

Residency Education

Required Procedural Training in Family Medicine Residency: A Consensus Statement

Melissa Nothnagle, MD; Julie M. Sicilia, MD; Stuart Forman, MD; Jeremy Fish, MD; William Ellert, MD; Roberta Gebhard, DO; Barbara F. Kelly, MD; John L. Pfenninger, MD; Michael Tuggy, MD; Wm. MacMillan Rodney, MD; STFM Group on Hospital Medicine and Procedural Training

Background and Objectives: Specific procedural training standards for US family medicine residencies do not exist. As a result, family physicians graduate with highly variable procedural skills, and the scope of procedural practice for family physicians remains poorly defined. Our objective was to develop a standard list of required procedures for family medicine residencies. *Methods:* The Society of Teachers of Family Medicine Group on Hospital and Procedural Training convened a working group of 17 family physician educators. A multi-voting process was used to define categories and propose a list of required procedures for US family medicine residency programs. *Results:* The group defined five categories of procedures within the scope of family medicine. Consensus was reached for a core list of procedures that all family medicine residents should be able to perform by the time of graduation. *Conclusions:* Defining standards for procedural training in family medicine will help clarify family medicine's scope of practice and should benefit both patients and family physicians. We propose that with input from national family medicine organizations, the procedure list presented in this report be used to develop a national standard for required procedural training.

(Fam Med 2008;40(4):248-52.)

Controversy exists over which procedures should be taught in family medicine residency. The policies and requirements of family medicine organizations emphasize the importance of procedural skills training without specifying which procedures must be learned. For example, the American Academy of Family Physicians (AAFP) policy on the scope of procedural training reads, "Family medicine residencies should strive to teach residents all procedures within the scope of family medicine."¹ In 2006, the Residency Review Committee in family medicine revised the program

requirements for procedure skills to include "a list of procedural competencies required for completion by all residents,"² but these requirements are difficult to apply without defining the scope of practice in family medicine.

A majority of residency directors in one survey reported that there should be a national list of required procedures,³ but existing lists of core procedures for family medicine are inadequate to guide current training. Older lists may not reflect recent changes in procedural technology, some are based on surveys rather than a consensus process, and most are too long for practical use.^{3,6,7} One study used a Delphi technique with a representative sample of Canadian family physicians to develop a core procedure list; however, the list may not be applicable to practice in the United States.⁷

The Society of Teachers of Family Medicine (STFM) Group on Hospital Medicine and Procedural Training is made up of family medicine educators with a special interest in teaching procedural skills. A subset of this group met in January 2007 to develop standards for procedural training in family medicine, including a list of required procedures.

From the Department of Family Medicine, Brown University (Dr Nothnagle); Alaska Family Medicine Residency Program, Anchorage, Alaska (Dr Sicilia); Contra Costa Regional Medical Center Family Medicine Residency, Martinez, Calif (Drs Forman and Fish); Department of Family and Community Medicine, Maricopa Medical Center, Phoenix, Ariz (Dr Ellert); Family Medicine Residency Program, Niagra Falls Memorial Medical Center, Niagra Falls, NY (Dr Gebhard); Family Medicine Residency Program, University of Colorado (Dr Kelly); National Procedures Institute, Midland, Mich (Dr Pfenninger); Swedish Family Medicine Residency Program, Seattle, Wash (Dr Tuggy); and Department of Family Medicine, Meharry Medical College (Dr Rodney).

Methods

Developing Comprehensive Baseline Master List of Procedures

The leaders of the STFM group used the group's listserv to develop a comprehensive master procedure list from which the working group would choose required procedures. A list generated by the group chairs was circulated among the approximately 50 members on the listserv from October 2005 to March 2006 for feedback and further expansion, and a master procedure list was completed in April 2006.

