s hospital within a hospital</td>
<td>47 (39)</td>
<td>14 (41)</td>
<td></td>
</tr>
<tr>
<td>Community hospital</td>
<td>22 (18)</td>
<td>9 (27)</td>
<td></td>
</tr>
<tr>
<td>Protected time for research, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>67 (56)</td>
<td>15 (44)</td>
<td>.001</td>
</tr>
<tr>
<td>1–9</td>
<td>18 (15)</td>
<td>5 (15)</td>
<td></td>
</tr>
<tr>
<td>10–25</td>
<td>23 (19)</td>
<td>9 (27)</td>
<td></td>
</tr>
<tr>
<td>&gt;25</td>
<td>12 (10)</td>
<td>5 (15)</td>
<td></td>
</tr>
<tr>
<td>Expected to perform research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>58 (48)</td>
<td>18 (53)</td>
<td>.27</td>
</tr>
<tr>
<td>No</td>
<td>62 (52)</td>
<td>16 (47)</td>
<td></td>
</tr>
<tr>
<td>Participate in QI committees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>86 (72)</td>
<td>20 (59)</td>
<td>.73</td>
</tr>
<tr>
<td>No</td>
<td>34 (28)</td>
<td>14 (41)</td>
<td></td>
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<tr>
<td>Presented abstract</td>
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<td></td>
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</tr>
<tr>
<td>Yes</td>
<td>N/A</td>
<td>29 (85)</td>
<td>.001</td>
</tr>
<tr>
<td>No</td>
<td>N/A</td>
<td>5 (15)</td>
<td></td>
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</tbody>
</table>

This table represents a univariate association from \( \chi^2 \) test of significant for the row and column variables. Column percentages may not add to 100% because of rounding. N/A, not applicable.

Our data suggest that, if the goal is to foster research in the pediatric hospital medicine community, training in research could be a systematic approach to increasing presentations at national meetings and publications of peer-reviewed manuscripts. These results can also help inform individuals entering the field of Pediatric Hospital Medicine, current faculty interested in increasing academic productivity, and pediatric hospitalist present in an academic environment, protected time for research, or expectation of performing research.
program directors eager for groups to succeed at publishing both abstracts and manuscripts. Previous work by these authors demonstrated that pediatric hospitalists are eager to participate in research, have a wide range of research interests, and appear to have the capacity to succeed at research. The results from this manuscript focus on identifying specific factors that can facilitate research productivity. Presentation of these data is not intended to underestimate the importance of an individual faculty member’s personal attributes that can contribute to a successful career. The data do suggest programmatic approaches to increase research productivity, such as additional research training for pediatric hospitalists and encouraging abstract presentations, could be a viable approach to enhance research productivity.

Previous research suggests that presenting abstracts at national meetings is a predictor of future publications in pediatrics, and our work suggests that this premise holds true for pediatric hospitalists. Interestingly, presenting an abstract was the strongest predictor of publishing 2 or more first-author peer-reviewed manuscripts for pediatric hospitalists among all the individual and environmental characteristics assessed, including additional degree and fellowship training. This suggests that continued efforts focused on presenting abstracts at scientific meetings may be a good first step in developing publications to further research productivity of pediatric hospitalists. Because only 34 of the individuals surveyed have succeeded at publishing 2 first-author peer-reviewed manuscripts, further efforts to encourage publication of previous national abstract presentations seems a logical first step for this community that would ultimately lead to success at obtaining funding and protected time for research.

Interestingly, participation in hospital QI committees is not associated with either measure of academic productivity. Pediatric hospitalists frequently participate in QI efforts with a presumed goal of contributing to the field of QI in our setting. QI has potential benefits to both patients and academic physicians. Although participation in QI committees did not predict success with abstracts or publications, it may be that these efforts are important, but that the approach taken by these individuals could be modified to ensure research productivity for the faculty participating. Rigorous QI projects have recently succeeded at publishing in mainstream pediatric journals, suggesting that these efforts could generate needed academic research productivity for pediatric hospitalists. Therefore, further work should be performed to determine what, if any,
specific aspects of QI work by pediatric hospitalists predict success at these important academic research benchmarks outside of our measure of simply participating in a QI committee. Additionally, these data could simply be revealing a deficit in adequate journals for publishing QI efforts from the inpatient pediatric setting.

The finding that protected time for research is not associated with research productivity may be a result of protected research efforts not producing publications, an artifact of our survey methods, or a result of such few individuals with protected time reported. Specifically, respondents with relatively higher levels of protected time may be pursuing QI projects funded through their institution that are not ultimately obtaining publications in peer-reviewed journals. Participation in hospital QI efforts is fairly common among pediatric hospitalists, and, in our analysis, participation in a QI committee was not associated with publications. Therefore, it is likely this played some role in our results. Future research should consider asking more specific questions about the funding source for protected time. A cross-sectional survey is taken at a specific time, and this could confound the relationship of protected time and research productivity measures. For example, individuals with substantial amounts of protected time in the past resulting in publications may be investigating new funding sources for protected time and may categorize themselves at a lower percentage protected during the time of the survey. Also, a recent career award recipient may have received protected time but not, as of yet, begun to publish results of their investigation. With such few Pediatric Hospitalists in our survey responding that they have >25% protected time (6% or 13 respondents), our analysis is easily affected by any confounding factors. But this low percentage of individuals with >25% protected time for research does pose a barrier to success at research for the field of Pediatric Hospital Medicine. Logically, if you are not protected for research, are performing research that does not get published, or were previously successful at research and are now unfunded you are less likely to succeed at research.

