

Procedural Training In Family Practice Residencies: Current Status And Impact On Resident Recruitment

Michael B. Harper, MD, Edward J. Mayeaux, Jr., MD, John B. Pope, MD,
and Ravindra Goel, MD

Background: Although procedural training in family practice has recently received greater emphasis, the current status of this training in residency programs has not been reported. Considerable variation in procedural training among family practice residencies is allowed by the American Board of Family Practice and accreditation requirements. This study was performed to report the current status of procedural training in family practice residencies and to determine whether a correlation exists between the number of procedures taught in family practice residencies and successful resident recruitment.

Methods: A one-page questionnaire was developed to determine availability of teaching and type of instructor for 24 selected procedures. This questionnaire was mailed to all 398 family practice residency directors in the United States. Data from the survey were compared with the published residency match results in 1993 and 1994.

Results: Questionnaires were received from 363 programs, for a response rate of 91 percent. The current status of training in these procedures, presented by program type and geographic region, reflects considerable regional variation. Training in colposcopy and in cardiac stress testing was reported to be available in a greater percentage of programs than in previous studies. A significant positive correlation was found between the number of procedures taught by family physicians and residency match results.

Conclusions: The 91 percent response rate lends credibility to this status report and indicates that family practice program directors recognize procedural training as an important issue. The trend toward greater availability of procedural training in family practice residencies is confirmed for selected procedures. Emphasis on procedural training by family physicians has a positive correlation with successful resident recruiting. The impact on medical student interest in family practice deserves further study. (J Am Board Fam Pract 1995; 8:189-94.)

Guidelines for procedural training in family practice residencies currently allow for wide variability among programs. Accreditation and board requirements do not specify the procedures that family practice residents must be taught. The American Board of Family Practice has previously considered requiring program directors to certify their residents' competence in a list of core procedures as a requirement for board certification, but this requirement has never been implemented.

The American Academy of Family Physicians (AAFP) has actively participated in providing procedural training to its members. It initially

offered structured continuing medical education training in flexible sigmoidoscopy and subsequently added training in colposcopy, esophago-gastroduodenoscopy (EGD), cardiac stress testing, and others. This training is in the form of workshops at the annual assembly, 1- or 2-day courses, and individual tutorials by qualified academy members. In April 1993 the AAFP formed a task force on procedures in family practice with the goal "To develop mechanisms to encourage, train, support, and credential family physicians in the development and use of procedural skills . . ." Findings from recent studies have shown that family physicians are interested in learning colposcopy, EGD, and other procedures.^{2,3}

This increasing emphasis on procedural training has also influenced family practice residencies. For the last 3 years, the AAFP-sponsored Program Directors' Workshop has included a forum on procedural training. In 1992 the AAFP sponsored its first EGD workshop and invited family practice program directors and other

Submitted, revised, 9 December 1994.

From the Department of Family Medicine and Comprehensive Care (MBH, EJM Jr, JBP), and the Family Practice Center (RG), Louisiana State University Medical Center in Shreveport. Address reprint requests to Michael B. Harper, MD, Department of Family Medicine and Comprehensive Care, Louisiana State University Medical Center, 1501 Kings Highway, Shreveport, LA 71130-3932.

family practice faculty for the purpose of increasing the availability of this training in residency programs.

A major purpose of our study was to determine the current status of procedural training in family practice residencies. Published data on this subject are limited, and information about procedural training offered by other family practice residencies could be useful to programs that are attempting to expand their procedural teaching.

A second purpose of this study was to examine the influence of availability of procedural training on resident recruitment. During the last 6 years, procedural training has been increased and emphasized in the recruiting efforts of the family practice residency at Louisiana State University Medical Center in Shreveport (LSUMC-S). There has been a concomitant improvement in the residency match fill rate at this residency during the same period, and the emphasis on procedural training is thought by the faculty and chairman to have been a major contributing factor. This observation led to the question of how procedural emphasis affects recruiting on a national level. No previous study has examined this issue. Factors that have been studied and shown to influence students' program selection include quality of family practice faculty, program reputation, academic potential, and curriculum.⁴⁻⁶ Procedural training, especially by family practice faculty, could potentially have a positive impact on each of these factors. This study was intended to determine whether a correlation exists between emphasis on procedural training and successful resident recruitment.

