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Guidelines for Regional Anesthesia Fellowship Training

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Background: The number of regional anesthesia fellowships has grown over the past 2 decades. There currently exist no guidelines for what constitutes ideal regional anesthesia fellowship training.

Methods: Regional anesthesia fellowship program directors and other advocates of regional anesthesia were invited to participate in a collaborative project to establish a standardized curriculum for regional anesthesia fellowships. Guidelines were created based on the existing template of Accreditation Council of Graduate Medical Education program requirements for residency education in anesthesiology. The resulting draft guidelines were distributed at a meeting of the program directors, who were then asked to forward all comments and relevant training material from their respective institutions to a coordinating institution.

Results: All received materials were reviewed, and selected components were collated into a consensus document, which was then reviewed, modified, and eventually approved by the program directors over a 2-year series of meetings. The program directors agreed to adopt the guidelines as their fellowship curriculum and to evaluate their effectiveness in 2 years' time.

Conclusions: The intent of these initial guidelines is to improve the quality and consistency of regional anesthesia fellowship training. The creation process also led to an affirmation of the directors' commitment to continued dialogue for the purpose of facilitating the exchange of ideas among programs. *Reg Anesth Pain Med 2005;30:218-225.*

Key Words: Regional anesthesia, Fellowships, Guidelines, Medical education.

The North American practice of regional anesthesia has expanded over the past 2 decades, particularly with regards to continuous epidural analgesia and perineural catheter techniques. Surgeons are increasingly realizing the benefits of regional anesthesia with respect to postoperative analgesia, decreased nausea and vomiting, and patient safety.[1] However, resident training in regional anesthesia and analgesia techniques may not be fully concordant with the perception of increased demand. Residents in North American and some European programs continue to report limited peripheral nerve block experience during the course of standard residency training.[2,3] Indeed, based on caseload reporting to the Accreditation Council on Graduate Medical Education (ACGME) in the year 2000, American resident training in spinal and epidural techniques was adequate and had held steady from 1990, yet up to 40% of residents failed to perform the minimum 40 peripheral nerve blocks required by the Anesthesiology Residency Review Committee.[4] This has led some programs to develop innovative methods of increasing their residents' exposure to regional anesthesia and peripheral nerve block procedures.[5] Although the aforementioned data suggest that residency programs are improving their regional anesthesia training, an increasing number of graduates are seeking additional training in formalized regional anesthesia fellowships.[6] The number of available fellowships at least doubled from 1990 to 2004. Yet, despite this modest growth in training opportunities and a growth trend in the provision, teaching, and research of regional anesthesia, there currently exist no guidelines for what constitutes ideal regional anesthesia fellowship training.

Responding to the lack of formalized guidelines and the potential for such guidelines to improve training, the directors of several regional anesthesia

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fellowships assembled to develop a set of academic, clinical, and administrative guidelines intended to build a foundation for current and future regional anesthesia fellowship programs (Appendix 1). The primary objective of this process was to create regional anesthesia fellowship guidelines based on the collective experience and consensus of current fellowship directors and recognized teachers and leaders in regional anesthesia.

Methods

The Education Committee in the Department of Anesthesiology at Hospital for Special Surgery (New York, NY) had the desire to establish a standardized curriculum for its fellowship in regional anesthesia. In October 2001, 2 of the authors (JB and MH) contacted the directors of regional anesthesia fellowship programs listed on the American Society of Regional Anesthesia and Pain Medicine (ASRA) Web site, inviting them to participate in a collaborative project. JB created an initial draft of regional anesthesia fellowship guidelines based on the ACGME's Program Requirements for Residency Education in Anesthesiology.[7]

An initial program directors meeting was held in April 2002 during the ASRA Annual Spring Meeting. At the meeting, the guidelines draft was reviewed, and all participants were asked to comment on it and to submit curricula from their respective fellowship programs. Initial modifications were based on the curricula of regional anesthesia fellowship programs from the University of Manitoba (Winnipeg, Canada), Virginia Mason Medical Center (Seattle, WA), and Hospital for Special Surgery (New York, NY). MH coordinated the group's activities and maintained a contact list for all contributors. The program directors in attendance were also asked to send MH the names of any other regional anesthesia fellowship program directors that were not in attendance so that they too could be invited to participate. Information concerning the activities of the meeting in April 2002 and the planned project along with contact information was featured in the Fall 2002 ASRA Newsletter. An ongoing dialogue via e-mail was established among the program directors. Further program directors' meetings were planned and coordinated to coincide with annual ASRA and American Society of Anesthesiologists meetings.

