

# Research and emergence of the Lifeline Foundation

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Know then thyself, presume not God to scan;  
The proper study of Mankind is Man. . . .  
Sole judge of truth, in endless Error hurled,  
The glory, jest and riddle of the world!  
Alexander Pope, *An Essay on Man*, 1733

It may come as a surprise to some that the programs of The Society for Vascular Surgery were not always as exciting and timely as they have become again these past few years. At the time of the founding of the Society, vascular surgery was concentrated in medical centers. Members were highly interactive. New discoveries and new applications came in rapid succession. Most of us had access to a surgical research laboratory, a dog, and a research-minded resident, and we had time to perform research ourselves. Funds were available. Our members turned their attention to improving radiopaque contrast media, arterial grafts, noninvasive imaging assessment of occlusive arterial disease, and perfection of operative approaches. Refinement of indications for revascularization procedures, identification of operative risk, and standardization of reporting of degrees of disease and of complications of treatment made up the bulk of the papers selected for the program of the annual meetings. Space on the program was limited and very competitive. Each annual meeting was a rich intellectual experience. It was a stimulating time to enter this nascent specialty. The flood of new ideas and procedures, however, gradually slowed and became a trickle. Programs consisted of papers extending the number of patients in a clinical series and other developments of marginal significance. Very little research was directed to new and fundamental discoveries. Rene Leriche had identified the problem several decades earlier: "the problem with surgery is the problem of lack of knowledge."

The repetitive clinical content of the Society's programs prompted one prominent member to liken them to reshuffling a lot of old bones. Clinical case

studies were not the only old bones being reshuffled in these middle years; so were the members. With the membership limited by numbers and, except for the founding fathers, most of us being within a few years of age of each other, the membership was rapidly growing older. Inductions of young members were infrequent, and the attendance of young people was limited by Society rules and by an individual's funding. Some of us feared that in another 10 years the Society would become a living archive; its meetings not unlike a gathering of alumni. Partial restitution came with a revision of the criteria for membership in the North American Chapter of the International Society for Cardiovascular Surgery. Restrictions were relaxed; the membership ceiling was increased; younger entry-level vascular surgeons were encouraged to attend. All of this was constitutionally permissible by emphasizing the educational opportunity presented by the Society and the responsibility of the members to improve the quality of vascular surgery practice in the community. The Society for Vascular Surgery benefited from the back-to-back meetings of the two groups.

Resurgence of innovation and interest came with the emergence of sophisticated imaging technologies that reduced the need for angiography, once the Holy Grail of vascular surgery; deliberate penetration of the arterial lumen, once an anathema to the high priests of vascular surgery; endoscopes, stents, and other therapeutic and diagnostic devices; and the evolution of meaningful treatment for long-neglected venous disease. All breathed new life into our discipline. The intellectual content of our meetings improved.

Still, present and future problems remained. There was a striking lack of understanding of the importance of induction of younger members into the Society, of its collateral problem of lack of a mechanism whereby younger candidates could obtain an audience for their work and eventually be invited to membership, and of the paucity of meaningful research being presented to the members of Society. "Meaningful research" requires definition.

In the early years of the Society, virtually every member could claim the title of research for his

presentations. That it would not be so designated by more learned societies such as the natural sciences was of little concern. The programs abounded in reports of new discoveries. Almost exclusively these concerned technologic advances. They were of an observational nature, with little sophisticated attempt to understand the biologic mechanisms underlying them. They were not basic research. Experimental design was dictated by recognition of a clinical need: better synthetic material, radiopaque contrast medium, antibiotics, and anticoagulants. In the case of synthetic arterial grafts, the experimental method was one of trial and error. Porosity, platelet activation, and nonthrombogenicity were of great concern, but their study was limited to observing the extent to which it was present or occurred. Little insight into the reasons for or causes of phenomena was achieved. This approach continues today, as illustrated by the effort exerted to prevent intimal hyperplasia and restenosis.

The formal training and accumulated experience of years of clinical practice had not prepared the leadership of vascular surgery for the challenges that became a part of their specialty. As the technologic advances of endarterectomy and bypass grafting solved the short-term problems of severe and symptomatic arterial occlusions, the long-term problems of progressive atherosclerosis and intimal hyperplasia were revealed. These problems were of a different order in that they did not yield to continuing technologic improvements. Vascular surgery was believed to consist of a number of techniques, essentially mechanical in concept and execution, for relief of end-stage occlusive arterial disease. Our understanding of atherosclerosis as a systemic disease was superficial, and with pitifully few exceptions our research efforts in this area and in the biology of the arterial wall were negligible.

The long-term problems defied solution. Small-caliber grafts, intimal hyperplasia, and progressive atherosclerosis singly and together defeated many revascularization attempts.

