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## An International Physician Education Program to Support the Recent Introduction of Family Medicine in Egypt

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**Background and Objectives:** *There are few reports of systematic international physician development programs to create family medicine as a new specialty in a developing nation. This paper describes the process and outcomes of a large-scale effort to initiate new family medicine training through the Egyptian Ministry of Health and Population (MOHP) using a 12-week US-based program at the University of California, Irvine (UCI). Methods:* Generalist physicians (n=134) with 1 year of internship training, currently working under the MOHP in Egypt, were competitively selected to participate in a training program at UCI between 1998 and 2002. Participants were assessed before, during, and after the program using multiple measures of competencies in family medicine topics, practice, and teaching. Aggregate participant data, post-program quality surveys, and follow-up surveys of the program's influence on practice behaviors comprised the main measures used for program evaluation. **Results:** Participants showed improvement in knowledge and skills for family medicine practice and teaching for topics covered in the program. After returning to Egypt, 98% reported continued use of their newly acquired skills and knowledge. Participants reported that the program advanced their careers, they taught family medicine to other physicians, and they were likely to pursue certification under a newly established Family Medicine Board of Egypt. Self-reported practice in family medicine increased to 69% after the program versus 16% before. **Conclusions:** Overseas training programs are a viable method of introducing family medicine as a new clinical specialty. Ingredients for successful implementation and barriers are discussed.

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US faculty development programs are generally offered to US clinician-educators as fellowships, continuing medical education experiences, or master's degree programs.<sup>1-4</sup> Some programs have been evaluated using longitudinal outcomes<sup>3,5</sup> that usually are retrospective self-assessments by participants.

Faculty development of physicians as the primary strategy for introducing family medicine as a new specialty in other nations, however, is an untested concept. Literature on programs designed specifically for physicians from overseas is scarce, consisting of a mixture of descriptive reports on scholar programs,<sup>6-8</sup> consultations and site visits,<sup>8,9</sup> and programs focused on initiating

new service and patient care projects.<sup>10-12</sup> Most reported programs are small in size, with fewer than 20 participants.<sup>6,8</sup> Evaluation outcomes typically have consisted of short-term measures, such as new skills gained, examination performance, and the proportion of trainees who return to serve their home communities.<sup>6,7</sup> Longer-term outcomes, such as effect on practice and teaching behaviors after graduation from such overseas training programs, are lacking. Further, of 49 US fellowship programs in family medicine offering training to foreign medical graduates surveyed in 1990,<sup>13</sup> only 11 (22%) had ever trained a foreign fellow, and just five felt able to sustain this training in the future.

### Family Medicine in Egypt

As recently as 1997, family medicine was not a recognized specialty in Egypt. Indeed, a list of 19 recognized medical specialties (reported in the Egypt Health Sector Reform Program "First Draft Report," Decem-

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ber 1997, by the Egyptian Ministry of Health and Population (MOHP) did not mention family medicine. Only one family medicine training program, at the Suez Canal University, existed at that time.

Major concerns of the MOHP in the 1990s included a maldistribution of physicians, with a lack of primary care and female physicians in the remote governorates (states). There also was thought to be inadequate training of physicians to provide for the population's primary health care needs, especially in preventive services. Further, there was a lack of continuing education for practicing physicians. Lastly, the MOHP had limited capacity to implement educational policies such as regulation of the number of medical school graduates and accreditation requirements.

As a result of these concerns, in 1995, the Health Minister initiated the Egypt Health Sector Reform program and commissioned health care needs assessments. These measures resulted in a recommendation to improve outcomes of mortality, morbidity, and quality of life for Egypt's citizens by introducing family medicine as a universal primary care delivery system.<sup>14</sup> A multilevel implementation plan included establishment of family health centers as the basic infrastructure health unit, upgrading knowledge and skills of existing general practitioners, and initiating accredited family medicine training programs. These programs were to be established through collaboration with key Egyptian universities and the Ministry of Higher Education (which oversees medical education), with assistance from overseas institutions. The various goals of the health reform program were then pursued through contacts with key overseas educational institutions in the United Kingdom and the United States.

Current Egyptian medical school graduates undergo 1 year of required internship training in a rural setting and then either become general practitioners or enter residency training. One third of physicians subsequently are employed by the MOHP. The rest pursue private practice, enter academia, or emigrate. One third of physicians are females, who practice mainly in urban areas.

