Residency Education

A National Survey of Procedural Skill Requirements in Family Practice Residency Programs

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Background and Objectives: *Procedural skill training is a controversial but important component of family practice residency programs. This study examines the use and composition of required procedure lists in US family practice residency programs.* Methods: *The study used a cross-sectional nine-item questionnaire. This survey was sent to 467 residency program directors listed in the 1999 American Academy of Family Physicians* Directory of Family Practice Residency Programs. Results: *A total of 326 programs (70%) responded to the survey. Of these, 242 programs (74% of respondents) reported use of a required procedure list. Sixty-six programs provided a list. Of these, 63 lists were interpretable. The number of required procedures on the lists ranged from a minimum of 3 procedures to a maximum of 117, with an average of 42. A total of 265 distinct procedures were identified, with 25 procedures named on more than half of the lists. Thirteen programs (21%) mandated competency in required procedures, but only five programs (8%) gave clear definitions of what constituted competency. There were no significant differences in lists among training program type, university affiliation, number of hospitals used for rotation, size of affiliated hospital, or number of residents.* Conclusions: *The expectations of individual programs vary greatly in terms of required procedures. Few programs define how to evaluate the technical competency of their residents.*

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Procedures are considered an integral component of family practice, and residency programs are expected to provide training in the procedures necessary for successful practice.[1] Despite the importance that procedures play in family practice, there is debate about what procedures family physicians should be trained to perform.

In the late 1960s, the American Board of Family Practice in conjunction with the American Academy of Family Physicians (AAFP) attempted to define a basic set of procedural skills.[2,3] These early attempts to develop a core list of procedures were controversial and not uniformly endorsed. More recently, there has been renewed interest and consensus about developing a required procedural skill set for family practice residents.

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In 1993, the AAFP's Task Force on Procedures generated a document that stated:

> While family practice residents cannot be expected to learn all the procedures within the scope of family practice, they should, at a minimum, teach all residents those procedures done by a substantial number of practicing family physicians or taught in a substantial number of family practice residencies.[4]

Unfortunately, this policy statement gives little specific guidance about the types and numbers of procedures that family practice residents should perform.[5]

Perhaps an even greater task is defining procedural competency. As residents graduate and apply for hospital privileges, program directors are often asked to certify the graduates' competency.[6] A common method of assessing involves the completion of a predetermined number of procedures.[7] However, there is little evidence supporting this approach as a valid measure of technical competence. As a result, residency directors are faced with not only identifying which procedures should

be taught but also evaluating trainees' performance to assure proficiency.[7]

One approach to these intertwining issues is to develop a list of essential procedural skills for family practice residency training programs. Such a core list of procedures could be useful in several ways. First, program directors would have a defined guideline for curriculum development and implementation. This in turn might lead to more consistency in training across programs.[8-10] Second, a core list would clarify the scope of family practice for hospital credentialing committees, insurance companies, and physicians in other specialties. Third, residents would understand exactly which skills they need to master. Fourth, a core list could provide a focus for family medicine educators to develop explicit criteria for assessing competency. A 1996 survey confirmed that a majority of residency program directors agree that a core procedural list would be beneficial.[4]

The first step in developing a core list is to determine which procedural skills are currently consistently taught in most programs. This study describes the current status of procedural training in family practice residency programs nationally and answered the following questions: How many programs have required procedure lists? What is the content of these procedure lists? How are these lists derived, and how do the lists compare with one another? Do these lists incorporate evaluation and/or competency measures?

Methods

Approval for this study was obtained through our Institutional Review Board. The study subjects consisted of the directors of the 467 residency programs listed in the 1999 American Academy of Family Physicians *Directory of Family Practice Residency Programs.* Program directors from each of the 467 programs received a cover letter describing the purpose of the study and a survey. Nonresponding directors received up to two additional follow-up letters.

Instrument

The nine-item survey (Appendix A) consisted of questions designed to elicit specific information related to the development and use of procedural skills within residency training. The survey was modified from a questionnaire developed by van der Goes to assess procedural skills training in Canadian family practice programs.[11] The nine-item questionnaire was modified to make it more appropriate for family practice programs in the United States. The revised survey was pilot tested on six family physician faculty members in the Department of Family Medicine at Northwestern University Medical School to evaluate the content and clarity of the question items. The faculty members' suggestions were incorporated, and the revised survey was reviewed by three Chicago-area family practice residency program directors to assess the face and content validity of the final questionnaire.