Methods

A one-page questionnaire was developed by the authors through the use of pilot testing and suggestions from several family practice program directors and faculty members. The questionnaire addressed 24 procedures that might be taught in family practice residencies and asked the following questions: (1) Is training currently offered in your program for this procedure? (2) Is training available without the resident relocating? and (3) Do family physicians on the residency staff perform and participate in teaching this procedure? Procedures selected were primarily outpatient procedures that could

be performed in a family practice office setting. Obstetric procedures also were included. The list of procedures studied is found in Table 1. Other procedures typically performed in an operating room, intensive care unit, or emergency setting were not included to keep the questionnaire brief. Using AAFP mailing labels, all family practice program directors in the United States were mailed this questionnaire in November 1993. A second mailing was sent to program directors who had not responded by January 1994.

The results of the questionnaire were compared with the published fill rate in the residency match for 1993 and 1994. Pearson correlations and the Student *t*-test were utilized to determine whether significant correlations occurred. The Student *t*-test was used to compare the number of procedures taught in university and community programs.

Results

Of the 398 questionnaires mailed, 363 were returned, for a response rate of 91 percent. Of the

Table 1. Percentage of Family Practice Residencies Offering Training in Selected Procedures.

Procedure	Taught in Program	Taught in Town	Taught by Family Physician
Vaginal delivery	100	96	77
Flexible sigmoidoscopy	99	97	95
Circumcision of newborn	98	96	87
Colposcopy	95	93	85
Levonorgestrel implant insert, remove	93	90	85
Vacuum extraction	88	85	65
Slit lamp examination	79	74	31
Forceps delivery	77	72	50
Vasectomy	75	73	59
Cardiac stress test	66	63	34
Obstetric sonography	63	60	31
Fine-needle biopsy of breast	54	52	40
Cesarean section	54	49	14
Rhinolaryngoscopy	50	49	33
LEEP	41	37	27
Tubal ligation	40	37	14
Colonoscopy	26	23	6
Fine-needle biopsy of thyroid	22	22	13
Chalazion curettage	22	22	13
EGD	21	19	7
Circumcision of adult	15	15	8
Abdominal sonography	13	13	5
PEG placement	8	7	2
Hysteroscopy	8	8	5

LEEP=loop electrosurgical excisional procedure, EGD=esophago-gastroduodenoscopy, PEG=percutaneous endoscopic gastrostomy.

24 procedures studied, programs offered training in an average of 13. Only three programs reported training in all 24 procedures, and no program had family practice faculty teaching all procedures. The nationwide results of the questionnaire are displayed in Table 1. The percentages of programs offering training in each procedure are displayed in Table 2, with data arranged by program type and geographic region. Data on procedures performed and taught by family physicians are displayed in Table 3. Considerable regional variation was found for some procedures.

The mean number of procedures for which training was provided in university residency programs did not differ from the average number taught in community programs. Significantly more of these procedures were taught by family

physician faculty in university programs than in community programs ($P=0.007$).

There was a significant positive correlation between the number of procedures taught by family physician faculty and the fill rate in the 1993 residency match, as well as the averaged fill rate for 1993 and 1994. The correlation coefficients were 0.18 ($P=0.001$) and 0.16 ($P=0.002$), respectively. A positive correlation was found for 1994 ($r=0.09$) but was not statistically significant ($P=0.08$). There was no significant correlation found between either total number of procedures taught or number taught in town when compared with residency match fill rates.

Discussion

A major strength of this study is the excellent response rate of 91 percent, which improves the re-

Table 2. Percentage of Programs That Teach Each Procedure.

