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On the evolution of anti-aging medicine

The practice of anti-aging or age-management medicine (AAM) has undergone logarithmic growth over the past decade and more. This fact is not necessarily surprising. The desire for enjoying a full life span in a healthy, vital, and youthful state is a universal human desire. Undoubtedly, this longing has caused people to seek out practitioners who promote themselves as having the knowledge and methods to at least approach the goal of healthy life extension through appropriate management of senescence. However there are several characteristics of AAM that set it apart from more traditional fields of medical practice. These include the following:

- AAM takes a health maintenance approach in therapy
- It was created by entrepreneurs not by those experienced in research on aging mechanisms and interventions
- While an extensive research literature on aging exists, there is a paucity of data and peer-reviewed papers on human responses to interventions in aging, and
- Until 2005, there was no legitimate and traditional forum for debate and exchange of information by AAM practitioners.

Each of these characteristics are important and play a significant role in the current status and future evolution of AAM. The AAM is on the cutting edge of clinical medicine evolution because it is health-oriented. AAM is proactive rather than reactive. Its intention is to avoid disease through health maintenance rather than treat disease after it has become established. To achieve this goal, AAM takes a holistic approach to therapy because its basic premise is that progressive loss of homeostasis leads to functional decline and an increased risk for development of intrinsic disease, ie, the commonly called “diseases of aging”. Because of this philosophy, “replacement therapy” is currently the most basic clinical intervention in aging. It has long been recognized that deterioration of homeostasis during aging is associated with a progressive decline in essential informational, regulatory, and protective molecules. Since adequate technology to slow or arrest underlying homeostatic decline has not yet been developed, replacement of those naturally occurring products including hormones, cofactors, anti-oxidants, etc. is routinely employed. On the other hand, traditional medicine is disease oriented, ie, practitioners prescribe medications to treat the symptoms of disease in patients presenting with complaints about their health. Rather than taking a whole body, physiological approach to therapy, AMM takes a segmented or body part, a pharmacological approach that is based in large part upon the response of tissues or cells to xenobiotics that are specifically designed and produced by pharmaceutical companies to relieve symptoms of disease. The philosophical difference between this traditional approach and the AAM approach is that the former presumes that symptomatic relief will restore whole body well-being. However, except perhaps for antibiotics, traditional drug therapies rarely if ever cure the underlying disease state. Thus, in the absence of therapies to oppose age-decline in homeostasis and as senescence proceeds, more and more drugs are used to suppress symptoms of increasing numbers of intrinsic diseases. This leads to the conundrum in which a pharmacopoeia of drugs with significant risk for malignant side effects and interactions are eventually needed to sustain life. Obviously, a proactive, holistic approach intended to delay onset or avoid development of age-related disease is more logical than a reactive, symptomatic approach. Eventually,

traditional medicine must embrace this philosophical change if it is to provide effective patient care in the future.

The problem with AAM serving as a model for medical philosophical evolution is that it was created by entrepreneurial businessmen responding to market opportunities rather than by those who are experienced in research and clinical management of aging issues. Furthermore, their efforts and successes were based almost exclusively upon the merits of a single study that was published in the *New England Journal of Medicine* in 1990 (Rudman et al 1990). The now famous paper authored by the late Daniel Rudman and colleagues showed that certain “youthful” qualities of form and function could be simulated in elderly men by administration of human growth hormone (hGH). These findings were sensationalized by the press in a number of exaggerated reports published in popular magazines and articles. For example, in October 1992, LIFE Magazine ran a cover page story entitled “Can we stop aging” in conjunction with a composite picture of a woman named Sally Woodbridge as she appeared in 1944 and 1992. The lead article of this issue was entitled, “The war on aging”, which included a dramatically symbolic photograph of one of Rudman’s elderly subjects, smiling youthfully while standing in a virgin forest with sunbeams falling on his muscled arms (Darrach 1998). Understanding the marketing significance of this display and the public demand for product upon which it was based, entrepreneurs immediately took the lead in commercializing hGH and founding an anti-aging movement. As if in a gold rush, sales of anti-aging nostrums and access to the “fountain of youth” rapidly became associated with AAM, tainting it in the minds of legitimate practitioners, who under other circumstances might have helped advance the field. Immediately following publication of Rudman’s paper, other respected researchers stated that the age-related decline in GH and other hormones could contribute to senescence in varying degrees and conversely that hormone replacement might have some benefit in preventing such maladaptive change (Corpas 1993). Sadly, these endorsements were subsequently withdrawn in light of the commercialization of AAM, despite the fact that at the time a National Institute on Aging existed for over two decades and a significant literature on aging and life extending interventions existed, albeit mostly in animal models. Compounding the problem was the fact that in contrast to their peers practicing traditional medicine, the growing number of AAM practitioners failed to collect outcomes data and to report their findings in medical journals. At the time, AAM organizations only published

magazines whose purpose seemed to be advertising rather than medical information exchange, so legitimate growth of the fledgling specialty was further hampered. This absence of a peer-reviewed, legitimate record of outcomes from AAM interventions in aging led to an outcry that an ongoing “experiment” was being conducted in human subjects without protection or benefit of competent oversight.

In response to these potentially destructive issues and recognizing that for the most part AAM practitioners are seeking evidence based approaches to age management, a nucleus of activists have been working over the past two years to create an alternative perspective on the field. The specific objectives of their efforts are to promote education, stimulate debate and information exchange, and contribute positively to the evolution of AAM as a legitimate medical specialty. As previously discussed (Walker 2006) central to this effort is a professional society that will function as any other non-profit group with a duly elected and rotating president, officers and board of directors. It will hold regular membership meetings and be devoted to education, support of research and service to its constituents. That group is the international Society for Applied Research in Aging (SARA; www.agesociety.org) which will be holding its second annual meeting on November 10–12, 2006 in Las Vegas, Nevada, USA. The meeting will be held in cooperation with the Age Management Medicine Group (AMMG; www.agemed.org), a respected professional organization whose goal is to provide education and information on the new sub-specialty of AMM to physicians and healthcare professionals through evidence-based continuing medical education conferences, workshops, seminars, publications and web media. So as to provide an interactive opportunity for AAM practitioners, the official SARA journal, *Clinical Interventions in Aging* will expand its format to include a section in which brief communications and comments on clinical issues can be submitted for editorial response as well as reply by the readership. Unlike the main body of the Journal, this interactive venue will not be subject to peer review because those sending submissions will get feedback in print directly from colleagues in support of or against their views. Hopefully, this opportunity will engender lively discussion on current topics between practitioners and also provide both within the peer-reviewed sections and without, a historical perspective on the evolution of legitimate, evidence-based interventions in aging. Through such cooperative efforts of caring professionals, anti-aging medicine, age-management medicine or whatever name one

chooses to use for describing therapies intended to sustain health, vitality, and good quality of life during aging will eventually take its lead place in guiding the evolution of medical philosophy and practice.

References

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