In addition to completing this survey, program directors were asked to submit a procedure list if they had one. All procedural lists were reviewed by two of the authors, who are family physicians. The first 10 lists were reviewed conjointly to establish reliability in coding definitions and methods. Each physician then reviewed the remaining lists independently. Any new items or uncertainties were discussed jointly until agreement was obtained.

Data Coding

In coding responses to surveys, a procedure was defined as a skill that involved physical interaction with patients that was either invasive or required the use of tools or equipment. For example, suturing, spinal tap, and circumcision were considered procedures, while history and physical, mini-mental status examination, and interpretation of chest X ray were not.

The physician reviewers then developed a master list and frequency count of every distinct procedure listed by the residency program directors. Procedures were also classified as required, optional, or unclear (if expectations were not explicitly described). The following are examples of the classification process used:

(1) Even if listed twice by the program directors, procedures were listed as a single procedure if technically similar across age groups (ie, lumbar puncture). Similarly, if counted twice by gender, the procedure was counted only once (eg, male and female catheterization).

(2) Procedures that differed primarily in terms of anatomical location but not technical skill were given a single count (eg, suturing skin versus vaginal lacerations).

(3) Procedures that were described in relatively broad terms were classified as unspecified (eg, "hemorrhoid surgery" was counted as "hemorrhoid surgery-unspecified").

(4) Obstetrical ultrasound was assumed to mean that the resident could use ultrasound technology to assess fetal position, amniotic fluid level, and placental position rather than detailed fetal anatomy. The terms *informal obstetrical ultrasound, obstetric ultrasound for fetal position and amniotic fluid level,* and *labor OB ultrasound* were interpreted to mean the same as obstetrical ultrasound and counted once.

(5) No procedures were credited when courses such as Basic Cardiac Life Support, Cardiopulmonary Resuscitation, Advanced Cardiac Life Support, Advanced Trauma Life Support, Neonatal Resuscitation Program, Pediatric Advanced Life Support, and Advanced Life Support in Obstetrics were listed. Although these courses generally test for one or more such skills, ie,

intubation, the skills themselves are not taught during the courses.

(6) Procedures grouped in aggregate, such as biopsy punch/shave/excision, were counted as the appropriate number of separate procedures.

Data Analysis

Data analysis included simple descriptive statistics for the study group and for each survey item. Multivariate analysis of variance with Scheffe post-hoc tests of means was used to explore relationships between survey responses and characteristics or location of each residency program, as obtained from the AAFP directory. Response rates for fax and mail were analyzed using *t* tests.

Results

Of the 467 residency programs, 326 (70%) returned surveys. Three residency programs could not be contacted via fax on three attempts. Surveys mailed to two residency programs were returned as undeliverable on two attempts.

Program directors (83%) and assistant program directors (7%) completed 90% of the returned surveys. Other individuals designated by the directors completed the remainder. Respondents and nonrespondents did not differ significantly by number of residency programs at the hospital, number of hospital beds, age of family practice residency program, or number of residents in family practice.

Table 1

Results of Procedural Skill Survey in Family Practice Residency Programs

Question	*Responses*	*#*	*%*
• What type of skill lists do you use?	Rotation-based procedural skills	27	8
	Core procedural skills	62	19
	Both rotation-based and core skills	153	47
	No procedural skill lists	84	26
• What sources were used for creating the skill lists?	Faculty and published lists	113	47
	Faculty consensus	84	35
	Program director	16	7
	Published lists and/or other program lists	12	5
	Faculty and residents	5	2
	Other	6	2
	Don't know	6	2
• Skills list has been revised since inception?	Yes	175	72
	No	67	28
• Skills list revised by:	Faculty	96	55
	Faculty and residents	40	23
	Faculty and outside MDs	19	10
	Faculty, residents, and specialists	10	6
	Other	9	5
	Don't know	1	1
• Skills list distinguishes between mandatory and optional procedures specified on the list?	Yes	120	49
	No	120	49
	Missing	2	1
• How are procedural skills assessed?	Faculty discussion and forms	83	34
	Supervisor indicates specifics on form	61	25
	General remarks from rotation form	38	16
	Self-report and faculty discussion	26	11
	Resident self-report only	22	9
	Faculty discussion alone	8	3
	None	4	2

Number of respondents=242

Procedure Lists

Although 242 programs reported the use of procedural skill lists, only 66 (27%) of programs sent copies of procedure lists with their returned surveys. Three of the lists were excluded because they were not lists of procedural skills taught in the family practice residency program. Programs were split on the use of lists that distinguished mandatory from optional procedures. Most lists were developed using faculty input and published lists.

