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Developing Physician-Scientists in the Fields of Neonatology and Pediatric Critical Care Medicine: An Effort to Formulate a Departmental Policy

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Both patient care and research are fundamental to the missions of academic pediatric medical centers in the US. The value of training physicians to perform basic science, clinical, and translational research is well recognized, and it is supported by the National Institutes of Health (NIH) through several mechanisms, including mentored career development awards (K awards). These awards most often are used to provide physicians the opportunity to develop their scientific skills under the supervision of a mentor at the start of their academic careers. Such time, protected from the burden of clinical duties, is invaluable, given the increasing competition for extramural research funding and the requirements for academic promotion. At the same time, this early career stage comes with the challenge of transitioning to the role of attending physician.

In Fall 2011, a committee was formed by the division chiefs of Neonatology and Pediatric Critical Care Medicine at the University of California San Francisco (UCSF) that was charged with making recommendations on promoting the success of junior faculty embarking on a research career, with particular attention to the tension between academic success and clinical mastery. To accomplish this task, the committee informally queried a number of peer institutions, which were all academic pediatric centers with significant NIH funding (as reported by the NIH). The committee sought to understand whether a general standard exists across the country, particularly regarding clinical and nonclinical (research) duties and time allocation. In addition, the findings of the NIH Individual Mentored Career Development Awards Program Evaluation Working Group were reviewed.[1] Based on these data, as well as structured deliberations, the committee made several recommendations. Although much of the committee's work focused on the particularities of our institution, and although the survey of peer institutions was not scientific, we believed that our findings may be informative to other academic pediatric centers.

NIH	National Institutes of Health
RPG	Research project grant
UCSF	University of California San Francisco

Pediatric Critical Care Medicine

Questionnaires were sent to Pediatric Critical Care faculty members at 27 different pediatric academic medical centers. Full responses were received from 17 institutions (63%). Data from UCSF were included in the analysis (n = 18). Seventeen of the 18 centers (94%) reported that junior physician-scientists were granted protected time to develop an academic program. Five of 18 centers (28%) required in-house attending night-call. There was a wide range of clinical duties in terms of required weeks of service per year and number of night calls per year (Table I). Of note, institutions without in-house night calls often reported the largest number of call nights, as attending physicians were on-call from home at night during their weeks of service.

The size and general representation of primary faculty roles is shown in Table II. Interestingly, only 34% of the faculty was identified as having research as their primary role within the division. An important observation from our survey was that although the majority (94%) of programs provide protected time for junior research faculty, most divisions currently had either 0 (35%) or 1 (24%) research project grant (RPG).

Neonatology

Questionnaires were sent to Neonatology faculty members at 20 different pediatric academic medical centers. Full responses were received from 16 institutions (80%). We focused our further analysis on the 14 sites (n = 15, including UCSF) that reported protected time from

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Table I. Pediatric critical care clinical duties: weeks of service and night call

	Weeks		Call	
	Average	Range	Average	Range
Pre-K award	9	6-12	44	26-77
K award phase	8.5	6-12	37	17-70
Post-K award	9.8	8-14	40	17-70
RPG funded	8.5	6-12	37	17-70
Clinical FTE	15	10-20	50	17-98

FTE, full-time equivalent.

Table III. Neonatology clinical duties: weeks of service and night call

	Weeks		Call (In-house)		Call (home-based)	
	Average	Range	Average	Range	Average	Range
Pre-K award	12	6-22	35	0-60	27	0-78
K award phase	9	6-14	30	0-60	27	0-78
Post-K award	11	8-17	31	0-60	35	0-78
RPG funded	10	6-17	29	0-60	34	0-78
Clinical FTE	21	12-32	35	0-60	41	0-78

clinical activities for junior faculty to allow for the development of research careers. The data differ considerably from critical care data because there were a number of programs that provided coverage in lower acuity settings, resulting in a combination of in-house and home-based overnight call responsibilities, with considerable variability in clinical responsibilities reported within and between sites. In these cases, we used the average number of service weeks or call nights reported to calculate the averages across sites, but we also present the ranges for each of these variables (Table III).

We identified 5 programs as successful by our criteria, in which 2 junior faculty in each program had transitioned to independent research funding in recent years. Junior faculty in these programs did 7-12 weeks of service prior to receiving their K awards and 6-10 weeks while supported by their awards. In contrast, clinical faculty at these institutions did 16-26 weeks of service, generally carrying a greater burden of the clinical service load. In-house call responsibilities ranged from 12-60 nights. Home-based call was only necessary in 2 of the 5 programs, with 21 nights for all faculty in 1 program, and 40 nights for clinical faculty only in the other program.

Recommendations

In addition to the data from other programs gathered by committee members, we discussed the findings of the NIH Individual Mentored Career Development Awards Program Evaluation Working Group.[1] This group reported that, whereas 32% and 42% of K23 and K08 awardees obtained an RPG, only 20% and 21%, respectively, of matched but unfunded K23 and K08 applicants obtained an RPG. These data suggest that the effort spent in preparation of the K award may be important in addition to the protected time during the award period. Thus, based on our committee findings and deliberations, a number of recommendations were made. With the selection of an appropriate candidate, 6-8 weeks of clinical service per year prior to and during the K award period seems reasonable to promote a successful transition to independent funding. The clinical service time should be based on the needs of the junior faculty member vis-à-vis the development of his/her clinical skills, and not on the clinical needs of the division. Generally, an upper limit of 10-12 clinical weeks should be set for research faculty. In-house (or equivalent) call coverage should be limited to 24 nights per year.

Developing physician-scientists represents an investment based on the belief that physician involvement in biomedical research is essential. Although it was not within the scope of our committee's work to examine the viability of the physician-scientist model, it is clear that ongoing changes in the US healthcare system and decreases in research funding threaten this career path. Communication between national pediatric academic centers about strategies to support physician-scientists within the field of pediatrics may contribute to the development of a more uniform approach across the US. ■

Table II. Faculty in division: 15 (average) and 6-30 (range)

	Percent of total faculty	
Primary role	Average %	Range %
Clinical	48	6-30
Research	34	7-64
Educator	10	0-30
Administrator	9	0-33

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Reference

1. Report of the National Institutes of Health Individual Mentored Career Development Awards Program Evaluation Working Group. Available at: http://grants.nih.gov/training/K_Awards_Evaluation_FinalReport_20110901.pdf, Accessed December 19, 2012.

Appendix

In addition to the authors, members of the UCSF Neonatology and Pediatric Critical Care Early Faculty Development Committee include: Sonia Bonifacio, MD, Trevor Burt, MD, Henry Lee, MD, Patrick McQuillen, MD, Mary Ulman, BSN, Jeffrey Fineman, MD (Chief, Division of Pediatric Critical Care Medicine), and David Rowitch, MD, PhD (Chief, Division of Neonatology).