

Facilitating Faculty Success: Outcomes and Cost Benefit of the UCSD National Center of Leadership in Academic Medicine

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ABSTRACT

Problem and Background. In 1998, the University of California San Diego (UCSD) was selected as one of four National Centers of Leadership in Academic Medicine (NCLAM) to develop a structured mentoring program for junior faculty.

Method. Participants were surveyed at the beginning and end of the seven-month program, and one-four years after. The institution provided financial information. Four primary outcomes associated with participation in NCLAM were assessed: whether participants stayed at UCSD, whether they stayed in academic medicine, improved confidence in skills, and cost-effectiveness.

Results. Among 67 participants, 85% remained at UCSD and 93% in academic medicine. Their confidence in skills needed for academic success improved: 53% personal leadership, 19% research, 33% teaching, and 76% administration. Given improved retention rates, savings in recruitment was greater than cost of the program.

Conclusions. Structured mentoring can be a cost-effective way to improve skills needed for academic success and retention in academic medicine.

Faculty members in academic medicine face challenges in career advancement, which is complicated by daily professional responsibilities. Their academic advancement requires excellence in clinical practice as well as teaching and research, and an understanding of the many complex organizational structures of academic medical institutions. These challenges have been especially difficult as the world of medicine has been compromised by the increasing financial and clinical burden associated with the managed care environment. These challenges can lead to high faculty turnover. Data from the Association of American Medical Colleges (AAMC) indicate that 7.7% of men and 9.1% of women medical school faculty left their positions on an annual basis between 1995 and 1999.¹ In recent years, mentoring has been suggested as critical to faculty retention and promotion, as well as advancement to significant leadership positions in academic medicine.^{2,3}

The University of California, San Diego (UCSD), School of Medicine enjoys a reputation of excellence in both research and clinical service to the community. The vision that created this successful academic medical center and campus, did not however, create an organized focus to foster the professional development needs of its junior faculty. Over the past five years this has changed. In 1998, the Office of Women's Health of the U.S. Department of Health and Human Services selected UCSD as one of four National Centers of Leadership in Academic Medicine (NCLAMs) in the country.⁴ The UCSD NCLAM is an innovative professional development plan committed to providing assistant professors the knowledge, attitude, skills, and resources necessary to make the transition to successful careers in academic medicine.⁵

UCSD's NCLAM, described in more detail elsewhere,⁵ is a seven-month program, which includes a curriculum-based series of professional development workshops, academic strategic career planning, individualized academic performance counseling sessions, a formal junior/senior mentoring relationship focused on a professional development contract, and community network building for both junior and senior faculty. Goals of the program are targeted both for the institution and for individual participants. For the School of Medicine, the goals are to provide a formal mentoring system for junior faculty, to provide feedback to junior faculty about their academic progress in the University of California system, to enhance the connection of junior faculty to the School of Medicine, and to increase the sense of community for both junior and senior faculty. Complementary goals for junior faculty are to develop skills appropriate for their career path, to develop a personal academic strategic plan aligned to the requirements for success at the University of California, and to expand a network of colleagues within the university.

The NCLAM program requires a commitment from each junior faculty to participate fully in the program. This includes attendance at weekly half-day workshops, completion of an individual professional development contract, and regular meetings with a senior mentor focused on completion of the contract. In return for the time dedicated to NCLAM, each participant's department is compensated at the rate of 5% of his or her base salary while in the program.

The present study assessed four primary outcomes associated with participation in the UCSD NCLAM program: whether participants stayed at UCSD, whether they stayed in academic medicine, a quantitative assessment of improved confidence in skills needed to succeed in academic medicine, and costs of the program compared to dollars spent on junior faculty recruitment.

Method

Sixty-seven junior faculty members completed the NCLAM program between 1999–2002 with 18, 22, 13, and 14 in each class, respectively. Participants either volunteered or were nominated to participate by their department chairs. To qualify, they had to be between one to five years at the assistant professor level. Approximately 30% of School of Medicine's junior faculty have participated in NCLAM. Twelve out of 13 departments in the School of Medicine were represented. There were 49 faculty members with MDs, 11 with PhDs, and seven with MD/PhDs. Six of the participating faculty members were underrepresented minorities, 30 were men, and 37 were women. Fifty-nine senior faculty members served as mentors, several more than once: 44 with MDs, 11 with PhDs, one with an MD/PhD, and three with other degrees (DO, EdD and RN). There were 34 men and 25 women mentors.