The results of the procedural skill surveys are shown in Table 1. Table 2 outlines the characteristics of the 63 procedure lists returned by programs. Almost half were simple lists of procedures with no accompanying information. More than 25% identified a minimum number of procedures that residents should perform. More than 20% of respondents reported making a judgment or decision about a resident's competence, but competence was generally not defined. Thirteen percent contained statements specifying that the residents should be able to demonstrate cognitive knowledge associated with the procedure in addition to the technical skill, but only five lists provided any description or definition of how cognitive knowledge was defined.

Appendix B is a master list of the procedures from all 63 lists combined. It reveals a vast array of 264 items across 17 categories and a high degree of variation in the frequencies of required and optional procedures. Among the 264 items, Table 3 lists the 26 procedures named by more than 50% of the programs.

Table 2

Characteristics of the Procedural Skill Lists Submitted

*# of Lists**	*List Characteristics*
29	Documentation list only
24	Categorized by specialty
20	Alphabetical or alphabetical by specialty or type
19	Attending physicians sign off
18	No obstetrical procedures on list
17	Identifies required number of procedures
15	Distinguishes inpatient and outpatient procedures
13	Requires competency without defining competency
8	Cognitive competency discussed or evaluated
7	Identifies if resident performs, assists in, or is supervised during procedure
6	Relates procedures to residency year
6	Only partial list submitted
5	Formal assessment or definition of competency stated
4	No gynecological procedures on list
3	Distinguishes which preceptor teaches which procedure
2	Only credentialing list submitted
2	OB procedures only/additional OB track
1	Only evaluation card submitted
1	Only skill list submitted

* n=63 submitted lists

Total is greater than 63 since some lists had multiple characteristics.

Discussion

This study provides information on the current use of procedural skill lists among US family practice residency programs and about procedures required by these programs. The results demonstrate a wide variability in the composition of procedure lists. Specifically, the number of procedures named on submitted lists ranged from 3 to 117. Some lists raised questions about how reasonable a program's expectations might be. For example, one program required that residents drain five peritonsillar abscesses during their residency. In light of modern antibiotics, encountering five cases of peritonsillar abscesses might be difficult. Interestingly, despite the Residency Review Committee guideline requiring family practice residency programs to include obstetrical training,[2] 29% of the lists omitted obstetrical procedures, and 6% omitted gynecological procedures. Perhaps those programs rely on subspecialty rotations to ensure that their residents gain the skills they need in obstetrics or gynecology.[5,12,13]

Although the study did not examine why there was such variability, one can speculate that many programs with extensive lists used them primarily for documentation. Some variability might also be attributed to how programs viewed procedures. For example, some programs listed EKG interpretation as a procedure, while our definition categorized this as a cognitive skill rather than a technical skill. Other programs may have excluded procedures they considered so fundamental, like venipuncture, that they did not feel the need to specify them as required or may not have revised their lists recently and included obsolete procedures (eg, insertion of Sengtaken-Blakemore tubes). Finally, prior research suggests that some programs may lack either the faculty or patients for sufficient training of some procedures.[1] As a result, these programs may have eliminated procedures for which they did not have trained faculty or sufficient patient volume.[14]

Programs also varied in the methods used to evaluate residents' performance of skills. The most common methods included faculty discussion with a review of evaluation forms and reviewing evaluation forms completed by supervisors. However, other programs relied on residents' self-report alone or self-report coupled with faculty discussion. Two programs did not formally evaluate skills. Less than 10% of programs defined or formally assessed procedural competency. Both the AAFP and Society of Teachers of Family Medicine have made it clear that traditional methods of evaluation are no longer adequate to ensure competence.[9] If one accepts that procedural skills are a fundamental part of family practice training, then our specialty must assure core competency for a residency graduate. This study

suggests that the training programs are not close to achieving this goal for procedures.

Although the full list of procedures presented in Appendix B is comprehensive and interesting to review, it is unrealistic to suggest that residency programs teach all 264 procedures listed. Norris et al and the AAFP Task Force on Procedures have proposed that a core list consist of procedures that 50% of existing family practice residency programs teach.[2] Table 3 includes 26 distinct procedures, which by virtue of Norris' recommendation could be considered the core of what should be taught to all residents in family practice training programs. Even if one accepts the list as definitive, one must still develop ways of assuring competency in performing these core procedures. One potential method for assuring competency is the work done by Brotzman and Apgar for training and evaluating colposcopy skills.[15] Similar models could be developed for skills such as suturing, casting, and the other core procedures.

