

Quality Improvement for Diagnostic Neuroangiography and Other Procedures

Curtis W. Bakal, MD, MPH

J Vasc Interv Radiol 2003; 14:S255-S256

Abbreviation: JCAHO = Joint Commission on Accreditation of Healthcare Organizations

THE Quality Improvement Guidelines for Adult Diagnostic Neuroangiography published in this issue of *JVIR* (1) is a clinical practice guideline produced by an interdisciplinary consensus group process to cover a crucial aspect of the care of patients with potentially devastating neurovascular disease. The document should be of intense interest to all those who desire to ensure quality of care for patients undergoing carotid angiography. As the pace of development and application of carotid stent placement and intracranial thrombolysis quickens, it is important to remember that one major potential rate-limiting factor in ensuring efficacy and safety of these procedures is the training, skill, and experience of practitioners performing the diagnostic and interventional components of the procedures. Outcomes-based practice guidelines such as this one must be used to monitor results and set a benchmark for expected performance.

Clinical practice guidelines are defined as systematically developed statements, which assist medical decision making. Besides quality improvement guidelines such as this one, other

practice guidelines include credentialing statements and clinical pathways. Guidelines are used primarily to reduce variation in clinical practice between individual physicians or groups of physicians, thus raising the standard of care. Guidelines also assist physicians and other healthcare providers in managing the huge amount of information that is found at scientific meetings, in journal articles, and in personal clinical experiences. Clinical practice guidelines serve both an educational and a surveillance function in an effort to define and achieve an optimum level of patient care. Good practice guidelines should rest on methodical analysis of the scientific evidence, be reproducible and reliable, have clinical applicability for defined patient populations, and be updated periodically to reflect current knowledge and state of practice. We believe that this neuroangiography practice guideline meets these criteria.

The quality improvement guidelines on neuroangiography comprise the first intersociety, multidisciplinary document developed by the ASNR, ASITN, and the SIR. Members of these societies together have had the overwhelming clinical experience with carotid arteriography in the United States. Radiologists (including vascular and interventional radiologists, neuroradiologists, and interventional neuroradiologists) performed 91% of the 91,558 cervicocerebral angiograms recorded in the Medicare procedural database in one recent year, while physicians in the next named specialty category (cardiology) performed only 4.2% (2). Therefore, these radiology

groups possess the clinical experience and expertise to generate a realistic standard of care. The membership of the intersociety working committee represents both academic and community practices and was drawn from a wide geographic area.

Quality improvement documents such as this one, as well as others in the SIR QI program (3-7), utilize an evidence-based literature search and a formalized consensus process (modified Delphi technique), which provide valid and reproducible threshold indicators. Thresholds defined by the document are appropriateness (indications), effectiveness (technical success), and safety (complication rate) (8,9). Preliminary data from the SIR HI-IQ[®] electronic database have been used to provide actual clinical practice data on short-term outcomes and will be used in the future to validate and update quality improvement guidelines. There are multiple sources for practice guidelines, including hospital protocols and bylaws, payers, national, local and state health care agencies, professional societies, and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). In recent years, JCAHO compliance and consequent accreditation has been of paramount concern to healthcare organizations.

The JCAHO requires that there is a mechanism that ensures that the same level of quality of patient care be provided by all individuals with delineated clinical privileges, both within medical staff departments and across all departments at an institution (10). Thus, outcome measures as delineated

This article first appeared in *J Vasc Interv Radiol* 2000; 11:1-3.

From the Departments of Radiology at Beth Israel Medical Center, St. Luke's-Roosevelt Hospital Center, Long Island College Hospital, and the Albert Einstein College of Medicine, New York, New York. Address correspondence to SIR, 10201 Lee Hwy, Suite 500, Fairfax, VA 22030.

© SIR, 2003

DOI: 10.1097/01.RVI.0000094594.83406.8b

within this document and others should apply universally to an entire institution, regardless of what type of physician or which department is associated with the procedure.

Mechanisms to ensure universal quality within an institution require that a quality improvement program be established that covers the targeted procedures and all physicians performing them. Thus, there should be a single QI meeting or program that should hold regular and frequent quality improvement meetings, ideally monthly. All individuals should be required to attend. Numerator and denominator data on specific procedures must be rigorously recorded so those rates for appropriate indications can be calculated and assessed. Criteria for data entry and standardized reporting of the indicators for effectiveness, safety, and appropriateness should be consistent and there should be adequate follow-up to ensure that care is optimized and the quality improvement data are accurate and verifiable. When an indicator threshold, for example complication rate, is crossed, a review of departmental policies and procedures should be undertaken. Physician operator competency is also assessed in this manner. It is important to note that real-world success and complication rates often differ from published rates because of institutional experience, case load differences, and patient selection factors. The thresholds developed in this joint QI document, as well as others in the SIR series, account for these differences by allowing indicator thresholds to differ from published efficacy and complication rates and by encouraging individual institutions to set their own local thresholds.