All participants completed a survey at the beginning and end of the NCLAM professional development program. The survey was derived directly from the professional academic skills published by Bland and colleagues.⁶ Junior faculty were asked to rate their level of confidence on 36 seven-point, semantic-differential items anchored by the descriptors strong and weak. The survey included ten items identifying skills involving professional development, ten in skills comprising research, eight in skills concerning education, and

TABLE 1. Self-Efficacy Scores of 67 University of California San Diego Junior Faculty Before and After Participation in the National Centers of Leadership in Academic Medicine (NCLAM) Program

Skill Categories (No. of Items, Possible Points)	Pre-NCLAM Mean (SD)	Post-NCLAM Mean (SD)	Mean Difference	Percent Change	Effect Size <i>r</i>
Professional development (10, 70)	37.9 (9.8)	58.0 (7.0)	19.9*	52%	.76
Research (10, 70)	47.9 (14.5)	57.2 (10.2)	9.4*	20%	.35
Education (8, 56)	42.7 (9.8)	57.2 (7.4)	14.1*	33%	.64
Administration (8, 56)	29.2 (1.0)	51.4 (9.6)	22.1*	76%	.74

**p* value < .0001 based on paired *t*-test.

eight in skills addressing administration.⁵ For assessment purposes, the scale positions between strong and weak were later converted to numerical values from seven to one, with 7 representing a strong response and 1 a weak response. The internal consistency reliability of the instrument was .69 (Cronbach's alpha). Survey data were analyzed by generating the mean and standard deviation for each category of items on the questionnaire: professional development, research, education, and administration. Paired *t*-tests, percent change, and effect-size *r*'s were used to compare the NCLAM participants' self-rated scores before and after the program. Data comparing the first two classes to a control group has been published elsewhere.⁵

All participants were surveyed in 2002 to assess their current position at UCSD or elsewhere, whether they were still in academic medicine, whether they had been reviewed for and/or received a promotion, and reaction to the NCLAM experience. Complete surveys obtained for 66 out of 67 participants. Information on current job position was reconfirmed in 2003 for all participants.

Finally, financial information on the NCLAM program and recruitment costs associated with faculty turnover were ascertained and compared. Return-on-investment (ROI) for the School of Medicine was calculated using the standard ROI formula:

$$[(\text{Total Benefits} - \text{Total Costs}) / \text{Total Costs}] \times 100$$

Results

As shown in Table 1, after completing the program, junior faculty were significantly more confident in their academic roles at UCSD as well as their skills in education, research, and administrative responsibilities (all *p* values < .001). The largest improvements reported by junior faculty were in professional development and administrative skills (effect-size *r* = .76 and .74, respectively). A prior analysis, based on only the first two classes, demonstrated significantly greater confidence in all skill categories for participants compared to peers who had not participated in the program.⁵

As shown in Table 2, ten out of 67 NCLAM participants left the UCSD School of Medicine by July 2003, five of which also left academic medicine. Thus, 85% of the 67 junior faculty participants remained at UCSD while 93% are still in academic medicine. Nine of the ten faculty members who left UCSD, and all of the five who left academic medicine were MDs. There were no significant differences in retention at UCSD for women and men (84% and 87%, respectively) or retention in academic medicine (89% and 97%, respectively). Five out of six underrepresented minority faculty members remained at UCSD; all remained in academic medicine.

Records are not available to assess the turnover in nonparticipants at UCSD. However, data from the AAMC indicate that 9.1% of female and 7.7% of male medical school faculty left their positions on an annual basis between 1995 and 1999.¹ Applying these statistics to the number of men and women in each year of observation (reducing the number of participants by the expected loss and increasing it by the new class size) produces an expected loss of 5.4 men and 8.4 women by July 2003. Participants have been followed from one year after graduation (class of 2002) to four years

(class of 1999). The expected turnover for UCSD NCLAM participants, had they not participated, would have been a total of 14 instead of ten faculty members.

The total cost of the implemented program to the academic medical center over four years has been \$670,000—approximately \$10,000 per junior faculty member (including salary reimbursement to the departments, operational program costs, and a \$1,000 stipend for each senior mentor). In order to assess the relative cost–benefit of the NCLAM program, this four-year cost was compared to the estimated savings generated by having to recruit fewer faculty members given improved retention rates.

