Academic Health Center
STRATEGIC ISSUES DOCUMENT

Mission - Vision - Values - Challenges

February 1997

F. Supporting Documents: A wide range of materials, including those referenced in this document, are available in the Provost's Office.

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A. Academic Health Center Mission

The mission of the Academic Health Center is to be a leader in the ethical, innovative, and efficient discovery and dissemination of knowledge to enhance the health and well being of Minnesota, the nation, and the world.

> As our state's only integrated academic health center, the AHC has unique, broad responsibility to advance health care and health promotion. We must provide the leadership and programs that will preserve and enrich the University's contribution to the greater community. We must sustain a commitment to excellence in promoting the health of the public, in educating health care providers throughout their careers, in advancing biomedical research, in advancing clinical care of patients, and in supporting the evolution of the health professions.

B. VISION FOR THE AHC

Education: Education is a principal mission of the AHC.

- We commit to continuing leadership for improvement and innovation in education.
- We will be responsive to the employer/health care market in our education programs.
- We will be responsive to our student's needs. We will provide high value in education.
- Our programs will capture the value of interdisciplinary and interprofessional education.
- Educational efforts by our faculty and staff will be rewarded.

Research: Research drives the advancement of all that we do. It is key to sustaining a competitive lead as an academic institution.

- We will have research programs that are focused, excellent, and are the leaders for the nation and the world.
- The AHC will commit resources for research investment and new program initiation.
- The AHC research infrastructure will effectively serve the needs of investigators and programs.
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We will provide conduits of access between investigators and external research constituencies that encourage basic and clinical research, technology transfer, and health outcomes and health systems improvements.

Clinical Service/Outreach: Clinical service/outreach is a critical faculty activity. It advances the professions, provides personal development, and is a major avenue of community interaction.

- Clinical service/outreach is the AHC in action in the communities we serve.

- Clinical service programs are a key component to our education and research programs.
- Clinical service will maintain a fiscal separation from other AHC components, and where possible, achieve financial self sufficiency.

Internal Operations and Processes: Efficient, effective, and responsive infrastructure and processes are essential to enabling the vision and achieving the mission

- We will develop an AHC-wide distributive model of infrastructure and support services.
- We will secure specialist expertise in key areas of management.
- We will seek community involvement in strategic issues: faculty consultative input, staff, students, constituencies.
- We will adopt a proactive communications strategy in support of our mission.
- We will encourage coordinated development efforts across the AHC.
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We will provide effective, user oriented support and management services: information technology, financial management, human resources, and facilities.

The AHC will accomplish this mission by being responsive to the educational, research, and service needs of the communities we serve. The AHC will determine these requirements through a broad-based participatory process involving external and internal advisors. As a result, the AHC will continue to develop innovative programs such as the Rural Health School, the Team Care Program, the Managed Care Institute, the Immunology Institute, the Cancer Center, and the Biomedical Engineering Institute. Through these and other innovative programs, the AHC will continue its long-standing tradition of excellence in education, research, and service, and maintain its leadership position among health care institutions.

The AHC commits to achieving this mission by providing the leadership for its professional and academic communities, by responding to the needs of the constituencies it serves, and by insisting on excellence in each of its mission programs: education, research, and clinical service/outreach.

C. BASIC VALUES

Fundamentally, the Academic Health Center exists to serve people. We serve many constituencies: students, practicing health professionals, communities, our state, nation, and world, the organizations that fund research and development, and our own internal community of faculty and staff. The future of the Academic Health Center lies with an efficient and effective institution that serves the needs of its constituents and provides leadership and support for its mission. To do so, the AHC as a whole must develop and articulate a common mission, develop a general vision for its future, and must share and demonstrate a set of core values that guide how it operates. These basic choices about who we are can then guide the development of goals and strategies and can chart a course for the AHC as it makes program priority and investment decisions.

The AHC, its academic units, and its people must be organized within an operating environment that is responsive and effective in bringing the mission and vision into practical reality. Establishing strategic directions within the AHC will necessarily depend on an integration and balance between individual leadership, creativity and initiative and organizational consultation and consensus. The tension between these two dynamics is desirable and on-going; as a community we need to recognize the value of both. Similarly, the AHC will be best served if it acknowledges a natural tension and need to preserve the identity and role of each profession while fostering cross collegiate integration and interaction.

Characteristics of these basic values in daily life include: mutual respect and understanding; openness of dialogue and communications; creativity and a nurturing environment; accountability; honesty and integrity; and concern and compassion.

D. THE CHALLENGES WE ARE FACING

In times that need significant changes, it is valuable to know what major forces affect the world within which we operate. There are five primary challenges facing the AHC, three relating to the changing world of health and health care, one tied to our changing financial situation, and one derived from our own operating processes.

1. The Patient Care Enterprise

Challenges facing academic health centers today
None of the nation's academic health centers is immune from the dramatic changes occurring in the health care marketplace. Shifts in focus from the provision of health care to the maintenance (and restoration) of health; from individual health status to population health status; from inpatient treatment to outpatient treatment; and from episodic, discontinuous care to long-term, continuous care are developing. These changes are largely supported by the public and have been fueled by marketplace forces. These changes are occurring at different rates in distinct regions of the country, but will eventually affect all areas. At minimum, these changes are challenges with which to deal, at worst, they represent a crisis for academic medicine. The patient care enterprise of AHCs is directly affected by these forces in two general areas: access to patients for education and research, and loss of clinical revenue to support education and research.