Procedure Taught	Program Type			Region*								
	University	Community	Military	WS Central	ES Central	WN Central	Mountain	Pacific	S Atlantic	EN Central	New England	Mid Atlantic
Endoscopy												
Flexible sigmoidoscopy	100	99	100	100	100	100	100	100	100	99	100	98
Rhinolaryngoscopy	55	48	87	51	65	45	24	43	63	53	23	41
Colonoscopy	24	27	27	37	55	30	43	14	23	23	15	22
EGD	18	23	13	49	55	21	33	10	24	16	8	9
PEG placement	0	10	7	11	10	12	5	7	4	12	0	7
Hysteroscopy	4	8	13	9	20	9	10	10	2	4	8	9
Obstetrics-Gynecology												
Vaginal delivery	100	100	100	100	100	100	100	100	100	100	100	100
LG implant insert, remove	100	94	67	97	100	97	100	100	98	93	92	85
Colposcopy	96	94	100	94	85	97	100	98	94	97	100	87
Vacuum extraction	86	88	100	89	85	97	100	100	86	88	85	74
Forceps delivery	76	77	93	89	85	94	81	79	76	80	38	59
Obstetric sonography	73	60	93	83	75	67	71	69	57	62	46	41
Cesarean section	47	55	73	91	70	64	86	71	39	38	31	33
LEEP	35	42	47	51	55	52	48	29	35	42	46	28
Tubal ligation	35	41	47	86	60	39	52	52	27	28	15	20
Other												
Circumcision newborn	100	98	100	100	100	100	100	100	98	100	100	93
Slit lamp examination	80	78	100	80	90	91	81	86	73	78	77	61
Vasectomy	82	73	100	91	70	94	100	93	61	78	62	37
Cardiac stress test	65	65	100	91	80	88	71	67	71	53	46	37
Fine-needle biopsy, breast	57	54	47	51	45	58	57	74	47	49	54	59
Fine-needle biopsy, thyroid	20	23	27	29	20	27	19	33	25	19	8	15
Chalazion curettage	20	23	27	29	20	30	19	31	29	14	15	15
Circumcision in adult	12	15	33	20	10	18	14	14	8	18	8	9
Abdominal sonography	16	13	13	20	30	15	5	12	12	9	8	11
Mean number of procedures taught	13	12.9	14.4	15.5	14.9	14.4	14.2	13.9	12.2	12.2	10.8	10.5

*States for each region: WS Central=AR, LA, OK, TX; ES Central=AL, KY, MS, TN; WN Central=IA, KS, MN, MO, NB, ND, SD; Mountain=AZ, CO, ID, NV, NM, UT, WY; Pacific=CA, HI, OR, WA; S Atlantic=DE, DC, FL, GA, MD, NC, SC, VA, WV; EN Central=IL, IN, MI, OH, WI; New England=VT, RI, MA, ME, CT; Mid Atlantic=NJ, NY, PA.
 LEEP=loop electrosurgical excisional procedure, EGD=esophagogastroduodenoscopy, PEG=percutaneous endoscopic gastrostomy, LG=levonorgestrel (Norplant).

Table 3. Percentage of Programs That Have Family Practice Faculty Perform and Teach Each Procedure.