Over the next 2 years, an increasing number of program directors and advocates of regional anesthesia met twice annually to develop a consensus-based document. Areas such as clinical curricula, academic initiatives, and didactic and nondidactic educational programs were considered.

Results

In October 2003, the Guidelines for Regional Anesthesia Fellowship Training (Appendix 2) were formally approved by the group. In September 2004, the ASRA Board of Directors was given the opportunity to comment on the guidelines. The ASRA Board endorsed the Guidelines, but ASRA is neither charged with, nor does it have the authority, to accredit fellowship training programs. To conclude the process, several of the represented programs committed to implementing the guidelines during the 2004 to 2005 academic year.

The regional anesthesia program directors (whose meetings are open to all interested parties) determined that the guidelines would undergo a periodic process of update and reevaluation. This process will include a formal review to be conducted at the ASRA Spring 2006 meeting. This review will include the observations of the program directors, as well as the evaluations and feedback received from those fellows training in the programs following the guidelines.

The group neither intends nor does it set forth specific powers to govern individual fellowship programs. The development of these guidelines had the secondary effect of solidifying directors' commitment to a continued exchange of ideas between programs.

Discussion

A group of regional anesthesia fellowship directors and other interested parties met to develop the appended Guidelines for Regional Anesthesia Fellowship Training. These guidelines are offered for the improvement of regional anesthesia fellowships in North America but may prove valuable in similar programs throughout the world. The guidelines are intended to supply a common framework on which to design a regional anesthesia fellowship. This framework contains few absolute but many relative guidelines. For instance, the group firmly believed that regional anesthesia fellowships must be at least 1 year in duration, be directly associated with a core ACGME-accredited anesthesiology training program, and that only trainees who have completed a full anesthesiology residency program be eligible to enroll as regional anesthesia fellows. The guidelines are intended to supply only a basic framework for what an individual program director considers appropriate in terms of specific technical experience, research requirement, or didactic program structure. In essence, the guidelines are intended to bring a degree of structure and expectation to regional anesthesia fellowship programs while allowing individual programs the freedom to capitalize on their strengths.

It is not the group's intention that development of training guidelines be interpreted as a step to-

ward seeking accreditation of regional anesthesia fellowships or certification of their graduates. Indeed, because of the small number of programs offering these fellowships and the small number of fellows trained each year, it is our opinion that it is highly unlikely that the ACGME would pursue efforts toward accreditation. Currently, 3 anesthesiology subspecialties are accredited by the ACGME: critical care medicine, pain medicine, and pediatric anesthesia. Of these, only the first 2 have developed an examination leading to subspecialty certification by the American Board of Anesthesiology (ABA). Pediatric fellowships are currently accredited, but no examination exists and their graduates are not certified by the ABA.

Secondary to development of the guidelines, the group identified future initiatives to improve regional anesthesiology fellowship administration and structure, including (1) developing a directory of regional anesthesiology fellowships that can serve as a resource to residents and clinicians seeking further training in regional anesthesia; (2) creating a standard fellow evaluation tool based on the 6 core competencies identified by the ACGME (www.ACGME.org) to obtain a record of an individual fellow's progress throughout the year and provide essential internal and external measurement information; (3) designing an electronic case log to document the fellow's training experience, the data of which can potentially be used in educational research programs to track caseload trends; and (4) formulating a database of regional anesthesia fellowship graduates to be used to track their professional and academic development.

In summary, a group of regional anesthesiology fellowship directors and other interested parties convened over a 2-year period to develop guidelines for regional anesthesia fellowship training. The intent of these guidelines was to improve the quality and consistency of regional anesthesia training in the United States and Canada. Although the group did not undertake the initiative for the purpose of seeking fellowship accreditation or graduate certification, they have committed to periodic meetings to evaluate the usability of these guidelines and to further the organization of regional anesthesia fellowships.