### **UCI Program Objectives**

We established a physician development program at the University of California, Irvine (UCI) College of Medicine designed to assist the Egyptian MOHP in implementing its health reform. This article describes the 12-week UCI curriculum and the short- and long-term training outcomes. Our hypothesis was that overseas-based training of generalist physicians who had no prior residency training can be an effective model for seeding and disseminating family medicine education in a nation such as Egypt.

### **Methods**

#### *Program Development*

In 1997, Egypt's Health Minister requested the UCI College of Medicine to provide systematic physician development in family medicine. This training was intended for selected primary care physicians in response to Egypt's health reform needs. A proposal that included a 16-week pilot training program at UCI for 12 Egyptian physicians was implemented under the direction of two of the authors and evaluated by assessing participants before, during, and after the program using multiple measures. From this pilot program, an ongoing 12-week program for up to 16 physicians per cycle evolved. A total of 10 cycles of training occurred from 1998 to 2002, in which 134 Egyptian physicians participated.

The first seven cycles of training were funded by the Egypt MOHP. The last three cycles were funded by the United States Agency for International Development (USAID).

#### *Program Description*

Egyptian program participants were mostly practicing generalist physicians from urban or rural health care centers. All of the participants were salaried by the MOHP while they participated in our program. They were selected by MOHP administrators in Cairo, Egypt and UCI faculty through a process of face-to-face interviews, curriculum vitae review, and English-language proficiency assessment. Inclusion criteria included a history of excellent service, leadership roles as clinical directors, and verbal and written English fluency. All selected participants signed contracts committing them, for at least 2 years after returning to Egypt, to serve the MOHP by introducing new family medicine programs. No tuition fee or living costs were charged to participants, and the program was fully funded by the MOHP or USAID.

**Program Goals.** Three broad curricular goals for participants in the international family medicine program were generated by consensus discussion between the UCI leadership and the Egyptian Ministry physician administrators. The first goal was to assist participants to develop updated clinical knowledge and competencies in family medicine, as well as to give them an understanding of its scope of practice as it differs from traditional general practice. This scope of practice and clinical knowledge included prevention, acute care, chronic illness care, and psychosocial aspects of community-based health care.

The second goal was to provide participants with basic educational skills that would enable them to teach family medicine to other primary care physicians. That is, they should be able to develop new programs and to train others. The third goal was to provide participants with lifelong learning skills, with a focus on Internet

search strategies and skills for critical appraisal of the medical literature within the context of evidence-based medicine (EBM).

The achievement of the first goal was limited by licensing restrictions that prohibit unlicensed international graduates from providing patient care. Clinical skills were therefore developed by observation of actual patient encounters, viewing videotaped demonstrations, and using standardized patient (SP) encounters. Cases using SPs were adapted from existing US medical student and residency cases to conform to Egyptian learning needs and values, as derived from the participants on pre-program surveys via discussion between the MOHP and UCI collaborators. An outline of the educational topics, their relative weighting, and learning activities for the 12-week curriculum are shown in Tables 1 and 2.

**Instructional Methods.** Five instructional strategies were used throughout the training program. First, we used in-class lectures and seminars that incorporated clinical case problem solving and practice of educational skills. These educational skills included lecturing, presenting to small groups, precepting, and learner and program evaluation. Videotapes and role plays were incorporated into these classes.

The second instructional method was hands-on computer classes to teach participants about electronic communication (e-mail) and Internet searching as a foundation for EBM. Participants demonstrated their skills

with in-class presentations of critically appraised topics. Participants were required to complete an EBM assignment and present the results to their peers.

The third method was clinical observation of and follow-up discussions about patient encounters and precepting sessions in several residencies. This was the approach used to educate participants about clinical teaching skills.

Fourth, we organized development of an educational intervention project in family medicine to be implemented by small groups of three to four participants after returning to Egypt. These intervention projects consisted of short (6- to 12-week) continuing education programs for groups of 10 to 20 generalist physicians, aimed at updating clinical knowledge and introducing evidence-based approaches to patient care to other Egyptian physicians. All participants developed their educational intervention projects for implementation in their home practice settings and received UCI faculty mentoring and frequent formative feedback throughout the 12-week training program. Faculty also were present at a final/graduation session when each group of participants presented its project and received audience peer review and in-depth oral and written summative critiques of the educational interventions' design, structure, and feasibility. Selected participants who performed at an outstanding level received "awards of excellence" for academic performance, leadership, or peer role modeling as voted by UCI faculty.