Limitations

A strength of this study is the high response rate to our survey, but an exception to this generally high response rate was the lower response rate for military programs. Since the number of military programs is small, it is unlikely that the overall results would change

Table 3

Procedures Taught in at Least 50% of Family Practice Residency Programs

System	*Procedure*	*R*	*O*	*U*	*T*	*%*
Dermatology	Biopsy—punch	18	3	19	40	64
	Cryotherapy (skin lesion)	16	2	19	37	59
	Excision of lesion (including excisional biopsy)	18	3	27	48	76
	Incision and drainage—abscess	17	2	24	43	68
	Suturing/laceration repair—simple/complex	23	3	28	54	86
	Toenail removal	15	3	27	46	73
Gastroenterology	Paracentesis	19	4	19	42	67
	Sigmoidoscopy—rigid or flexible	24	5	28	57	90
Genitourinary	Circumcision—neonatal	19	3	25	47	75
	Vasectomy	14	7	16	37	59
Gynecology	Colposcopy +/- cervical biopsy	20	6	25	51	81
	Endometrial biopsy	23	1	24	48	76
	IUD insertion/removal	13	6	16	35	56
Miscellaneous	Lumbar puncture	22	3	25	50	79
Obstetrics	Delivery—SVD	19	2	20	41	65
	Episiotomy repair—first degree	14	3	19	36	57
	Induction/augmentation of labor	13	2	18	33	52
Orthopedics	Casting	17	2	24	43	68
	Joint/bursa/cyst aspiration	20	3	27	50	79
	Joint/bursa/cyst injection	18	2	22	42	67
Otolaryngology	Cerumen removal	17	1	15	33	52
	Epistaxis management	9	1	23	33	52
	Intubation	19	1	21	41	65
Pulmonology	Chest tube placement/thoracotomy	12	4	20	36	57
	Thoracentesis	20	2	22	44	70
Surgery	Central line placement	19	4	16	39	62

R—Number of lists indicating procedure is required
O—Number of lists indicating procedure is optional
U—Number of lists not indicating required or optional status
T—Number of lists that include the procedure
%—Percentage of all submitted lists that include the procedure

IUD—intrauterine device
SVD—spontaneous vaginal delivery

significantly. Another strength is that this study examined what programs currently do, providing a starting point for a core list that differs from previous studies. Prior studies circulated lists of predetermined procedures asking respondents to verify if the procedures were taught in their programs.[2,4,6,10,16,17] However, this approach may introduce a bias toward skills already mentioned and may have precluded programs from naming other skills they taught.

A potential limitation is that not all programs submitted copies of their procedural lists. Thus, the 26 procedures listed in Table 3 might not be representative of all programs. However, the similarity between our results and previous research in the United States and Canada supports the validity of our findings.[3,11,18,19]

The methods from our study also did not examine how the lists are used. Future studies that examine the best way to use a core list would be helpful. Finally, this study relies on self-report, which may not reflect the actual behavior of residency programs and the use of procedural lists.

Conclusions

Procedural skill training remains an important and unresolved issue in family practice. Our study identified variation in how skills are taught and evaluated. Some variation is expected because of differing demand or need for services within specific populations. Nonetheless, our survey has defined a set of procedures that can be considered common among programs. The next challenge is to ensure that these procedures are actually acquired by the residents in our programs. This can be accomplished by developing and adopting a standardized curriculum by program directors. In doing so, the scope of family practice training can be clarified for faculty, students, consultants, and consumers.

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Appendix A

The Survey

A National Survey of Procedural Skills in Family Practice Residency Programs

1. Does your residency program consistently use a list that outlines:
   - ❑ Rotation-based procedural skills?
   - ❑ Core procedural skills?
   - ❑ Both rotation-based and core procedural skills?
   - ❑ Do not have a printed procedural skills list (Skip to #9)

2. How did your program create the procedural skills list(s)? (Mark all that apply.)
   - ❑ Created by the program director
   - ❑ Created with a consensus of faculty input
   - ❑ Created from published lists and/or lists from other residency programs
   - ❑ Created from hospital privileges lists
   - ❑ Do not know
   - ❑ Other (please specify): _____