Appendix 1. Directors of Regional Anesthesia Fellowship Programs That Participated in Guideline Development

Physician/Staff Name	Affiliation
Juan-Francisco Asenjo, M.D.	McGill University, Canada
Chandran Baker, M.D.	University of Manitoba, Canada
James D. Beckman, M.D.	Hospital for Special Surgery, United States
Andre P. Boezaart, M.D., Ph.D.	University of Iowa, United States
Lynn Broadman, M.D.	West Virginia University, United States
Robert Brown, M.D.	University of Manitoba, Canada
A. Robin Brown, M.D.	Columbia University, United States
Chester Buckenmaier, M.D.	Walter Reed Army Medical Center, United States
Jacques Chelly, M.D.	University of Pittsburgh Medical Center, United States
Laura Clark, M.D.	University of Kentucky, United States
Mercedes Concepcion, M.D.	Brigham & Women's Hospital, United States
Giovanni Cucchiaro, M.D.	Children's Hospital of Philadelphia, United States
F. Kayser Enneking, M.D.	University of Florida, United States
Helmut R. Gerber, M.D.	Kantonsspital, Lucerne, Switzerland
Michael A. Gordon, M.D.	Hospital for Special Surgery, United States
Admir Hadzic, M.D.	St. Luke's-Roosevelt Hospital, United States
Mary Hargett	Hospital for Special Surgery, United States
Stewart Hinckley	ASRA, United States
Terese Horlocker, M.D.	Mayo Clinic, United States
Brian Ilfeld, M.D.	University of Florida, United States
Richard S. King, M.D.	Hospital for Special Surgery, United States
Robert Koorn, M.D.	University of Iowa, United States
Gregory A. Liguori, M.D.	Hospital for Special Surgery, United States
Colin J. L. McCartney, M.B., Ch.B., F.F.A.R.C.S.I., F.R.C.A.	University of Toronto, Canada
Joseph M. Neal, M.D.	Virginia Mason Medical Center, United States
Karen C. Nielsen, M.D.	Duke University, United States
Jeffrey M. Richman, M.D.	The Johns Hopkins School of Medicine, United States
Julia Pollock, M.D.	Virginia Mason Medical Center, United States
Richard Rosenquist, M.D.	University of Iowa, United States
Susan Steele, M.D.	Duke University, United States
P. Sebastian Thomas, M.D.	State University of New York–Syracuse, United States
Brian Williams, M.D.	University of Pittsburgh Medical Center, United States
Paul Willoughby, M.D.	Stony Brook University, United States
Christopher Wu, M.D.	The Johns Hopkins School of Medicine, United States

Appendix 2. Guidelines for Regional Anesthesia Fellowships

A consensus document from the directors of regional anesthesia fellowship programs

Mission Statement:

The purpose of this endeavor is to develop a set of standards for subspecialty training in regional anesthesia.

These fellowship programs will ensure the ongoing development of regional anesthesia as a defined subspecialty.

Research activities, educational curricula, and, most importantly, clinical care will be emphasized.

Program Requirements for Fellowship Training in Regional Anesthesia:

Outline:

I. Scope and Duration of Training
II. Institutional Organization
III. Program Director and Faculty
IV. Facilities and Resources
V. The Educational Program
VI. Scholarly Activity
VII. Consultant Skills
VIII. Evaluation
IX. Board Certification

I. Scope and Duration of Training:

A) Scope of Training: Regional anesthesia training is a subspecialty focused on the perioperative management of patients receiving neuraxial or peripheral neural blockade for anesthesia or analgesia. Fellowship training should be concerned with the development of expertise in the practice and theory of regional anesthesiology.

B) Duration of Training: The time required for subspecialty training in regional anesthesia shall be twelve months. There should be enough flexibility to allow the Program Director to tailor the program to meet the individual needs of their fellows. Specialized clinical rotations of less than 12 months may be made available but the minimum amount of training necessary to use fellowship in the diploma language is one year.

II. Institutional Organization:

A) Relationship to a Core Program: Institutions with subspecialty training in regional anesthesia must have a direct affiliation with an ACGME (or similar, e.g., RCPC or RCA) accredited residency in anesthesiology. If the institution in which the fellowship is based is other than the primary institution of an accredited residency, a written agreement linking the two, and an evaluation protocol consistent with ACGME (or equivalent) approved standards for residency programs must be prerequisites.

B) Institutional Policy and Resources: The fellowship must be recognized and approved by the institution's division of Medical Education.

III. Program Director and Faculty:

A) Program Director: The Director of the fellowship training program must be an ABA Board-Certified anesthesiologist (or equivalent, e.g., FRCPC, FRCA) who has completed one year of fellowship training in regional anesthesia, or is a dedicated and skilled practitioner of regional anesthesia. The Program Director must also have an academic and/or clinical affiliation with an ACGME (or recognized equivalent) accredited institution.