The fifth educational method was attendance at a US national meeting to learn how to offer CME programs in Egypt. Participants attended either the annual meetings of the American Academy of Family Physicians or the Society of Teachers of Family Medicine. They thus had the opportunity to experience the scope and depth of family medicine education and practice from a national perspective.

The program was presented daily from 9 am to 4 pm with either 1 or 2 half days per week allocated for self-study and project work. Required program hours totaled approximately 550 over 12 weeks. The entire program was offered in English. UCI department faculty (26 physicians, one social worker, two PhD psychologists) were given time to participate as instructors for clinical and behavioral science topics. Five International Division faculty members provided the primary curriculum in teaching skills and project development, and they did most of the mentoring and evaluation of individuals and groups.

Table 1

Outline of 12-week Program Topics and Activities\*

Week#	Block Topics	Longitudinal Topics
1-6	Orientation Computers Classes and Search Strategies Teaching Skills Territory of Family Medicine Adult Health Pediatrics Geriatrics Administration and Leadership	Behavioral Science Educational Project Development Designing Educational Curricula
7-8	Residency Observation	Learner and Program Evaluation
9-10	Clinical Practice Examination (CPX) Attendance at a National Meeting Preventive Care and Screening	Presentation Skills
10-12	Women's Health Clinical and Administrative Skills Leadership, Project Completion, and Presentation Project Presentations Program Evaluation	Computer Skills and Evidence-based Medicine

\* For details of program curriculum, please contact the corresponding author.

Table 2

## Relative Weighting of Curricular Topics by Hours

Curricular Topic	Number of Hours	Percentage of Training Time
1. Territory of Family Medicine	160	40
2. Curriculum Design	80	20
3. Teaching Skills and Leadership	80	20
4. Evidence-based Medicine, Internet, and Word Skills	40	10
5. Evaluation Methods	40	10

\* These topics, delivered over approximately 400 hours in 12 weeks, exclude 1 week of residency observation and 4 days of national meeting attendance.

*Program Evaluation*

The participants were the primary source of program evaluation data. Participants were profiled by age, gender, practice background and location, specialty, and years in practice. Three primary methods of program evaluation were used: (1) comparison of pre- and post-program self-assessed skills, (2) an end-of-program evaluation of educational quality and effectiveness, and (3) post-program surveys conducted at 1 to 4 years after graduation to collect longer-term reports from participants. All measures were developed by consensus of UCI program faculty, based on standard practices used in similar educational programs and pilot tested with the first group of 12 Egyptian physicians in training.

**Pre- and Post-program Self-assessment of Skills.** Participants completed a written pre-program needs assessment, including a self-assessment of their baseline skills. This allowed program faculty to adjust the curriculum in each cycle in response to specific learner needs.

Participants' self-assessments of skills in six categories taught in the curriculum were rated on a 5-point scale on which a higher rating indicated a higher level of competency. The six categories were teaching skills for lecturing and precepting about family medicine topics, curriculum design and implementation, developing evaluation methods, leadership skills, research literature appraisal, and computer and Internet skills. Aggregate results of the needs assessment were discussed with participants at program entry. The identical skills assessment instrument was administered immediately after program completion and for the two post-program follow-up surveys.

**End of Program Evaluation.** An immediate post-program evaluation was conducted at the end of 12 weeks, using a 29-item survey instrument. Questions were rated on a 5-point Likert scale from "strongly disagree" to "strongly agree;" 5 was the highest rating value. Rating items addressed the perceived quality and effectiveness of the curriculum in terms of clarity of objectives, degree to which objectives were achieved, relevance of topics taught, likelihood of using new knowledge and skills, quality of instruction, and appropriateness of methods used to evaluate participants.

**Post-program Survey.** A follow-up mail survey, written in English, was designed and pilot tested and then implemented. The survey asked the following questions: first, we asked if participants were currently practicing family medicine. Second, we asked if they had taught, or were currently teaching, family medicine. Third, we asked how much, if any, of their educational projects had been implemented. We asked about their use of the Internet and evidence-based principles in clinical practice, their career development since graduation, and their desire for further leadership training. We also asked them to reevaluate their current skills in the six categories previously described in the pre- and post-program self-assessment of skills using the same 5-point Likert rating scale.