Working Group Meeting Process

All listserv members were invited to participate in the meeting. Prior to the meeting, the following goals were developed: (1) Define categories of procedures within the scope of family medicine (procedures required by all residencies and optional procedures) and the level of competence that residents should achieve for required procedures, (2) define priorities to guide choices of required procedures, and (3) create list of required procedures. The process for achieving each goal was planned in advance. One leader facilitated the consensus-building processes that were used to achieve each goal and resolve conflicts as described below.

Goal 1: Consensus Definitions for Procedural Training: Categories of Procedures and Level of Competency Required

A tentative list of procedure categories was proposed by the working group leaders: (A) procedures that must be taught in all residencies, (B) procedures that may be taught in interested residencies, and (C) procedures that require advanced training, such as a fourth year or fellowship.

The leaders also proposed several possible definitions for competency, including the following: (1) completion of a target number of procedures, (2) ability to perform the procedure (independently versus needing assistance), and (3) level of supervision required (none, backup available, or direct supervision).

Goal 2: Priorities for Inclusion of Procedures in Core List

To guide decisions for which procedures to include in the core requirements, the group generated a comprehensive list of priorities through brainstorming. Similar items were grouped, and multi-voting was used to produce a rank-ordered list of priorities. In multi-voting each participant has an equal number of votes to distribute among potential responses, which are then ranked in order of number of votes received.

Goal 3: List of Required Procedures

The working group started from three existing family medicine core procedure lists, including the master list developed on the listserv and two published lists.^{3,7}

Procedures were defined as "the mental and motor activities required to execute a manual task involving patient care."⁷

Generating Core Procedure Lists

Participants were divided randomly into two groups to simultaneously create draft lists of core procedures. Participants were instructed to select 10 procedures based on the identified priorities, then share their 10 procedures in a round-robin fashion. Each group then collapsed similar items into broader procedure descriptions. Multi-voting was then used to narrow the lists to the most essential 10–20 procedures. After the top procedures were selected in this fashion, the groups cycled through the ranking process repeatedly until there was consensus that the lists were complete. The lists from these two groups were combined, and multi-voting was then used to develop a consensus list.

Results

Participants

The group of 17 family physician educators gathered in Phoenix for 2 full days of meetings. Five (29%) were women. Fifteen were faculty at family medicine residency or fellowship programs, one was in private practice, and one was a faculty member in a private practice. Eight worked in urban areas, two in rural settings, three in suburbs, and four in multiple settings. Twelve of 17 participants (70.5%) currently deliver babies. Ten states were represented: California, Colorado, New York, Alaska, Arizona, Washington, Michigan, Tennessee, Ohio, and Rhode Island. Participants had been practicing an average of 16.6 years (range 5–30).

Goal 1: Consensus Definitions for Procedural Training

The group decided by majority vote that graduating residents must be able to perform all required procedures independently. The proposed major categories of procedures (A, B, C, described earlier) were approved by majority voting. The "A" category, procedures that must be taught in all residencies, was further divided into A0, A1, and A2. The definitions of all categories are shown in Table 1. Since the highest priority of the working group was to develop the list of required procedures for all residencies, subsequent efforts focused on the "A" categories.

Goal 2: Priorities for Inclusion of Procedures in Core List

Priorities used to guide inclusion of procedures in the core list of required procedures are shown in Table 2.

Goal 3: List of Required Procedures

The lists generated by the two groups during the nominal group technique were then combined into one list. During this reconciliation process, participants

Table 1

Procedure Categories

- A: All family medicine residency programs must provide training in each of these procedures.
- A0: Residents will have the ability to perform these basic procedures either upon graduation from medical school or through normal residency experience. These procedures do not require specific documentation of training or numbers performed.
- A1: All residents must be able to perform these procedures independently by graduation.
- A2: All residents must have exposure to these procedures and be given the opportunity to be trained to perform them independently by graduation.
- B: These procedures are within the scope of family medicine and may require focused training for residents to be able to perform independently by graduation.
- C: These procedures are within the scope of family medicine and may require additional training beyond the usual 3-year training for family physicians to perform independently.

voted to group several procedures into broader categories. For example, a category called skin surgeries included biopsies and destruction of skin lesions as well as component skills such as suture selection.