Recruitment costs vary by institution and type of faculty.^{3,8,9} For clinicians, temporary salary support while building a practice tends to be more common in places like California, where professional reimbursement is poor. At UCSD, the average cost of recruitments includes \$10,000–15,000 for interviews (advertising, airfare, meals, etc.), startup costs ranging from \$250,000–400,000 for a junior basic scientist to \$150,000–300,000 for a junior nonbench scientist, and salary support over three years totaling \$150,000–400,000.¹⁰ For clinicians, the latter includes clinical support (nurse, medical assistant, etc.) instead of research startup support. NCLAM participants include clinicians, bench, and nonbench scientists. The present study uses a conservative estimated recruitment cost of \$250,000. This estimate does not include costs associated with search committee and staff time, lowered productivity, overtime for other faculty to maintain workload, lost patients, or canceled clinics, but is in line with estimates of \$250,000 from other institutions.^{11,12}

Using the AAMC estimates of an annual attrition rate of 9.1% for women and 7.7% for men, the estimated savings created by

TABLE 2. Retention of Junior Faculty at the University of California San Diego (UCSD) After Participation in the National Center of Leadership in Academic Medicine Program

Category	Participants	Left UCSD	Left Academic Medicine
Total	67	10	5
Class			
1999	18	2	1
2000	22	6	2
2001	13	2	2
2002	14	0	0
Gender			
Men	30	4	1
Women	37	6	4
Ethnicity			
URM*	6	1	0
Other	61	9	5
Degree			
MD	49	9	5
PhD	11	1	0
MD/PhD	7	0	0

*URM = underrepresented minority

NCLAM is the difference of replacing the ten faculty members who participated and left versus an estimated 14 faculty who would have left without the program, and the cost of the running the program. Using the conservative estimate of \$250,000 for recruitment costs per faculty member, the difference in the recruitment costs saved (four faculty equals \$1,000,000) and the cost of the NCLAM program (\$670,000) over four years is \$330,000. Using the savings in recruitment dollars as the only measurable benefit (it is difficult to make a dollar estimate on the academic productivity of the group), the ROI for NCLAM after four years is 49%, or a return of \$1.49 for every dollar spent.

Discussion

UCSD's NCLAM model provides a structured program of support for clinical and nonclinical junior faculty through their initial years in academic medicine. Tracking demonstrates that 85% of the 67 junior faculty participants remained at UCSD while 93% were still in academic medicine one to four years after participation.

A total of ten NCLAM participants have left UCSD, compared to 14 expected based on national data from the AAMC.¹ Since analysis at any single institution will be based on small numbers, this difference is not statistically significant but in the desired direction. National statistics may not be applicable to UCSD, however, given the managed care environment in California. The AAMC data may also be an underestimate, as it is based on all faculty, not just junior faculty, where turnover may be higher. Other reports have estimated turnover ranging from 8% a year among academic physicians in Missouri,¹¹ 38% over seven years among internal medicine faculty,¹² and 55% over four to five years for young primary care physicians.⁸ Additional follow-up will lead to more stable estimates of NCLAM's retention rates, as well as assessment of rates of promotion.

While UCSD would like to keep all junior faculty members at the institution, an additional indicator of program success is retention in academic medicine. Out of 67 NCLAM graduates, 93% have stayed in academic medicine. All underrepresented minority faculty and all PhD faculty have stayed in academic medicine. National or regional data on retention in academic medicine for these faculty groups is currently unavailable.

The NCLAM graduates rate themselves significantly higher in self-confidence in all areas of professional academic skills after completion of the program. NCLAM graduates also rate themselves higher than peers who did not participate in the program.⁵ Using conservative estimates of expected turnover rates and local recruit-

ment costs, the NCLAM program proves to be of cost-benefit to the institution.

Succeeding in a faculty career in academic medicine has become much more complicated in recent years, with rapid changes in health care delivery bringing new demands and new methods to the education, clinical, and research work environments. UCSD's NCLAM has invested in a structured mentoring program for professional development that has proven successful in increasing faculty retention at the institution and in academic medicine, and in increasing faculty skills, confidence, and moral, while proving to be cost-effective.

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