Surprisingly, the results demonstrate that being present in an academic environment was not associated with abstracts or peer-reviewed publications. Being present in an academic environment typically accompanies other resources such as statisticians, mentors, and protected time for research, and one would suspect this would facilitate research productivity. It is possible that even in an academic environment these resources are limited for pediatric hospitalists and this may have limited this effect in our study. Of the respondents that stated they were expected to perform research, 47% reported no protected time for research, 19% reported only 1% to 9%, 22% reported 10% to 25%, and 12% (10 respondents) reported >25% protected time for research. Of course, the definition of protected time for research is often challenging, but even if this is an issue of perception, it likely hinders research productivity. The expectation to perform research not being associated with abstracts and publications is concerning for the future of pediatric hospitalists. If supervisors such as department chairs and division directors expect research productivity, it would be important for pediatric hospitalists to succeed at these expectations for academic advancement.

Our project has limitations. The results of this article support previous work suggesting that presenting abstracts is an important step in the process of publishing, but the methods of our project only demonstrate associations with the outcomes of interest and may or may not be directly causative in nature. Additionally, one could argue that our outcome measure of 2 or more first author peer-review journal articles does not demonstrate significant success within an academic setting. Although this may be the case, given the low percentage of pediatric hospitalists to have achieved this measure, it does represent a significant academic success within the Pediatric Hospital Medicine community. Other factors may be associated with academic productivity not included in our survey such as mentorship. Terms used such as protected time and academic environment may have different meaning among pediatric hospitalists. Last, our recruitment approach appears to have succeeded at capturing a reasonable number of respondents with research productivity, but the total number of respondents with success at the outcomes limits our ability to investigate with more detail in areas of type of fellowship completed and type of additional degrees. Given that 82% of our sample is present in an academic setting, this limitation is likely a result of a limited number of these types of individuals in the pediatric hospitalist community in comparison with a limitation in our study design. Our recruitment approach appears to have succeeded at recruiting academically productive pediatric hospitalists but does limit our ability to generate...
an accurate response rate and may not represent the nation of pediatric hospitalists.

CONCLUSIONS
Our study indicates that many pediatric hospitalists have the capacity to be successful in research and that there are specific activities that we can encourage and support that may help hospitalists with research aspirations to achieve their goals. This will benefit the pediatric hospital medicine community, as well as the patients for whom we care. Pediatric hospital medicine is an evolving field and future studies should consider reassessing research needs and factors that predict research productivity, especially as training programs evolve over time.

REFERENCES
PEDiATRIC HOSPITALIST RESEARCH NEEDS ASSESSMENT SURVEY: AAP SECTION ON HOSPITAL MEDICINE

The Research Subcommittee of the AAP Section on Hospital Medicine is beginning an intensive strategic process to assist planning activities that will meet your professional needs. We would like to ask you to complete the following survey, which will help us assess and identify your interests.

Our goal is to gain a better understanding and to work together to create a more supportive research environment. This survey will ascertain the current needs and perspectives of all pediatric hospitalists (academic and nonacademic) in research and quality improvement participation. Results will be used to inform our annual meeting planning process, generate ideas for new and improved activities, and provide relevant support to help develop and customize programs and services that genuinely meet your needs.

Please complete this survey if you currently work as a hospitalist, regardless of whether you are interested in research. This survey has been pretested for brevity and should take only 10 to 15 minutes of your time. Your feedback is very important, and we greatly appreciate the time you take to complete the survey. All responses are kept confidential. Your responses will be used collectively for quality improvement and research purposes. Please complete the survey by April 15, 2009. If you have any questions or concerns about this survey, please contact Arpi Bekmezian, at arpi@yahoo.com. Thank you!

PROFESSIONAL TIME

According to your job description, what percentage of your professional time is allocated to:

1) Inpatient clinical responsibilities ____% 
2) Emergency department clinical responsibilities ____%
3) Outpatient clinical responsibilities ____%
4) Administration ____%
5) Teaching ____%
6) Research ____%
7) Other (please specify) __________

Total should equal 100%

CLINICAL PRACTICE

1. In what type of hospital do you practice? (Check one that best applies)
   a. Free-standing children's hospital
   b. Children's hospital within a hospital
   c. Community hospital with significant pediatric subspecialty services
   d. Community hospital with limited pediatric subspecialty services

2. How many years have you worked as a hospitalist? _______ years

3. What is your current career level?
   a. Resident
   b. Fellow
   c. Staff physician
   d. Instructor (senior/clinical)
   e. Assistant professor
   f. Associate professor
   g. Professor
   h. Other: __________

ADMINISTRATIVE ACTIVITIES

1. Are you on any medical staff hospital committees? yes no
2. Do you design or lead clinical practice guidelines for your hospital? yes no
3. Do you serve on quality improvement committees in your institution? yes no

