Exercise Stress Test Training In Family Practice Residency Programs

Steve Jacobson, MD, and James Nuovo, MD

Coronary heart disease is the leading cause of death in the United States.[1] Exercise stress testing (EST) is a well-established diagnostic tool that can be used for the following indications: (1) to evaluate chest pain in patients, (2) to follow the course of coronary heart disease, (3) to assess the severity of coronary heart disease, and (4) to offer preventive screening for asymptomatic high-risk individuals.[2-4]

Several authors have strongly recommended that family physicians should be performing EST and that the appropriate time for this training is during residency.[5-7] More specifically, some authors have recommended basic training criteria for family physicians performing EST.[8,9] Alternatively, others have stated that EST should be the exclusive domain of cardiologists.[10]

A survey of all family practice residency program directors was conducted to learn about the present state of EST training in the United States. The objectives were to determine the extent of EST training in the United States family practice residencies, the level of interest in adding EST training, characteristics of the training, and program directors' attitudes toward EST in family practice.

Methods

The *1991 Directory of Family Practice Residency Programs*[11] lists the directors of all 384 family practice residencies in the US and Puerto Rico. Each director was sent an itemized questionnaire designed to solicit specific information on whether EST training is offered, and if so, the characteristics of that training. Further, specific questions were constructed to assess attitudinal issues related to EST training. The programs were categorized by geographic region, structure, location, number of beds in the primary hospital, year of initial approval, number of interns, number of family physician faculty, and number of other physician faculty. For purposes of analysis, the categorization used previously reported geographic regions.[12] Puerto Rico was not included as a separate region because of its small number of programs. Data analysis of responding and nonresponding programs used chi-square analysis to compare the two groups with respect to the program characterizations listed above.

Results

There were 309 respondents for a response rate of 80.5 percent. The respondents did not differ significantly from the nonrespondents in terms of any of the program categorizations. EST training was provided by 52 percent of the responding programs. Programs in the Mountain-West, South-Central region were most likely to provide training (65 percent), while those in the Northeast were least likely (28 percent). The specific regional distribution of programs offering EST was as follows: Mountain-West, South-Central 65 percent (Arkansas, Arizona, Colorado, Idaho, Louisiana, Montana, Nevada, Oklahoma, Texas, Utah, Wyoming), Southeast 61 percent (Alabama, Delaware, Florida, Georgia, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia), Pacific 54 percent (California, Oregon, Washington), Midwest 54 percent (Iowa, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin), and Northeast 28 percent (Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont). Of the programs that do not currently offer EST training, 51 percent of the responding directors said that they would like to do so. Residency programs in the Northeast were least interested in adding EST training to their programs (36 percent).

Of the programs that do offer EST training, 32 percent have it as a required component of train-

Submitted, revised, 25 August 1992.

From the Department of Family Practice, University of California–Davis, Sacramento. Address reprint requests to James Nuovo, MD, Department of Family Practice, University of California–Davis, 2221 Stockton Boulevard, Sacramento, CA 95817.

J Am Board Fam Pract: first published as 10.3122/jabfm.6.3.289 on 1 May 1993. Downloaded from http://www.jabfm.org/ on 7 June 2025 by guest. Protected by copyright.

ing, and 25 percent have criteria to establish competence. These criteria include practical (35 percent), oral (18 percent), and written (5 percent) tests and a minimum number of supervised ESTs performed. The minimum number of supervised ESTs ranged from 5 to 50 (mean = 19).

Training to residents was provided most frequently by cardiologists (78 percent), followed by family practice faculty (47 percent) and general internists (23 percent). Many programs had more than one of the above groups involved in training.

Opinion statements were recorded on a Likert five-point scale (strongly agree = 1, neutral = 3, strongly disagree = 5). The overall averages were:

1. Family physicians should be doing cardiac stress testing — 2.11 (agree)
2. Cardiologists in our institution oppose family physicians doing cardiac stress testing — 3.04 (neutral)
3. We have no faculty available to teach cardiac stress testing — 3.38 (neutral)
4. It is important to train cardiac stress testing in family medicine residencies — 2.38 (agree)
5. It is not cost effective for our program to train family medicine residents in cardiac stress testing — 3.39 (neutral)

Discussion

EST has a broad range of diagnostic and prognostic uses for one of the most common disease problems in our country.[4] With proper training family physicians can perform ESTs safely and accurately in an office setting while maintaining the primary care relationship with their patients.[5,8,9] EST, however, remains a procedure that is infrequently done by family physicians. In 1990 only 7.9 percent of family physicians surveyed, performed, and interpreted ESTs in their offices.[13] As demonstrated by this survey, there was a divergence of opinion among residency directors regarding the need to include EST as part of the curriculum and to ensure that residents receive enough training to allow them to use this technology in their practice. Further, as reflected by the tendency for the opinion statements to be either neutral or to lack strong agreement, the directors did not give a strong endorsement to the question whether family physicians should be doing EST. It is clear that some residency programs have embraced EST training whereas others have not and that there is a regional tendency for programs in the Northeast to be less inclined to provide training.