During the reconciliation process, participants expressed two concerns: (1) the grouped list lacked the specific detail needed for residencies to implement it and (2) some important procedures may have been inadvertently omitted during the process, resulting in a less comprehensive list (the comprehensive list that had been generated on the listserv was used for reference but not systematically reviewed during the process).

A proposal was made and approved to start a second process for developing the core procedure list: beginning with a more specific and comprehensive master list, the contents of *Pfenniger and Fowler's Procedures for Primary Care*.⁸ One group leader extracted a comprehensive procedure list directly from the text and provided it to each participant. Individuals assigned categories (A0, A1, A2, B, C) to the procedures listed using the definitions created by group consensus (Table 1).

Votes were tallied and presented back to the group. Procedures that received more than nine votes for a given category were tentatively assigned to that category. The list was presented, and majority vote was used to approve the category assignment for each procedure.

Post-meeting Process

A draft list combining both the grouped list and the list generated from the Pfenniger text was proposed by the group chair and distributed by e-mail among the meeting participants. Online discussion was then used to establish consensus on the reconciled list as well as to clarify the category definitions. The final list was then circulated among the then approximately 120 members

Table 2

Rank-ordered Priorities for Procedure Inclusion in Core List

1. Added patient value/benefit/hard to access/lifesaving
2. Enough faculty to teach the procedure
3. Substantial number of family physicians doing the procedure
4. Enough volume
5. Economic viability/adequate reimbursement/low start-up costs

of the Group on Hospital Medicine and Procedural Training listserv for review and debate.

Table 3 shows the final list of required procedures (A0, A1, A2). The list of category B procedures was not completed by the end of the meeting but tentatively included procedures such as EGD (esophagogastroduodenoscopy), LEEP (loop electrosurgical excision procedure), exercise treadmill testing, Cesarean section, and hysteroscopy. Category C procedures were not yet defined; the working group plans to reconvene to complete the B and C lists.

Discussion

This group of family physician educators came together to define standard procedural training requirements for US family medicine residencies. Clarifying the breadth of procedural training in family medicine has several benefits, the most important of these being for patients. In particular, a key feature of the New Model of Practice is comprehensive care including common therapeutic procedures.⁹ Defining procedures that all family physicians are trained to perform helps patients understand what family physicians can do for them and assures that graduates can provide this basket of services. In addition, a clearer definition of a family physician's scope of practice and of standard procedure training provided in all family medicine residencies may reduce difficulties encountered by family physicians in obtaining hospital privileges to perform procedures.

Several features set this list apart from other published core procedure lists. The priorities that drove inclusion of procedures on our list were determined by group consensus, and the highest priority was benefit to patients and improved access to services. In addition, our process defined categories of procedures based on levels of training that all residencies must provide. These categories provide flexibility to this list; as technology changes, so will the procedures that fit into the A0, A1, A2, B, and C categories. Although the working group was self-selected, the diversity and depth of experience of the participants adds strength and validity to the list. The group is geographically diverse, representing rural, urban, and suburban residency programs and private practices.