TEACHING ACTIVITIES

1. Do you practice in an academic environment? yes no
   a. Do you supervise residents? yes no
   b. Do you work on a nonteaching service for purposes of decreasing resident patient load? yes no

2. Do you mentor junior faculty, fellows, residents or students? yes no
RESEARCH ACTIVITIES
1. Does your institution expect you to conduct research? ___ yes ___ no
2. How would you describe your research activities? (check all that apply)
   A. None
   B. I make time when I can to do research
   C. I have departmental funding for protected research time
   D. I have/had grant support for research activities
3. Do you conduct (check all that apply)
   a. Patient safety research
   b. Quality improvement research
   c. Educational research
   d. Health services research
   e. Clinical trials
   f. Basic science research
   g. Other
4. Have you
   a. Published an article in a NON-peer-reviewed journal? ___ yes ___ no
   b. Presented poster/plenary abstract(s) or case report(s) at a national meeting? ___ yes ___ no
5. How many articles in peer-reviewed journals have you had in the past 5 years:
   As first author? ______
   As not-first author? ______
6. How interested are you in conducting research (check one)?
   1 Not interested at all (skip to Training Background)
   2 Somewhat interested
   3 Interested
   4 Very interested
   5 Extremely interested
7. How important are the following goals in your desire to conduct research?
   1 Not important at all
   2 Somewhat important
   3 Important
   4 Very important
   5 Extremely important
   A. Publish peer-reviewed manuscripts
   B. Acquire promotion and/or tenure
   C. Improve quality of care for hospitalized patients
   D. Establish practice guidelines
   E. Bring national recognition to your institution
   F. Advance the field of hospital medicine
   G. Promote changes in health care policy
   H. Improve third party reimbursement
8. What types of research are you interested in? (Please check all that apply).
   A. Case report/clinical conundrum
   B. Quality improvement/patient safety
   C. Clinical research
   D. Educational evaluation
   E. Health services research
   F. Clinical trials
   G. Translational
   H. Basic science
   I. Other
9. How significant for you are the following obstacles in trying to do research?
1 Not important at all
2 Not important
3 Important
4 Very important
5 Extremely important

A. Competing personal interest
B. Sufficient time
C. Institution/organizational investment in hospitalist research
D. Lack of resources/support (statistician, laboratory, nursing, etc)
E. Effective mentorship
F. Funding for hospital-related research
G. Formal research training

10. How useful would each of the following be in assisting you in research endeavors?

1 Not useful at all
2 Not useful
3 Useful
4 Very useful
5 Extremely useful

A. Roundtable discussion to
a. Share experiences regarding the process of doing research, getting published, and applying for research funding
b. Generate ideas about future research projects, develop study methods, develop research collaborations
c. Partner with other members to develop new clinical practice guidelines and tools
d. Other____

B. Workshop on
e. Getting started in research
f. Administrative data (ie, hospital financial database, etc)
g. Surveys
h. National data sets
i. Quality improvement research
j. Abstract writing
k. Referencing and literature search
l. Manuscript writing
m. Peer-reviewing for journals
n. Getting funding for research
o. Other____

C. Establishing a list of available short-term training courses in
p. Writing for publication
q. Quality improvement projects
r. Epidemiology, statistical analysis, methodology
s. Health services research in the hospital industry
t. Other____

D. List serve devoted to pediatric hospitalist research.

11. How important is help from SHM/AAP/APA in the following areas to support your research endeavors?

1 Not important at all
2 Not important
3 Important
4 Very important
5 Extremely important

A. Connect with experienced research mentors in your areas of interest
B. Advocate nationally for protected time for hospital-based research
C. Provide hospital-based research grants to fund projects
D. Give new researchers opportunity to share their research
E. Increase collaboration and integration of hospital medicine within scientific circles
F. Develop and support efforts to create multicenter research networks, such as PRIS (Pediatric Research in Inpatient Settings)
G. Other (please specify)

12. Is there an information service that SHM/AAP/APA do not offer that you would like us to consider?

13. What is the most useful change the SHM/AAP/APA could consider to help meet your research needs?

TRAINING BACKGROUND

1) What type of residency training did you complete? (check one)
   a. ___ Pediatric categorical
   b. ___ Pediatric primary care
   c. ___ Medicine/pediatrics
   d. ___ Family practice
   e. ___ Other (describe):

2) In what year did you finish residency?

3) Other than medical school and residency, have you completed any of the following? (Please check all that apply)
   a. Chief resident year
   b. Robert Wood Johnson Clinical Scholars program
   c. Fellowship in
      i. Pediatric Hospitalist Medicine
      ii. Academic Pediatrics
      iii. Pediatric Infectious Disease
      iv. Other
   d. Graduate degree in
      i. MSc
      ii. MPH
      iii. PhD
      iv. Other
   e. Other

DEMOGRAPHICS

1) In what year were you born? 19__
2) Gender ___ Male ___ Female

Thank you for completing this survey!
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Ronald J. Teufel II, Arpi Bekmezian and Karen Wilson

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