Are there specific advantages for a residency program to include EST training as part of the curriculum? Based on a review of the medical literature, there are several advantages. It would be advantageous for residents in training to appreciate the nature of this technology. A greater appreciation of the indications, contraindications, and limitations of the test should facilitate optimal patient management. Having family physicians perform EST can work to establish improved collaborative relations with consulting cardiologists. A model of a collaborative interdepartmental approach for flexible sigmoidoscopy training has been previously described.[14] The concerns for family practice residencies and physicians in practice include the costs of equipment, hospital or group practice policies, patient population needs, and time commitment for the procedure. The cost of EST equipment is substantial. The range for initial setup can be $14,000 to $18,000. Standard equipment also should include an office defibrillator, which costs approximately $2,000 to $3,000. The common office charge for EST with continuous electrocardiographic monitoring and interpretation averages $175 to $250.[15]

Other findings from this survey relate to specific training. We found that training for ESTs was provided most frequently by cardiologists, followed by family practice faculty. As more family physicians are trained in EST, a higher proportion of the training can be provided by qualified family practice faculty. Cardiologists will remain closely involved as consultants for appropriate follow-up of positive tests, including such procedures as cardiac catheterization and for assistance in difficult EST interpretations.

Documentation of procedural competence has continued to grow in importance in family practice, as well as other medical specialties. Many programs offering EST training already have rigorous competency guidelines in place, such as minimum number of supervised tests, as well as practical, oral, and written examinations. Jurica, et al.[9] have recommended a minimum of 8 hours of didactic instruction and at least 20 supervised ESTs performed by the trainee, and Assey[8] has recommended a minimum of 25 supervised tests for basic competency guidelines.

J Am Board Fam Pract: first published as 10.3122/jabfm.6.3.289 on 1 May 1993. Downloaded from http://www.jabfm.org/ on 7 June 2025 by guest. Protected by copyright.

Summary

EST is a commonly indicated procedure in primary care medicine and as such is well suited for use by family physicians. At present there are few family physicians performing this procedure in their offices. Our survey of US family practice residency directors has shown an interest well above what would be expected for the level of current practice in the community; however, there remains an ambivalence on the need to provide EST training in the curriculum.

References

1. State and sex specific premature mortality due to ischemic heart disease — 1985. MMWR 1988; 37: 313-14, 320-3.
2. Richard D, Birrer R. Exercise stress testing. J Fam Pract 1988; 26:425-35.
3. Mead WF. Maximal exercise testing — Bruce protocol. J Fam Pract 1979; 9:479-90.
4. Guidelines for exercise testing. A report of the American College of Cardiology/American Heart Association task force on assessment of cardiovascular procedures (subcommittee on exercise testing). J Am Coll Cardiol 1986; 8:725-38.
5. Mead WF. Is exercise tolerance testing indicated for diagnoses and/or screening in family practice? An affirmative view. J Fam Pract 1989; 28:473-6.
6. Eberly AL Jr. Exercise testing in family practice. J Fla Med Assoc 1980; 67:845-7.
7. Zoller DP, Boyd GE. Six-year experience with graded exercise testing in a model family practice office. J Fam Pract 1985; 21:451-4.
8. Assey ME. Screening for silent myocardial ischemia. Am Fam Physician 1988; 38:143-6.
9. Jurica JV, Baumgardner DJ, Lawrence SL. Graded exercise stress test training in family practice and internal medicine residencies. J Fam Pract 1989; 29: 537-41.
10. Hindman MC. Is exercise tolerance testing indicated for diagnoses and/or screening in family practice? An opposing view. J Fam Pract 1989; 28: 476-80.
11. American Academy of Family Physicians. 1991 directory of family practice residency programs. Kansas City: American Academy of Family Physicians, 1991.
12. Weiss BD. Hospital privileges for family physicians at university hospitals. J Fam Pract 1984; 18:747-53.
13. American Academy of Family Physicians. Facts about: family practice. Kansas City: American Academy of Family Physicians, 1990.
14. DeNeef P, Eggertsen SC, Silverstein FE. Interdepartmental training in flexible sigmoidoscopy for family medicine residents. J Fam Pract 1989; 28:457-9.
15. Evans CH, Karunaratne HB. Exercise stress testing for the family physician: part I. Performing the test. Am Fam Physician 1992; 45:121-32.

J Am Board Fam Pract: first published as 10.3122/jabfm.6.3.289 on 1 May 1993. Downloaded from http://www.jabfm.org/ on 7 June 2025 by guest. Protected by copyright.