Procedures Taught by Family Physicians	Program Type			Region*								
	University	Com-munity	Military	WS Central	ES Central	WN Central	Mountain	Pacific	S Atlantic	EN Central	New England	Mid Atlantic
Endoscopy												
Flexible sigmoidoscopy	100	94	100	97	85	100	100	100	98	93	85	91
Rhinolaryngoscopy	33	31	73	34	35	21	19	33	55	32	8	22
Colonoscopy	10	6	0	14	20	3	15	5	8	1	0	6
EGD	8	8	0	17	20	9	14	7	12	3	0	0
PEG placement	2	3	0	0	0	6	0	2	2	4	0	4
Hysteroscopy	4	5	7	6	15	0	10	7	2	3	0	4
Obstetrics-Gynecology												
Vaginal delivery	88	75	100	83	70	97	81	76	67	84	85	61
LG implant insert, remove	98	85	40	97	85	94	95	93	94	86	85	70
Colposcopy	92	83	87	91	80	94	95	90	80	92	100	59
Vacuum extraction	73	62	93	54	70	85	81	69	63	72	69	37
Forceps delivery	65	47	73	60	65	85	48	43	49	64	15	13
Obstetric sonography	41	28	60	51	55	36	38	29	25	30	23	7
Cesarean section	16	13	27	34	35	12	19	21	8	7	0	2
LEEP	26	27	33	31	50	24	38	21	18	32	38	17
Tubal ligation	12	15	13	34	25	21	33	19	4	8	0	6
Other												
Circumcision newborn	92	86	93	94	80	100	100	88	78	96	92	70
Slit lamp examination	33	29	73	26	30	21	57	43	31	28	38	13
Vasectomy	78	53	100	69	45	91	76	86	51	54	46	15
Cardiac stress test	35	31	87	54	30	61	33	21	49	26	8	9
Fine-needle biopsy, breast	47	41	13	31	30	48	52	52	43	35	46	43
Fine-needle biopsy, thyroid	12	13	7	9	10	15	19	26	24	5	8	6
Chalazion curettage	16	13	7	17	10	18	10	17	24	7	0	9
Circumcision-adult	10	8	0	14	10	9	10	10	8	9	0	0
Abdominal sonography	8	5	7	14	25	3	0	7	4	1	0	2
Mean number of procedures taught	10	8.6	10.3	10.3	9.8	10.5	10.4	9.7	9	8.6	7.5	5.6

*States for each region: WS Central=AR, LA, OK, TX; ES Central=AL, KY, MS, TN; WN Central=IA, KS, MN, MO, NB, ND, SD; Mountain=AZ, CO, ID, NV, NM, UT, WY; Pacific=CA, HI, OR, WA; S Atlantic=DE, DC, FL, GA, MD, NC, SC, VA, WV; EN Central=IL, IN, MI, OH, WI; New England=VT, RI, MA, ME, CT; Mid Atlantic=NJ, NY, PA.
 LEEP=loop electro-surgical excisional procedure, EGD=esophagogastrroduodenoscopy, PEG=percutaneous endoscopic gastrostomy, LG=levonorgestrel (Norplant).

liability and generalizability of the findings. This response rate could be a reflection of a general interest in or recognition of the importance of procedural training among family practice program directors. These data might prove useful in negotiations by program directors who wish to expand their procedural training.

Results from this study confirm an increasing availability of procedural training in family practice residencies for some procedures. Colposcopy training has markedly increased, as evidenced by this procedure currently being taught in 95 percent of programs compared with only 45 percent in 1990.⁷ The percentage of programs teaching cardiac stress testing has increased to 66 percent, up from 62 percent in 1991.⁸ Lack of published data prevents comparisons for other procedures.

Considerable regional variation was found in the availability of training for many procedures. The causes of this variance are not known, but one factor might be resistance from subspecialists with regard to procedures, such as EGD and colonoscopy.⁹ Another factor could be regional differences in the utilization of certain procedures, such as forceps delivery and vacuum extraction. Regional variations in managed care and reimbursement patterns could also account for regional differences in training.

A surprising result was the finding that the mean number of procedures taught by family physicians was significantly greater in university residency programs than in community residencies. Because the mean number of procedures taught did not differ, these results indicate community programs rely more heavily on other specialists for pro-

cedural training than do university programs. This finding could be a reflection of greater availability of teaching from consultants at community programs or factors that limit availability of teaching by family physician faculty in these programs.

The positive correlation found between procedural training by family physician faculty and residency match results indicates a positive relation between these factors, but the cause of this correlation is open to speculation. Having family practice faculty perform and teach procedures should give a positive message to students that the faculty are clinically competent and actively involved in teaching. Although there are other ways to provide role modeling, procedural training appears to be one effective method. Procedural emphasis might lead to a change in the image of a family practice residency, as has been the experience at LSUMC-S. These findings are consistent with previous studies indicating the importance of program reputation and quality of family practice faculty.^{4,5} Many factors influence recruiting results, and procedural training is just one of these factors. Although the correlation coefficients were low, the relative impact of this influence compared with other factors is not known. Previous investigators have not examined the correlation of other factors with fill rate in the residency match.