Table 3

Core Procedures for Family Medicine

	A0: All residents must be able to perform but documentation not required	A1: All residents must be able to perform independently by graduation	A2: All residents must be exposed to and have the opportunity to train to independent performance
Skin	Remove corn/callous Drain subungual hematoma Skin staples Fungal studies (KOH) Laceration repair with tissue glues	Biopsies • Punch, excisional, incisional Cryosurgery Remove warts, fingernail, toenail, foreign body Incision and drainage of abscess Simple laceration repair with sutures	Electrosurgery
Pregnancy care		Spontaneous vaginal delivery, including • Fetal monitoring • Fetal scalp electrode • Intrauterine pressure catheter and amnioinfusion • Amniotomy • Labor induction/augmentation • First- and second-degree laceration repair Vacuum-assisted vaginal delivery	Third- and fourth-degree laceration repair
Women's health	Wet mount, KOH	Pap smear Vulvar biopsy Bartholin's cyst management Remove cervical polyp Endometrial biopsy Intrauterine device insertion/removal Fine needle aspiration of breast	Paracervical block Cervical dilation Colposcopy Cervical cryotherapy Uterine aspiration/dilation and curettage
Life support courses		Advanced Cardiac Life Support, Neonatal Resuscitation Program, Pediatric Advanced Life Support, Advanced Life Support in Obstetrics, Advanced Trauma Life Support	
Musculoskeletal		Initial management of simple fractures • Closed reduction • Upper and lower extremity splints Injection/aspiration • Large joint, bursa, ganglion cyst, trigger point Reduction of nursemaid's elbow	Upper and lower extremity casts Reduction of shoulder dislocation
Ultrasound		Basic prenatal ultrasound • Amniotic Fluid Index, fetal presentation, placental location Ultrasound guidance for central vascular access, paracentesis, thoracentesis	Advanced prenatal ultrasound • Dating • Anatomic survey
Urgent care and hospital	Foreign body removal • Ear, nose Ring removal Fish hook removal Phlebotomy Peripheral venous access	Eye procedures • Fluorescein exam • Foreign body removal Anterior nasal packing for epistaxis Lumbar puncture Fine needle aspiration of mass	Slit lamp exam Endotracheal intubation Ventilator management Thoracentesis Paracentesis Arterial line Central venous catheter Venous cutdown Pediatric vascular access • Peripheral, intraosseous, umbilical vein
Gastrointestinal and colorectal	Nasogastric tube Fecal disimpaction Digital rectal exam	Anoscopy Excision of thrombosed hemorrhoid Incision and drainage of perirectal abscess Remove perianal skin tags	Flexible sigmoidoscopy or colonoscopy
Genitourinary	Bladder catheterization	Newborn circumcision	Vasectomy
Anesthesia		Topical anesthesia Local anesthesia/field block	Peripheral nerve block Conscious sedation

KOH—potassium hydroxide

To successfully recruit the next generation of family physicians, the specialty must be marketable as well as financially solvent. In exploring the economic viability of the New Model of Practice, Task Force Six of the Future of Family Medicine Project overlooked the financial benefit to family physicians of performing procedures. Including a broad spectrum of procedures in family medicine training has been shown to increase earning potential for family medicine residencies.¹⁰ Other studies have shown that family physicians who perform more procedures have higher job satisfaction and better financial compensation.^{11,12} One study noted that residencies in which a full component of procedures was taught by family physicians had higher fill rates in the Match.¹³

Several barriers have discouraged residency programs from adopting a comprehensive list of required procedures, including lack of procedurally trained faculty, low patient volumes, and scheduling difficulties.¹⁴ After some initial investment, faculty development should improve training for residents as well as increase revenue.¹⁰

In addition to generating the list of core procedures, the working group proposed several resources for faculty development in procedure training. A joint venture of the Texas Academy of Family Physicians, STFM, and AAFP has purchased the National Procedures Institute, which offers procedure training courses for primary care. Faculty from the WWAMI (Washington, Wyoming, Alaska, Montana, Idaho) network are developing an online procedure curriculum that will be available to residency programs at low or no cost. Several working group members are also developing tools for assessing resident competency in performing procedures.

Although family medicine residency directors have reported that a national list of required procedures would be helpful, they also expressed concern that regional differences in scope of practice would make implementation difficult.⁵ The working group included residency educators from across the nation, including urban areas in the Northeast, considered one of the least friendly areas for comprehensive procedural training in family medicine; these participants will be held accountable to the same standard if it is adopted by our national organizations.