B) Faculty: The majority of the faculty in the training program must be Board-Certified (or equivalent) in Anesthesiology. A division of the faculty in the training program must also demonstrate an expertise in regional anesthesiology and/or related disciplines such as acute pain medicine. The number of faculty in a program may vary based on the number of fellows in training; however a minimum of two regional anesthesia faculty must be maintained.

IV. Facilities and Resources:

A) Equipment: Suitable equipment for the performance of a wide variety of regional anesthetic techniques must be available. Such equipment must include nerve simulators, neuraxial and peripheral block supplies, catheter systems, and the basic requirements for conducting general anesthesia, according to the ASA standards.

Dedicated and acceptable on-call facilities must also be maintained if fellows are expected to take in-house calls.

B) Support Services: Appropriate support services, which may include, but are not limited to, anesthesia technical and pharmacy support should be available as needed by the program.

C) Library: A departmental library, or portion of the institutional library, dedicated to anesthesiology with literature specific to the practice of regional anesthesia must be maintained.

V. The Educational Program:

A) Clinical Education: The clinical program will serve as the cornerstone of the fellowship training in regional anesthesia. In order to achieve the necessary level of expertise, fellows should be familiar with the indications, contraindications, techniques, and complications of the techniques listed on the following pages:

Basic Techniques:

- Superficial cervical plexus block
- Axillary brachial plexus block
- Intravenous regional anesthesia (Bier block)
- Wrist block
- Digital nerve block
- Intercostobrachial nerve block
- Saphenous nerve block
- Ankle block
- Spinal anesthesia
- Lumbar epidural anesthesia
- Combined spinal-epidural anesthesia
- Femoral nerve block

Intermediate Techniques:

- Deep cervical plexus block
- Interscalene block
- Supraclavicular block
- Infraclavicular block
- Sciatic nerve block: posterior approach
- Genitofemoral nerve block
- Popliteal block: all approaches
- Suprascapular nerve block
- Intercostal nerve block
- Thoracic epidural anesthesia

Advanced Techniques:

- Continuous interscalene block
- Continuous infraclavicular block
- Continuous axillary block
- Thoracolumbar paravertebral block: single injection or continuous
- Lumbar plexus block
- Combined lumbar plexus/sciatic block
- Continuous femoral nerve block
- Sciatic nerve block: anterior approach and parafemoral technique
- Obturator nerve block
- Continuous sciatic nerve block
- Continuous popliteal block: all approaches
- Cervical epidural anesthesia
- Cervical paravertebral block
- Maxillary nerve block
- Mandibular nerve block
- Retrobulbar and peribulbar nerve block

Fellows will be required to complete a formal rotation in acute pain management. This rotation will include multimodal analgesic techniques such as neuraxial and peripheral nerve catheters,

local anesthetics and narcotic infusions, and non-narcotic analgesic adjuvants. Indications, contraindications, side effects, potential complications, and daily management of patients on the acute pain service should be stressed.

Fellows should complete daily case logs to track their clinical experience. These logs should be reviewed regularly with the appropriate faculty advisor.

Fellows must be able to show competency in the following areas:

- demonstrate rational selection of regional anesthesia for specific clinical situations
- demonstrate effective anxiolysis of patients by both pharmacological and interpersonal techniques
- demonstrate cost-effective management decision
- demonstrate ability to rescue failed regional anesthesia techniques
- demonstrate effective management of isolated peripheral nerve and central neuraxial blocks with respect to the physiologic consequences both intraoperatively and postoperatively
- demonstrate successful use of a peripheral nerve stimulator for neuronal blocks
- demonstrate effective management of regional anesthesia in critically ill patients
- demonstrate knowledge of practice management principles as they relate to regional anesthesia

Exposure to regional anesthetic techniques involving pediatric and ambulatory surgery patients is strongly encouraged. Access to cadavers and/or electronic models would greatly enhance the educational program experience, as would exposure to advanced localization techniques for block placement (e.g., ultrasound), where feasible. Physiologic and pharmacologic consequences of regional anesthesia must be stressed. Particular attention should be focused on the potential respiratory and hemodynamic perturbations, which accompany performance of neuraxial and peripheral nerve blocks.