The first post-program survey took 4 months, from December 1999 to March 2000, with three mailings and personal e-mail reminders. Fifty-five (83%) of the first 66 graduates surveyed responded. The same survey was repeated for 132 living program graduates (including those who had responded to the first survey) from December 2002 to June 2003, again using three mailings and personal e-mail contact. Seventy-four of 132 graduates (56%) responded to the survey, with 34 female and 40 male respondents. Data provided by respondents who completed both surveys were not linked because the surveys were completed anonymously.

**Other Evaluation Measures.** In addition to the methods described above, participants were frequently assessed during the program by interval written multiple-choice questions and short-essay tests, a mid-program Clinical Practice Examination (CPX), EBM exercises, electronically presented assignments, and observed classroom participation and performance. The CPX afforded the opportunity to measure participants' clinical competencies in history taking, physical examination, and counseling skills on cases uniquely designed for this program. The SP encounters presented in the CPX served as a proxy measure of clinical skills. The latter could not be measured by direct observation of actual practice on real patients, because of the licensing restrictions for foreign medical graduates. The primary use of the multiple learner evaluations was to pro-

vide individualized formative feedback. Tracking the aggregated learner performance results was used as a separate measure of curriculum effectiveness and complemented the three primary program evaluation measures.

#### Data Analysis

Frequency counts and percentages were computed for participants' demographic profile data. Descriptive statistics (frequency distributions, means, and standard deviations) were computed for each rating scale item in the program's evaluation measures and also for the aggregated learner evaluation measures.

Pre- versus post-program mean ratings on each of the six self-assessed skills were compared by paired *t* tests. We also compared pre-program skills versus post-program skills, an overall skills score obtained by collapsing ratings across the six separate skills. The Bonferroni correction for performing multiple *t* tests was applied by dividing the nominal two-tailed *P* value (.025) by the number of comparisons.<sup>7</sup> Thus, statistical significance for each pre-program and post-program comparison was set at  $P < .004$ . All data were analyzed with SPSS 11.5 (SPSS Inc, Chicago).

## Results

### Subjects

All entering participants ( $n=134$ ) were either practicing physicians or directors of health care units in Egypt. None of the participants were university faculty. Participant age, gender, and practice distribution are summarized in Table 3.

Participants predominantly represented the urban governorates around the Nile Delta. Most participants identified themselves as general practitioners, with some self-identified as representing maternal health care, pediatrics, internal medicine, and—rarely—surgical specialties (urology and otolaryngology).

The needs assessment determined that fewer than 20% could type or use common word processing computer software, and fewer than 10% had existing e-mail accounts. Except for a small number of participants who were enrolled in a newly established Egyptian Family Medicine Board created in 2000, none identified themselves as practicing family physicians.

All program requirements were successfully met for 133 of 134 entering participants. One participant returned to Egypt prior to program completion and is not included in the analysis. All 134 participants returned to their employment with the MOHP at program conclusion. One participant has died since returning to Egypt.

Table 3

Demographic Profile of Egyptian Physicians Who Completed the 12-week Education Program ( $n=133$ )

	#	% of Total
Gender		
Male	72	55
Female	61	45
Age		
20–30	44	33
31–44	70	53
>45	19	14
Practice location		
Urban and suburban	101	76
Rural	32	34
Years of practice		
< 2	3	2
2–5	47	35
> 5	83	63

### Program Evaluation

**Pre- and Post-program Self-assessment of Skills.** Data were not collected from the third cycle, leaving paired pre-post responses for 119 of the remaining 120 participants. A summary of the pre- and post-program ratings of self-assessed skills is provided in Figure 1. Participants reported significant ( $P < .0005$ ) pre- to post-program improvement in their mean ratings on all six skills. There also was a significant ( $P < .0005$ ) pre-post improvement in their mean overall skills score. In general, the magnitude of the reported improvement averaged approximately two rating scale units.

**End of Program Evaluation.** Responses to the 29 items on the end-of-program evaluation survey are summarized in Table 4. Mean ratings on all 29 items in the survey were in the range of 4.0 to 5.0 on a 5-point scale. Thus, participants consistently reported highly positive perceptions about the quality and effectiveness of the program, when measured immediately at the conclusion of the program.

**Post-program Survey.** The results of the first follow-up survey from 1999–2000 included the following: (1) 38% of respondents were promoted by the MOHP since returning to Egypt, (2) 66% continued to use the Internet for educational purposes, (3) 64% indicated that they now practice family medicine, and (4) 62% had given lectures or presentations. Among those completing the survey, 95% expressed interest in returning to UCI for further leadership training. Ten received scholarships to pursue, and have successfully completed, Masters in Public Health degrees at US institutions. These 10 sub-

sequently attained leadership positions within the MOHP.