3. What year did your program implement the use of procedural skills lists? _____

4. Has the procedural skills list been revised since it was initially implemented?
   - ❑ Yes
   - ❑ No

5. What year was the procedural skills list revised last? _____

6. Who revises or would revise the skills list? (Mark all that apply.)
   - ❑ Faculty
   - ❑ Practicing rural family physicians
   - ❑ Practicing urban family physicians
   - ❑ Residents
   - ❑ Consultation with specialists
   - ❑ Other (please specify): _____

7. Does your procedural skills list distinguish between mandatory and optional procedures?
   - ❑ Yes
   - ❑ No

8. How do you evaluate the residents' procedural skills? (Mark all that apply.)
   - ❑ Self-report only (logbook or form)
   - ❑ Supervisor completes procedural evaluation forms
   - ❑ Supervisor remarks in general or on rotation evaluation forms
   - ❑ Discussion at faculty meetings
   - ❑ Procedural skills are not formally evaluated
   - ❑ Other (please specify): _____

9. What is the job title of the person responding to this survey? _____

PLEASE FAX THIS FORM BACK TO xxx-xxx-xxxx
AND PLEASE INCLUDE A COPY OF YOUR SKILLS LIST.

Appendix B

Master List

APPENDIX B

MASTER LIST

(Arranged Alphabetically by System)

1=ANAESTHESIA (N=11)

	FREQUENCY REQUIRED	OPTIONAL*	UNCLEAR	TOTAL
Epidural Blood Patch	0	0	1	1
General	0	0	3	3
IV Conscious Sedation	2	1	4	7
Hematoma Block	0	0	2	2
Local Infiltration	5	0	4	9
Nerve Blocks / Regional Blocks	9	1	13	23
Nitrous Oxide Anaesthesia	0	0	1	1
Obstetrical - Epidural / Spinal	1	3	5	9
Obs/Gyn - Paracervical Block	6	2	10	18
Obs/Gyn - Pudenal Block	5	1	11	17
Topical Anaesthesia	1	0	0	1
TOTALS	29	8	54	91

2=CARDIOVASCULAR (N=10)

	FREQUENCY REQUIRED	OPTIONAL	UNCLEAR	TOTAL
Application of Cardiac Monitors	0	0	1	1
Cardioversion	5	1	7	13
Defibrillation	1	0	1	2
Doppler Evaluation	0	0	1	1
EKG - Unspecified	8	0	2	10
EKG - Stress	12	6	10	28
Holter Monitor	0	0	2	2
Pacemaker - External Placement	5	1	5	11
Pacemaker - Transvenous	0	1	5	6
Pericardiocentesis	3	0	6	9
TOTALS	34	9	40	83

3=DERMATOLOGIC (N=34)

	REQUIRED	OPTIONAL*	UNCLEAR	TOTAL
Aspiration of Cyst - Unspecified	0	0	3	3
Biopsy - Punch	18	3	19	40
Biopsy - Shave	10	1	11	22
Biopsy - Skin - Unspecified	2	0	9	11
Body / Ear Piercing	0	1	2	3
Chemical Destruction of Lesion	3	0	4	7
Cryotherapy	16	2	19	37
Curettage	2	0	2	4
Dehiscement	5	0	4	9
Dermatologic Procedures - Unspecified	1	0	0	1
Destruction of Lesion - Unspecified	1	0	1	2
Drainage - Subungual Hematoma	7	0	8	15
Dressings / Bandages	4	0	1	5
Electrocautery	8	0	12	20
Excision of Lesion / Excisional Biopsy	18	3	27	48
Foreign Body Removal - Unspecified	5	0	8	13
Incision & Drainage (I&D) - Abscess	17	2	24	43
I&D - Cysts	1	0	1	2
I&D - Paronychia	8	0	12	20
I&D - Perianal / Perirectal / Perineal	1	0	2	3
I&D - Pilonidal Cyst	1	0	1	2
I&D - Unspecified	2	0	4	6
Hematoma Evacuation	0	0	1	1
Keloid Injection	0	1	1	2
Laser Skin Treatment - Unspecified	1	0	0	1
LEEP Procedure - Skin	0	0	1	1
Paring Calluses / Corns	1	0	2	3
Repair of Lacerated Tendon	1	1	3	5
Skin Scraping for Fungus	1	0	0	1
Skin Tag Removal	1	0	3	4
Suturing / Laceration Repair - Simple / Complex	23	3	28	54
Toenail Cutting	0	0	2	2
Toenail Removal	15	3	27	45
Wart Treatment - Unspecified	1	0	2	3
TOTALS	174	20	243	437