The JCAHO also notes that a credentialing mechanism must be designed to ensure that standards for obtaining privileges are clearly stated for each category of procedure. Specific privileges are to be granted for clearly delineated procedures, individuals performing specific procedures provide services only within the scope of their specific privileges, and these privileges should be reviewed on a periodic basis (11). Appraisal for reap-

pointment should be based on an individual's documented experience in these specific procedures and the results of such treatment. Furthermore, there should be a satisfactory method to coordinate appraisal for granting and renewing clinical privileges when they are provided in more than one department or clinical specialty area. Because the JCAHO requires reasonable evidence of current ability to perform privileges, an open, institution-wide single quality improvement program should be the appropriate venue for complying with these JCAHO standards. We believe that failure to provide an appropriate climate for universal quality improvement might expose a healthcare institution to significant liability.

As myriad physicians attempt to extend their practices into vascular territories traditionally managed by other specialists, it is essential to understand that a quality improvement process with accountability must be applied equally to all within the institution. The ability to perform cervical-cerebral diagnostic arteriography effectively, safely, and for the appropriate indication is a necessary condition for performing carotid stent placement. As Dr. Richard Latchaw has written, "The most feared complication of carotid arteriography is a permanent neurologic deficit" (12). Thus, all physicians performing carotid arteriography and associated interventions—regardless of specialty—should be held to the same standard of care and be open to a universal QI review. Safe performance of carotid arteriography requires not only catheter/guide-wire skills, but also the cognitive abilities to understand the target vessel, the runoff vessel anatomy, and the end-organ vascular territory at risk. Knowledge of radiation safety principles, and the ability to recognize procedure-related complications and manage them percutaneously whenever possible, is essential and should also be required.

This document has set a standard to which all must adhere. Physicians performing carotid angiography should familiarize themselves with its content. Hospital QI and credentials committees should also utilize it for assess-

ing and optimizing care within their institutions. Radiologists—who have traditionally defined the standard of care—should be proactive in institutional credentials and QI committees. And finally, regulators and payers should seriously consider instituting financial incentives for institutions and practitioners to adhere to the quality benchmarks and processes described in this document.

References

1. Cooperative study between ASNR, ASITN, and SCVIR. Quality improvement guidelines for adult diagnostic neuroangiography. *J Vasc Interv Radiol* 2000; 11:129–134.
2. HCFA procedural database 1996.
3. Spies JB, Bakal CW, Burke DR, et al. Standards for interventional radiology. *J Vasc Interv Radiol* 1991; 2:59–65.
4. Bakal CW, Sacks D, Burke DR, et al. Quality improvement guidelines for adult percutaneous abscess and fluid drainage. *J Vasc Interv Radiol* 1995; 6: 68–71.
5. Cardella J, Bakal CW, Bertino RE, et al. Quality improvement guidelines for image-guided percutaneous biopsy in adults. *J Vasc Interv Radiol* 1996; 7: 943–946.
6. Lewis CA, Allen TE, Burke DR, et al. Quality improvement guidelines for central venous access. *J Vasc Interv Radiol* 1997; 8:475–479.
7. Drooz AT, Lewis CA, Allen TE, et al. Quality improvement guidelines for percutaneous transcatheter embolization. *J Vasc Interv Radiol* 1997; 8:889–895.
8. Fink A, Kosseffcoff J, Chassin M, Brook RH. Consensus methods: characteristics and guidelines for use. *Am J Pub Health* 1984; 74:979–983.
9. Leape LL, Hilborne LH, Parke RE, et al. The appropriateness of use of coronary artery bypass surgery in New York State. *JAMA* 1993; 269:753–760.
10. JCAHO Comprehensive Accreditation Manual for Hospitals 1997, Medical staff section 6.8. Oak Brook Terrace, Illinois.
11. JCAHO Comprehensive Accreditation Manual for Hospitals 1997, Medical staff section 5. Oak Brook Terrace, Illinois.
12. Latchaw R. Guidelines for diagnostic neuroangiography: a model to emulate from a neuroradiologist's perspective. *AJNR* 2000; 21:44–45.