The second follow-up survey from 2002–2003 showed an increase from 16% before to 69% after the program of respondents identifying family medicine as their primary practice specialty. Concomitantly, those identifying themselves as general practitioners decreased from 45% to 9% after completing the program. Other findings included: (1) 98% of respondents applied family medicine principles in their daily practice, (2) 49% held leadership positions, and (3) 59% had consulted about family medicine. Although 67% had identified and obtained support for practicing and teaching family medicine, only 30% reported that they actually taught on a regular basis.

Mean self-assessed ratings of the six core skills remained in the 4.0 to 5.0 range, demonstrating a persistence of the training effect at 1 to 4 years after training. Current use of the Internet and e-mail for communication exceeded 90%. Fifty-five percent of respondents had implemented at least half of their curriculum projects. Most (93%) expressed interest in returning to UCI for advanced training.

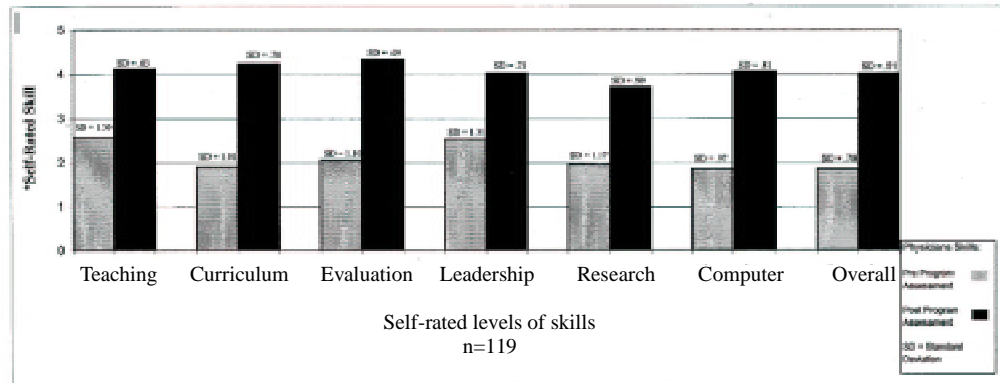
**Other Evaluation Measures.** In-training measures of participants' clinical knowledge and performance related to the practice of family medicine, which was explicitly addressed by program content, suggest a high level of attainment across these practicing physicians. In the aggregate, little between-group variation in written examinations and CPX performance was seen between the program cycles. All participants successfully completed and presented their curricular projects in family medicine training to their peers and UCI faculty at a final/graduation session. Attendance at scheduled program sessions was more than 90%.

## Discussion

The global need for family medicine as a model of efficient and equitable health care delivery was reviewed by Haq et al in 1995<sup>15</sup> and is eloquently articulated by the World Health Organization in the "Ljubljana Charter" of 1996.<sup>16</sup> Disseminating the family medicine ap-

Figure 1

Comparison (by Paired t Tests) of Pre- and Post-program Training: Self-assessed Skills Rated by Program Participants Across Nine Program Training Cycles (n=119)



Competency in each skill area was rated on a 5-point, Likert-type scale, where a rating of 5 indicated the highest level of self-assessed competency.

proach to health care delivery and practice through cooperative, international educational programs may be enhanced by a systematic accounting of purported program outcomes. The program we designed, implemented, and evaluated at UCI appears viable in this regard. A consistent pattern of training effects emerged from more than 100 program participants, based on data obtained from multiple measures and sources.

Both self-assessment and performance measures, as used in our study, have been demonstrated to be reliable and valid as faculty development program evaluation tools.<sup>3,5</sup> We successfully tracked immediate improvement in clinical and educational skills by objective and self-report measures. Participants clearly demonstrated immediate acquisition of new clinical knowledge and teaching competencies, and these changes were consistent with the training they received.

We also conducted post-program follow-up surveys of participants 1 to 4 years after they returned to Egypt. The follow-up surveys provided a measure of program success in the areas that were emphasized. That is, participants continued to use their new skills in their practice settings 1 to 4 years after completing the program. In evaluating the long-term effects of undergraduate and graduate medical training, it is difficult to link physicians' competencies acquired during training directly to improved patient care outcomes. It was beyond the scope of our program evaluation to accomplish this.