Molecular vascular biology became introduced into the medical school curriculum and entered the clinical world via young graduates and vascular trainees. Its potential for enabling investigation into vascular problems was quickly appreciated, but its jargon and methods were foreign. The clinician had neither the time nor the apparent need to learn them. Fortunately, a few bright young investigators saw the opportunity for meaningful research. A sprinkling of what were labeled "basic science" papers began to appear on the programs. A basic research forum was implemented. Even poster sessions, perfectly accept-

able to basic science symposia but disdained by some members, were introduced into our joint annual meeting. A confluence of disparate events—technologically insoluble clinical problems; bright, young, ambitious investigators undaunted by the unfamiliarity with molecular biology; and an avenue by which young vascular trainees and surgeons could gain access to our meetings—combined to bring new intellectual vigor to our meetings. More and more young people actively participated in the meetings, and basic research found a more receptive audience. Endovascular concepts and techniques found hesitant but optimistic acceptance. The "old bones" of former meetings were set aside. A new vitality characterized The Society for Vascular Surgery.

An essential ingredient was still missing. Funding for research became increasingly difficult to obtain. The largesse of the National Institutes of Health (NIH), so abundant for two or three decades after World War II, dropped continuously year by year as new national programs of presumed greater priority claimed tax dollars (Fig. 1). In terms of constant dollars, the high point was 1979. Even the higher projection for 1981 represents a decline in the purchasing power of 5.5%.<sup>1,2</sup>

The importance of devoting more national resources to vascular disease was explicitly stated in the 1982 report of the Research Training and Development Task Group: "An important area that has been relatively neglected is that of peripheral vascular disease. More manpower is desirable to extend scientific and methodological advances to improve understanding and control of peripheral vascular disease."<sup>3</sup> The funding situation deteriorated more severely. In 1973, 21% of the total research allotment of the NIH went to departments of internal medicine, compared with 13% received by departments of surgery. Ten years later, by 1982, surgery's share had decreased to 5.1%. Furthermore, it was noted that the ranks of medical researchers were being increasingly filled by scientists who were not medically trained (Fig. 2). The Heart and Blood Vessel Disease branch of the NIH awarded 212 traineeships and fellowships to holders of PhD degrees from 1972 to 1983, and holders of MD degrees received 630. From 1980 to 1982, PhD recipients numbered 358, compared with 291 for MD recipients.

One need not have been clairvoyant during those years to recognize that financial support for research and the concurrent development of young vascular surgeons would not be forthcoming from traditional sources. Federal funding could no longer be relied on. The burden would fall increasingly on individuals,

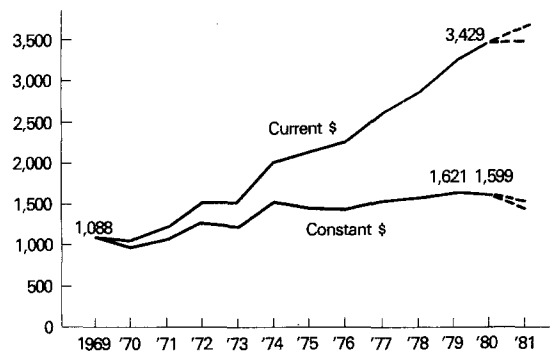


Fig. 1. Obligated funds for the aggregate of NIH programs are shown for the years 1969 through 1980, with alternate projections for fiscal 1981. (From Fredrickson DS. *N Engl J Med* 1981;304:509-17. By permission.)

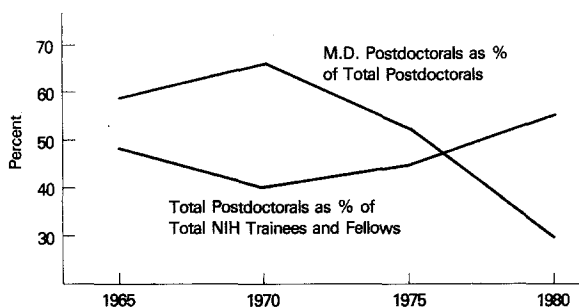


Fig. 2. Total number of NIH trainees and fellows declined from 18,945 in 1965 to an estimated 10,284 in 1980. During this period, total postdoctoral trainees, although declining in number, rose as a percentage of all trainees (from 48% to 55%). Physician postdoctoral researchers declined in both number and percentage (from 59% to 30%) of all postdoctoral researchers.

departments, and societies who wished to engage in these activities.

More recent experience demonstrates how grim the decline in NIH funding has truly become. Figures released by the NIH for fiscal year 1993<sup>4</sup> revealed an overall actual success rate of only 9.2% for RO1 (type 1 applications: new applications, unsolicited, un-amended, and competing). Continuing funding deterioration over the past 10 years engenders the prediction that two out of three established investigators who submit renewal applications (type 2: renewal, competing) will not be funded.<sup>4</sup>

The seed money once available from academic clinical departments has all but vanished under the yoke of competitive care. The offices of the dean, the hospital president, and the department chairman now have ever more claims for financial support made against constantly dwindling dollars. The academic



## Lifeline Foundation

Fig. 3. Logo of the Lifeline Foundation.