B) Didactic Educational Program: A didactic and educational program specifically dedicated to regional anesthesia practice must also be a part of fellowship training.

i) A lecture series or Grand Rounds, which covers topics relevant to, but not limited to, regional anesthesia, shall be held no fewer than 12 times per year. A "Journal Club" (current literature review) should be held at least once monthly. Fellows should present articles at least twice in twelve months under the supervision of an attending anesthesiologist. A case conference specifically designed for fellows and supervised, or given, by a qualified faculty member shall occur at least once per month.

ii) Fellows shall be expected to deliver a Grand Rounds lecture including a relevant literature review at least once during the course of the fellowship.

iii) Fellows should appreciate the practice of regional anesthesia from a multidisciplinary approach including joint conferences with surgical or medical colleagues.

iv) Fellows should have the opportunity to learn teaching techniques by educating junior residents during the academic year.

By completion of the accredited program, the fellow is expected to have a working knowledge base consisting of the following:

- understands general attributes of local anesthetic pharmacology
- understands specific clinical attributes of various local anesthetics, including onset, duration, motor/sensory differentiation, toxicity, and treatment
- understands principles and indications for various local anesthetic adjuvants, including epinephrine, phenylephrine, opioids, sodium bicarbonate, and clonidine
- understands principles of, and options for, regional anesthetic procedures
- understands complications of regional anesthetic techniques
- understands principles of regional anesthesia as they apply to pain management
- understands outcome studies related to the influence of regional anesthesia on perioperative outcome
- develops familiarity with major scientific studies related to regional anesthesia

VI. Scholarly Activity:

Expectations for Fellows: Fellows shall have the opportunity to participate in clinical and/or laboratory research and be given appropriate nonclinical time to fulfill these goals. There will be opportunities for the fellow to become involved in research already in progress, or to develop an original project. In either case, an appropriate attending anesthesiologist will be appointed to mentor

and assist the fellow to facilitate these goals. The types of activities that would suffice as academic projects include a research paper and/or case report submitted to a peer-review journal and presented; a clinical chart review or a review article submitted to, and accepted by a peer-reviewed journal; a book chapter; or other endeavor.

Expectations for Faculty: The quality of the educational environment of the parent and integrated institutions is of paramount importance to the program. Adequate documentation of scholarly activity on the part of the program director and the teaching faculty at the parent and integrated institutions must be submitted at the time of the program review. Scholarly activity at affiliated institutions cannot account for or substitute for the educational environment of the parent and integrated institutions.

Documentation of scholarly activities is based on:

1. Active participation of the faculty in clinical discussions, rounds, and conferences in a manner that promotes a spirit of inquiry and scholarship. Scholarship implies an in-depth understanding of basic mechanisms of normal and abnormal states and the application of current knowledge to practice.
2. Participation in journal clubs and research conferences.
3. Participation in research, particularly in projects funded following peer review that result in publications or presentations at regional and national scientific meetings.
4. Active participation in regional or national professional and scientific societies, particularly through presentations at organizations' meetings and publications in their journals.
5. Offering of guidance and technical support (e.g., research design, institutional committee protocol approval, statistical analysis) for fellows involved in scholarly activities.

While not all members of a teaching faculty can be investigators, clinical and/or basic science research must be ongoing in the department of anesthesiology of the parent and integrated institution(s). The faculty, as a whole, must document active involvement in all phases of scholarly activity as defined above in order to be considered adequate to conduct a program of graduate education in anesthesiology.

VII. Consultant Skills:

A) Communication Skills: Fellows should possess communication skills sufficient to solicit and impart information. The fellow must be able to clearly delineate options available to the patient regarding regional anesthesia as well as the risks and benefits in a manner that is understandable to the patient.

B) Collaboration Skills: Fellows must be able to work in a team environment, communicating and cooperating with surgeons, nurses, pharmacists, physical therapists, and all members of the perioperative team.

By the end of the fellowship, successful graduates will be able to:

- appreciate the roles of other members of the team
- communicate clearly in a collegial manner that facilitates the achievement of care goals
- help other members of the team to enhance the sharing of important information
- formulate care plans that utilize the multidisciplinary team skills, such as a plan for facilitated recovery

VIII. Evaluation:

A) As per ACGME Residency Guidelines, the attending faculty will be evaluated by the fellows twice annually.

B) Written evaluations of fellows by all faculty with whom they have worked shall occur quarterly. The results of these evaluations shall be recorded and reviewed with the fellows by the program director no less often than every six months.

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