It was surprising that only 50% of the graduates were successful in implementing more than half of their educational projects. There are several possible reasons: (1) follow-up support for individual participants may have been lacking, (2) local response to the family

Table 4

## Participating Physicians' End of Program Evaluation of Educational Quality and Effectiveness of the 12-week Curriculum on Physician Development (n=93)

Questions Answered	Mean*	SD
1. The program goals were clearly stated.	4.7	.30
2. The learning objectives were clear and specific.	4.6	.34
3. The first week's orientation was adequate.	4.4	.39
4. My previous background and clinical experience was adequate for this program.	3.9	.44
5. I was prepared to study and work hard.	4.4	.30
6. The syllabus provided was useful.	4.5	.27
7. I referred often to the syllabus.	4.4	.23
8. There were sufficient handouts to help my learning.	4.5	.27
9. My level of spoken English was adequate to follow this program.	4.3	.29
10. I received enough attention for my learning needs.	4.5	.21
11. The program activities scheduled were interesting and stimulating.	4.4	.20
12. I would recommend this program to my peers.	4.6	.29
13. My instructors evaluated me in a fair and consistent way.	4.5	.28
14. I received enough feedback on my performance.	4.6	.21
15. The evaluation of my performance was important.	4.6	.25
16. I had enough opportunity to give feedback to the instructors.	4.5	.24
17. I feel competent to design MCQs and MEQs.	4.4	.13
18. I understand the purpose and design of an OSCE.	4.5	.25
19. I can implement an educational curriculum.	4.6	.15
20. I am excited about being an educator.	4.6	.25
21. My skills as a teacher have improved as a result of this program.	4.7	.21
22. Working in a team on my project was useful.	4.6	.33
23. I plan to use my teaching skills.	4.7	.27
24. I hope to be a leader in family medicine education in Egypt.	4.8	.15
25. I hope to train at least 10 family physicians a year for the next 2 years.	4.8	.16
26. I would like to participate in future UCI conferences on family medicine in Cairo.	4.9	.18
27. I would like to return to UCI for a follow-up program in faculty development in 2 to 3 years.	5.0	.11
28. I enjoyed this program.	4.9	.16
29. The program goals were met.	4.8	.24

\* Mean for 5-point Likert rating scale: 1=strongly disagree, 5=strongly agree

SD—standard deviation

MCQ—multiple choice questions

MEQ—modified essay questions

OSCE—Objective Structured Clinical Examination, also referred to as a Clinical Practice Examination (CPX)

UCI—University of California, Irvine

medicine model may be unenthusiastic, and (3) our curriculum may have been inadequate to address the need for effective leadership for educational and practice reform. This observation underscores the need for sponsors of such programs to provide effective follow-up support for participants. This support may consist of funding, a critical mass of participants for each practice site, or subsequent visits by the overseas host team for continued consultation and expert assistance.

We identified features that contributed to the outcomes of this program. First, a department infrastructure and culture that allowed funded faculty participation in international training programs was critical to success. Second, there was sustained leadership support for establishing and managing new institutional ties abroad. An office of international affairs facilitated international collaborations and negotiations at UCI. Third, the overarching educational design incorporated

a structured and tightly run, full-time, systematically evaluated program with a high level of accountability to the sponsors. Fourth, the program learning activities followed from a well-conducted and thorough needs assessment.

#### Benefits for the UCI Program

We observed a lack of perceived conflict with other educational programs (such as residency and medical student programs). Our residents were able to arrange electives in Egypt with the program participants. Language and cultural differences presented both a challenge and an opportunity. Social events held regularly for participants and our faculty promoted willingness to learn and to teach. Cultural competencies of faculty, fostered by an already multi-ethnic, diverse practice and teaching environment here at UCI, con-

tributed to program success.

#### Limitations

There are some limitations to our experience, however. First, the program was customized to a homogeneous group of generalist Egyptian physicians. The curriculum we offered may not generalize to physicians in other specialties. Second, the entire project received extramural funding, and participants did not pay any fees, which may not be possible for other similar projects in other settings. Third, clinical competencies of participants in actual practice were not addressed by our curriculum. Fourth, the response rate for the second follow-up survey was only 56%, and details about the type and quality of educational interventions offered by the participants to other physicians after returning to their practices in Egypt are lacking.



## Conclusions

We conclude that systematic, structured international faculty development programs, given adequate funding and consistent institutional support, are viable. Future plans include international education projects in partnership with other institutions with established experience and ability to deliver in-country, train-the-trainer programs.

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