4=EMERGENCY MANAGEMENT (N=4)

	FREQUENCY REQUIRED	OPTIONAL	UNCLEAR	TOTAL
Cricothyroidotomy	2	0	3	0
Gardner Wells' Tong Application	0	0	3	0
Intubation	19	1	21	0
Needle Tracheotomy	1	0	1	0
TOTALS	22	1	28	0

5=ENT (N=21)

	REQUIRED	OPTIONAL	UNCLEAR	TOTAL
Audiometry - Office Screening	7	1	3	11
Caloric Testing	0	0	1	1
Cerumen Removal	7	1	15	23
Ear Hematoma	0	0	1	1
Epistaxis Management	9	1	23	33
Eustachian Tube Pottenzation	1	0	1	2
Flexible Nasopharyngoscopy	11	2	6	19
Foreign Body Removal	4	0	17	21
Frenotomy / Frenectomy	2	0	1	3
Insertion of Ear Wick	1	0	0	1
Laryngoscopy - Direct	3	1	4	8
Laryngoscopy - Indirect	4	1	8	13
Laryngoscopy - Unspecified	1	1	4	6
Myringotomy +/- P.E. Tubes / Tympanocentesis	0	1	6	7
Peritonsillar Abscess	1	0	2	3
Pneumatic Otoscopy	1	0	2	3
Reduction of Nasal Fracture	1	0	0	1
Tonsillectomy & Adenoidectomy	0	1	3	4
Tracheostomy / Tracheotomy - Unspecified	0	1	5	6
Turbinate Injections	0	1	0	1
Tympanometry	8	1	6	15
TOTALS	61	13	108	182

* Optional = Optional, Suggested, or Goals

Appendix B (continued)

APPENDIX B

MASTER LIST

(Arranged Alphabetically by System)

6=GASTROENTEROLOGY (N=12)

	FREQUENCY REQUIRED (R)	OPTIONAL* (O)	UNCLEAR (U)	TOTAL (T)
Colonoscopy (+/- Biopsy)	2	4	11	17
Endoscopy - Upper	1	3	10	14
Feeding Tube Placement (Dobbhoff)	1	0	0	1
Gastric Lavage	4	0	6	10
Hernia Reduction	0	0	1	1
Liver Biopsy	1	1	4	6
NG Tube Placement	11	1	8	20
Paracentesis	19	4	19	42
Proctoscopy / Anoscopy	13	1	16	30
Sigmoidoscopy - Rigid or Flexible	24	5	28	57
Sigmoidoscopy - Flexible With Biopsy	1	0	5	6
Stool Disimpaction	1	0	5	6
TOTALS	78	19	113	210

7=GENITOURINARY (N=11)

	R	O	U	T
Catheterization	8	2	11	21
Circumcision - Adult	2	1	2	5
Circumcision - Neonatal	19	3	25	47
Cystoscopy	0	0	2	2
Hydrocoeele Aspiration	0	0	1	1
Intracavernous Injection	0	0	1	1
Other Surgery - Unspecified	0	0	1	1
Peritoneal Dialysis	1	0	0	1
Suprapubic Tap / Catheterization	10	4	12	26
Urodynamic Testing - Basic (Cystometrics)	1	0	1	2
Vasectomy	14	7	16	37
TOTALS	55	17	72	144

8=GYNECOLOGICAL (N=23)

	R	O	U	T
Bartholin's Cyst Incision / Word Cath. Placement	8	2	15	25
Bartholin's Gland Marsupialization	2	0	5	7
Cervical Cap Fitting	2	0	2	4
Cervical Polypectomy	4	0	6	10
Colposcopy +/- Cervical Biopsy	20	6	25	51
Cryosurgery of Cervix	9	1	15	25
Conization of Cervix	0	0	7	7
Culdocentesis	2	0	10	12
Diaphragm Fitting	9	4	12	25
D & C	7	4	19	30
Endometrial Biopsy	23	1	24	48
Hysterosalpingogram	1	1	1	3
Hysteroscopy	0	2	1	3
IUD Insertion / Removal	13	6	16	35
Laparoscopy	0	1	2	3
Laser Therapy - Cervix	0	0	1	1
LEEP/LETZ	5	3	6	14
Norplant Placement +/- Removal	10	5	12	27
Pap Smear	7	2	6	15
Removal FB - Vagina	0	0	1	1
Thermal Endometrial Ablation	0	1	0	1
Therapeutic Abortion	0	2	4	6
Tubal Ligation	3	4	10	17
TOTALS	125	45	201	371