There was no significant correlation between total number of procedures taught and residency match fill rate. This lack of correlation suggests that the positive influence on student recruiting found above is not simply a result of offering procedural training but rather is related to procedural training provided by family physicians. This positive correlation could be a result of family practice faculty demonstrating the ability to perform procedures as a factor in providing positive role models for students.

The potential negative impact of too much emphasis on procedural training should be considered. If resources are shifted into procedural training at the expense of other areas of training, then a negative result can be expected. Factors such as resident workload, faculty time, support staff needs, and equipment requirements all need to be carefully considered so as not to affect negatively other aspects of resident training.

The impact that procedural emphasis might have on medical students' specialty choice is

a broader question. Having faculty role models has been an important factor in students choosing family practice as a career.¹⁰ Family physicians being more involved in performing and teaching procedures could change medical students' perception of this specialty and attract more students who are interested in the procedural aspects of medicine. If emphasis on procedural training is accomplished in a balanced, integrated manner that does not detract from the other important aspects of family practice residency training, a very positive outcome for the specialty could be expected. This issue deserves further study.

There are several limitations to this study. Not all procedures that are taught in family practice residency training were addressed. The procedures that were selected were primarily in the outpatient setting, as well as in obstetrics, with an emphasis on including newer technology. Faculty members and program directors from several different residencies were asked to select the most appropriate procedures for inclusion in this study. Many other traditional procedures performed in the operating room, the intensive care unit, and the emergency care settings could have been considered but were omitted to ensure brevity of the questionnaire. Another limitation was that no distinction was made regarding the amount of training offered in each procedure or any measure of the quality of training. The assumption was made that teaching a greater variety of procedures reflects an emphasis on procedural training. Future plans that programs might have in implementing additional procedural training were not taken into account, because these questions would have made the survey longer and more difficult to complete and could have adversely influenced the response rate.

Conclusion

The 91 percent response rate lends credibility to this status report and indicates that family practice program directors recognize procedural training as an important issue. The trend toward greater availability of procedural training in family practice residencies is confirmed for selected procedures. Emphasis on procedural training by family physicians might have a positive influence on resident recruiting. The impact on medical

student interest in family practice deserves further study. As emphasis on procedural training in family practice continues, it will be important to integrate and balance it with other important areas of training.

Skip Felmar, MD, and Gary Newkirk, MD, provided advice on questionnaire development, and Lillian Irving provided assistance in data collection.

References

1. Board minutes. Kansas City, MO: The American Academy of Family Physicians Task Force on Procedures in Family Practice, April 21-23, 1993.
2. Deutchman ME, Connor PD, Hahn RG, Rodney WM. Diagnostic and therapeutic tools for the family physician's office of the 21st century. *Fam Pract Res J* 1992; 12:147-55.
3. Phillips WR. Diagnostic and screening procedures in family practice. *Arch Fam Med* 1993; 2:1051-7.
4. Mayeaux EJ Jr, Arnold J. Why first-year family practice residents choose their residency programs. *Fam Med* 1993; 25:253-6.
5. DiTomasso RA, DeLauro JP, Carter ST Jr. Factors influencing program selection among family practice residencies. *J Med Ed* 1983; 58:257-33.
6. Godkin M, Quirk M. Why students choose family medicine: state schools graduating the most family physicians. *Fam Med* 1991; 23:521-6.
7. Ferris DG, Miller MD. Colposcopy practice and training in family practice residency programs. *J Am Board Fam Pract* 1992; 5:153-6.
8. Jacobson S, Nuovo J. Exercise stress test training in family practice residency programs. *J Am Board Fam Pract* 1993; 6:289-91.
9. Zuber TJ, Pfenninger JL. Interspecialty wars over endoscopy. *J Fam Pract* 1993; 37:21-2.
10. Martini CJ, Veloski JJ, Barzansky B, Xu G, Fields SK. Medical school and student characteristics that influence choosing a generalist career. *JAMA* 1994; 272:661-8.