Variability in volume of procedures for trainees and logistical issues such as scheduling procedure visits can be addressed in several ways. Simulators and models can be used both for training and assessment of less common procedures. Residency practice administrators can promote scheduling and financing policies that support procedure provision. Procedurally trained faculty and residents may be more likely to identify opportunities to perform procedures, creating more opportunities for practice. If local training resources are limited, residencies may outsource procedural training to other sites. A standard procedure training requirement may also help residency educators in obtaining

resources for training. Residencies should also have provisions through which residents may “opt out” of performing procedures to which they morally object, but all residents should have the opportunity to learn all required procedures.

The list we have developed promotes a broad scope of procedure training and practice among family physicians. We propose that this list of required procedures be reviewed and debated by members of the AAFP, Association of Family Medicine Residency Directors, Association of Departments of Family Medicine, STFM, the American Board of Family Medicine, and other national family medicine organizations to develop a national standard for procedure training in family medicine.

Acknowledgments: The manuscript content was reported at the Society of Teachers of Family Medicine 2007 Annual Spring Conference in Chicago.

All participants in the working group meeting contributed to the development of the procedure lists. In addition to the authors, they include John Andazola, MD; Paul Davis, MD; Roger Garvin, MD; Scott F. Loeliger, MD; Dale Patterson, MD; Linda Prine, MD; and Jeffrey Smith, MD.

Corresponding Author: Address correspondence to Dr Nothnagle, Brown University, Department of Family Medicine, 111 Brewster Street, Pawtucket, RI 02860. 401-729-2236. Fax: 401-729-2923. Melissa_Nothnagle@brown.edu.

REFERENCES

1. American Academy of Family Physicians. Policy on procedural skills, scope of training in family medicine residencies, 2006. www.aafp.org/online/en/home/policy/policies/p/proceduralskills.html. Accessed March 11, 2007.
2. Accreditation Council on Graduate Medical Education. Program requirements for graduate medical education in family medicine, 2006. www.acgme.org/acwebsite/downloads/RRC_progReq/120pr706.pdf. Accessed March 11, 2007.
3. Tenore JL, Sharp LK, Lipsky MS. A national survey of procedural skill requirements in family practice residency programs. *Fam Med* 2001;33(1):28-38.
4. van der Goes T, Grzybowski SC, Thommasen H. Procedural skills training. Canadian family practice residency programs. *Can Fam Physician* 1999;45:78-85.
5. Phelps KA, Taylor CA. The role of office-based procedures in family practice residency training. *Fam Med* 1996;28(8):565-9.
6. Norris TE, Felmar E, Tolleson G. Which procedures should be taught in family practice residency programs? *Fam Med* 1997;29(2):99-104.
7. Wetmore SJ, Rivet C, Tepper J, Tatemichi S, Donoff M, Rainsberry P. Defining core procedure skills for Canadian family medicine training. *Can Fam Physician* 2005;51:1364-5.
8. Pfenninger JL, Fowler GC, eds. Pfenninger and Fowler's procedures for primary care, second edition. St Louis: Mosby, 2003.
9. Task Force 1 Writing Group, Green LA, Graham R, Bagley B, Kilo CM, Spann SJ, Bogdewic SP, Swanson J. Task Force 1: Report of the task force on patient expectations, core values, reintegration, and the new model of family medicine. *Ann Fam Med* 2004;2:S33-S50.
10. Rodney WM, Hahn RC. Impact of the limited generalist (no hospital, no procedures) model on the viability of family practice training. *J Am Board Fam Pract* 2002;15:191-200.
11. Larimore WL, Sapolsky BS. Maternity care in family medicine: economics and malpractice. *J Fam Pract* 1995;40:153-60.
12. Martz WD. How to boost your bottom line with an office procedure. *Fam Pract Manag* 2003;10:38-40.
13. Harper MB, Mayeaux EJ, Pope JB, Goel R. Procedural training in family practice residencies: current status and impact on resident recruitment. *J Am Board Fam Pract* 1995;8:189-94.
14. Sierpina VS, Volk RJ. Teaching outpatient procedures: most common settings, evaluation methods, and training barriers in family practice residencies. *Fam Med* 1998;30:421-3.