community and The Society for Vascular Surgery were aware that funding was on a downward spiral and that we must depend more on our own resources. If it was indeed important to the intellectual prosperity of the Society to provide an infusion of young blood, to investigate problems such as intimal hyperplasia, and to move the conceptual basis of vascular surgery from solely technologic problems to a more sophisticated intellectual level, intramural financial support must be generated. Happily, the treasury of the Society had accumulated a modest surplus. From this simple approach the Lifeline Foundation was created. It began during the discussion of new business at the October 23, 1984, Council Meeting of the Society concerning "the utilization of certain assets of the Society to further the interests of younger surgeons in the specialty of vascular surgery." In the course of 2 years, a consulting firm had made recommendations as to the nature and legal status of a tax-exempt foundation. At the Council Meeting of June 8, 1986, it was unanimously voted in two separate actions to "support the establishment of a foundation subject to further development of a statement of purpose for the foundation," and "to contribute \$50,000.00 from the Society's reserves for the formation of this Education and Research Foundation." Separately, "it was voted to appoint the current officers of the Society as Directors of the new Education and Research Foundation." The first meeting of the Board of Directors of the Foundation was held October 22, 1986, during the course of the Annual Congress of the American College of Surgeons. Officers elected were Calvin B. Ernst, President; Victor M. Bernard, Vice President; and Malcolm O. Perry, Secretary-Treasurer.

A Mission Statement was written and rewritten. Its present version, adopted as amended April 7, 1994, states:

"The mission of the Lifeline Foundation is to support research and education in vascular disease by:

- Enhancing the development of young surgical scientists and the advancement of vascular science through its comprehensive research funding commitment.
- Insuring that new knowledge concerning causes, treatment and prevention of vascular disease is disseminated to the medical profession and the public.”

A logo was designed by Dr. Calvin B. Ernst, and its use was made available to donors (Fig. 3) Provision was made for representation of corporate donors on the Board of Directors. A request for research proposals was issued in 1991.<sup>5</sup> The judging process was formalized with establishment of a Research Committee operating under guidelines based on the NIH Peer Review System. The North American Chapter of the International Society for Cardiovascular Surgery requested and was granted membership in the Foundation in 1994. In time the Lifeline Foundation assumed administrative responsibility for the E. J. Wylie Traveling Fellowship, the Student Research Stipend Program, the annual Research Initiatives Meeting, and the Resident Research Award. Recipients of awards to date were, in 1992, Brian G. Rubin, MD, Washington University School of Medicine: “The Effect of Duration of Thrombosis on Vessel Wall Thrombogenicity;” in 1993, Colleen M. Brophy, MD, Medical College of Georgia Research Institute: “A Molecular Model of Vasospasm;” in 1994, Raymond G. Makhoul, MD, Medical College of Virginia: “L-arginine and Vascular Intimal Hyperplasia;” and in 1995, Michael A. Golden, MD, University of Pennsylvania Medical Center: “Gene Therapy for Control of Vein Graft Intimal Hyperplasia.”

The critical importance of the Lifeline Foundation is emphasized by the continuing reduction of research funds from the NIH and from other sources that once were available from within academic centers. The threat to research and education endeavors continues to expand as managed care gains control. No voluntary organization such as the Lifeline Foundation can meet more than a fraction of the needs of the research and academic community. It was never intended that

the Foundation could take the place of major funding sources. But, small as the dollar amounts are, it has made a difference to the present awardees. Small as the awards are, they may be just enough to keep alive the hope and the expectation of an academic career. This need not be forever, but only until such time as reason returns to the practice of health care and the responsibility for it is rescued from disciples of the corporate balance sheet and returned to its rightful deacons: physicians and surgeons whose ideals of service subordinate profit.

What keeps a society healthy, its members happy, its purpose effective? Why do we vascular surgeons seek our companionship once a year through an annual meeting pilgrimage and once a month through our journal? Alan Gregg<sup>6</sup> cites three things mainly: shared experiences, beliefs generally agreed on, and hopes and desires held in common. Our companionship thus has elements of the past, the present, and the future. Heneage Ogilvie,<sup>7</sup> citing the benefits of travel by surgeons to professional meetings, holds that there is value for all who come: “your old men shall dream dreams and your young men shall dream visions.”

It is our hope that the Lifeline Foundation will assist materially in bringing these visions to reality, and that The Society for Vascular Surgery will prosper.

#### REFERENCES

1. Fredrickson DS. Biomedical research in the 1980s. *N Engl J Med* 1981;304:509-17.
2. National Heart, Lung, and Blood Advisory Council. Public Briefings 1983, an analysis. U.S. Department of Health and Human Services, Public Health Service. Washington, DC: National Institutes of Health.
3. Callow AD. Presidential address: the microcosm of the arterial wall—a plea for research. *J Vasc Surg* 1987;5:1-18.
4. Mandel HG. Funding of NIH grant applications: update. *Science* 1995;269:13-4.
5. Ernst CB. Presidential address: society and vascular surgery—the need for humanism and research. *J Vasc Surg* 1992;15:267-74.
6. Gregg A. *For future doctors*. Chicago: University of Chicago Press, 1957:165.
7. Ogilvie WH. *Surgery, orthodox and heterodox*. London: Blackwell Scientific Publications, 1947.