9= LABORATORY (N=14)

	R	O	U	T
Accuchock	1	0	0	1
Cytology & Culture Techniques	0	0	1	1
Gram Stain	0	1	2	3
HCT, Spun	0	0	1	1
KOH/WET Mount	5	1	6	12
Peripheral Blood Smear	0	0	2	2
Rapid Strep Test	0	0	1	1
Routine Lab Procedures	0	0	1	1
Stool - Pinworm Prep / Exam	0	0	1	1
Synovial Fluid Analysis	0	0	1	1
Throat Swab / Culture	0	0	2	2
Urinalysis	3	2	5	10
Urine Pregnancy Test	0	0	1	1
Uricult	0	0	1	1
TOTALS	9	4	25	38

10=MISCELLANEOUS (N=19)

	R	O	U	T
Acupuncture	0	0	1	1
Allergy Skin Testing	1	1	6	8
Anthropometric Testing	1	0	0	1
Bone Marrow Aspiration	7	3	15	25
Immunizations	0	0	2	2
Injections - IM / SC / Intradermal	6	0	2	8
Intrapleural Chemotherapy	1	0	0	1
Lumbar Puncture	22	3	25	50
Medline Search	1	0	0	1
Nerve Conduction / Electrodiagnostic Studies	0	0	1	1
Newborn Feeding - Bottle	1	0	0	1
Newborn Feeding - Gavage	1	0	0	1
Radiofrequency Procedure - Unspecified	0	0	1	1
Rape Evaluation	2	1	4	7
Sclerotherapy - Unspecified	0	2	0	2
Sengstaken-Blakemore Tube	1	0	0	1
TB Skin Testing	0	0	2	2
Trigger Point Massage	0	0	1	1
TOTALS	44	10	60	114

R= Required, O=Optional, U=Unclear

Appendix B (continued)

APPENDIX B

MASTER LIST

(Arranged Alphabetically by System)

FREQUENCY

	REQUIRED R	OPTIONAL* O	UNCLEAR U	TOTAL T
11-OBSTETRICAL (N=31)				
Amniocentesis	1	1	6	8
Amnioinfusion	4	0	5	9
Amniotomy	6	2	5	13
Cerclage of Cervix	0	1	0	1
C/S - First Assist	5	0	4	9
C/S - Primary	1	0	0	1
C/S - Unspecified	2	1	11	14
Contraction Stress Test	4	0	7	11
Delivery - Forceps Assisted	7	2	17	26
Delivery - SVD	19	2	20	41
Delivery - Vacuum Extraction	12	1	11	24
Delivery - VBAC	3	0	2	5
Delivery - Vaginal Breech	3	1	8	12
Delivery - Vaginal Twins / Multiple	2	1	6	9
Deliveries - Unspecified	1	0	0	1
Emergency Management - Inverted Uterus	0	1	0	1
Emergency Mgmt. - Postpartum Hemorrage	0	0	1	1
Emergency Mgmt. - Retained Placenta	0	2	0	2
Emergency Mgmt. - Shoulder Dystocia	0	0	3	3
Episiotomy Repair - First Degree	14	3	19	36
Episiotomy Repair - Higher Order	12	2	12	26
External Version	1	2	4	7
Ferning Test	0	1	0	1
Fetal Monitoring - Unspecified or External	6	2	11	19
Induction / Augmentation of Labor	13	2	18	33
Insertion of Prostin Gel / Cervidil / Dilapan	3	0	2	5
Manual Removal of Placenta	10	0	16	26
Midforceps Rotation	0	1	0	1
Non-Stress Test	8	1	9	18
Scalp Clip / IUPC / Internal Monitoring	11	2	12	25
Scalp PH	3	1	9	13
TOTALS	151	32	218	401

FREQUENCY

	REQUIRED R	OPTIONAL O	UNCLEAR U	TOTAL T
12=OPTHALMOLOGIC (N=5)				
Eye Patching	0	0	1	1
Fluorescein Staining	5	0	4	9
Foreign Body Removal Cornea	6	1	23	30
Slitlamp Examination	8	1	4	13
Tonometry	5	1	10	16
TOTALS	24	3	42	69
13=ORTHOPEDICS (N=20)				
Casting	17	2	24	43
Cortisone Injection - Joint / Bursa / Cyst	1	1	3	5
Ganglion Cyst Aspiration	1	1	5	7
Injection - Plantar Fascia	0	0	1	1
Injection - Soft Tissue	0	0	4	4
Injection - Tendon Sheath	4	0	2	6
Injection - Trigger Point	6	1	9	16
Joint / Bursa / Cyst - Aspiration	20	3	27	50
Joint / Bursa / Cyst - Injection	18	2	22	42
"Lac" (26)	1	0	0	1
Open Reduction Internal Fixation - Unspecified	0	1	0	1
Orthopedic - Major Surgery	0	0	3	3
Orthotics	0	0	1	1
Osteopathic Manipulation	2	1	3	6
Reduction - Dislocation	8	0	16	24
Reduction - Fracture	6	1	12	19
Splinting	14	1	9	24
Steinman Pin Placement - Knee	1	0	0	1
Taping	2	0	2	4
Ulna Boot	3	0	4	7
TOTALS	104	14	147	265

	R	O	U	T
14= RADIOLOGIC (N=8)				
Biophysical Profile	2	0	1	3
Obstetric Ultrasound	13	2	8	23
Pelvic Ultrasound	1	0	0	1
Transabdominal - Unspecified	0	0	1	1
Transvaginal Ultrasound	1	1	1	3
TOTALS	17	3	11	31
15=RESPIRATORY/PULMONOLOGY (N=11)				
Bronchoscopy	0	1	1	2
Chest Tube Placement / Thoracotomy	12	4	20	36
Nebulizer Therapy / Mini Mist Treatment	1	0	1	2
Peak Expiratory Flow Meter / Measurement	3	0	1	4
Pleural Biopsy	0	0	4	4
Pleurodesis	0	0	1	1
Pulse Ox	1	0	0	1
Simple Spirometry / PFT'S	6	2	6	14
Thoracentesis	20	2	22	44
Thoracic Sclerotherapy	0	1	0	1
Ventilator Set-Up and Management	5	2	11	18
TOTALS	48	12	67	127

R= Required, O=Optional, U=Unclear

Appendix B (continued)

APPENDIX B

MASTER LIST

(Arranged Alphabetically by System)

FREQUENCY

16 SURGICAL (N=22)	REQUIRED (R)	OPTIONAL* (O)	UNCLEAR (U)	TOTAL (T)
Aspiration - Breast Cyst	8	5	9	22
Aspiration Mass - Unspecified	0	0	1	1
Fine Needle Aspiration - Breast Mass	3	4	8	15
Fine Needle Aspiration - Lymph Node	0	0	5	5
Fine Needle Aspiration - Thyroid	2	1	3	6
Fine Needle Aspiration - Unspecified	2	1	4	7
Breast Biopsy - Unspecified	2	0	4	6
Hemorrhoids - Banding	2	1	5	8
Hemorrhoids - Infrared Treatment	1	0	0	1
Hemorrhoids - I&D	11	0	16	27
Hemorrhoid Surgery (Incl. Inj.,Lig.,ectomy,Unsp.)	3	1	11	15
Hernia - Unspecified	0	0	2	2
Major - Appendect.,Cholecystect.,Hysterect.	0	2	8	10
Open Biopsy - Breast	0	1	4	5
Open Biopsy - Node	0	0	3	3
Open Biopsy - Other	1	0	2	3
Neurosurgery - Burr Holes / Other	0	0	2	2
"Peg" Tube	0	0	1	1
Peritoneal Lavage	0	0	6	6
Skin Graft	0	0	3	3
Sphinctarotomy	0	0	1	1
Surgery - First Assist	6	0	1	7
TOTALS	41	16	99	156

FREQUENCY

17=VASCULAR ACCESS/BLOOD SAMPLING (N=12)	REQUIRED (R)	OPTIONAL (O)	UNCLEAR (U)	TOTAL (T)
Arterial Blood Gas Puncture	15	0	13	28
Arterial Line Placement	7	3	12	22
Central Line Placement	19	4	16	39
Venous "Cut Down"	5	1	8	14
Heel Prick	0	0	1	1
Intraosseous Access	2	2	4	8
Peripheral IV Placement	11	0	8	19
Swan / Ganz	5	2	13	20
Umbilical Vein / Art Catheterization	12	3	12	27
Venipuncture - Femoral Stab / Catheterization	5	1	3	9
Venipuncture - Subclavian	0	0	1	1
Venipuncture - Unspecified	6	0	2	8
TOTALS	87	16	93	196

R= Required, O=Optional, U=Unclear, T=Total