Access to patients
The general result of management in patient care has been to decrease inpatient care encounters and increase non-hospital patient care encounters. This has resulted from several forces including: decreased hospital admissions with decreased length of hospital stay; increased intensity of inpatient care; development of systems, technology and incentives to provide care in a non-hospital setting; a shift in emphasis of care from individual encounters to a population-based, community health focus; and a strong emphasis on the cost of care as the primary determinant of the value of the care provided.

For teaching hospitals, these trends have produced major challenges in access to patients for education and research. UMHC represents a case study for these effects. Over several years, UMHC census fell twice as fast as the rest of the community, and outpatient encounters increased only one-half as fast and have now begun to decrease (1). In large part, these trends result from the low UMHC market share (~5%); the provision of high intensity, high technology care at UMHC by a specialist/subspecialist faculty; an unwillingness of managed care to compensate for education and research overhead inherent in the UMHC cost structure; and our inability to identify, control, and limit the added cost of education and research while demonstrating the value it adds to the patient care process.

With 880 medical students, 1360 medical residents and fellows, and students of pharmacy, nursing, and dentistry, access to patients for care encounters and continuity of care education while maintaining educational quality and relevance is a critical problem. In a similar way, with over 1100 active clinical research protocols, access to patients for participation in research for new therapeutics and care technology has become progressively limited.

These effects also affect faculty effort. Upwards of 20% of faculty clinical effort is now expended at non-UMHC sites in order to maintain clinical skills and productivity. The effects on education and research productivity are now just being realized and quantified.

Threatened revenues

Revenues from clinical services by AHC personnel and facilities represent 48% of the nation's AHCs' revenues (1a). Whereas much of this revenue is used to directly support clinical activities per se, approximately 28 cents of each clinical dollar earned is used to support (cross-subsidize) teaching and research activities (2). As these clinical revenues decrease or are at risk of shrinking, the education and research missions as well as the clinical service mission of AHCs are endangered. Revenues from clinical service have decreased or are at risk of decreasing for several reasons. All health care institutions face unrelenting pressure to contain costs (3). An increased proportion of health care is being delivered through managed care plans. Managed care is a system of health care delivery that "manages" the cost and quality of health care through a variety of strategies. Characteristics of managed care are limitations of access to specialist and subspecialist care; contractual arrangements with a limited number of providers who accept discounted payment or some sort of risk (through capitation) and agree to practice according to certain cost and utilization control measures designed by the plan; and limitations of benefits if care is provided by non-contracted providers. Managed care organizations use multiple cost control measures including the use of primary care physicians as gatekeepers to restrict referrals to specialists and the use of expensive diagnostic tests and procedures, pre-admission authorization, concurrent and retrospective review, same day surgery, large volume case management, mandatory drug formularies, and mandatory clinical practice guidelines. Managed care has beneficially forced all components of the health care delivery system to examine their activities and to become more efficient. However, in many markets the savings accrued from more efficient health care delivery have gone to for-profit organizations rather than to AHCs (4,5). The same has likewise been so in not-for-profit settings such as in Minnesota and California.

Costs of patient care are higher in teaching hospitals. A study performed by the Association of American Medical Colleges found that the average cost per admission was approximately 36% greater in teaching hospitals (6). Teaching hospitals have a greater burden for caring for the uninsured and underinsured than do their non-teaching hospital counterparts (7). AHCs also treat sicker patients and those requiring extensive support services (7). Medical education also predisposes to "inefficient" use of time since faculty must teach while they provide care and because of inefficient use of resources by inexperienced trainees. These imbalances result in higher costs and lower "profits" for AHCs. Similar effects are also occurring in community teaching settings. Students and trainees adversely affect the patient through-put in clinics and other non-hospital care settings. This pro-bono subsidy of education is now being questioned by managed care organizations and by the physicians who work in these settings as there are adverse effects on efficiency benchmarks and compensation.

Sources of financial support for AHC clinical activities in addition to direct receipts for care are also tenuous. There is a movement toward retrenchment in public investment in clinical training. This flagging interest in clinical training reflects the attitudes of Congress, state legislatures, and the marketplace. Medicare has traditionally been the primary source of funding for hospital-based direct and indirect educational expenses. Not only is Medicare funding for direct patient care likely to be reduced, but supplements for direct and indirect medical education are also being decreased and face severe reductions in the future. In addition, Medicare payments for non-hospital education expenses have not kept pace with the change in health care delivery practice and do not apply to other health professionals such as nurses and pharmacists.

AHCs are not the only health care institutions to face these challenging market forces. If they were able to reduce their costs, could they not be competitive in the health care market? The answer is that, of course, they might be able to compete. However, AHCs must still define their positioning and marketing strategies. Technology and specialty care have moved out of AHCs into the community as AHCs have trained an abundance of well-trained specialists and subspecialists with whom AHC clinicians now compete for patients. Despite the belief that AHCs deliver an unrivaled form of health care, the patient mix at AHCs is comprised of only 5% or fewer truly unique types of cases and only 15-25% unusually challenging or complex patients (8). There is often little else to differentiate AHCs from nearby community hospitals that also provide tertiary care and some forms of quaternary care.

Structural barriers

The rigors of the health care market demand a flexible organization that can respond rapidly to market alterations. In general, academic medical centers are complex, inefficient organizations that are often resistant to change (9). The organization of AHCs is not conducive to making decisions rapidly. There is a need for a more responsive governance structure rather than the quasi-independent organization of departments (9). Nevertheless, tenure and representational governance must be respected while accommodating the new environment.

Solutions available to AHCs

Princeton University economist Uwe Reinhardt predicts that "not all AHCs will survive into the next century," that most will be "vastly reengineered," that they will be "trimmed down, smaller on average," and be "more clearly decomposed into their three distinct product lines: teaching, research, and patient care" (10). AHCs can either grow or retrench depending upon their particular market, their own financial strength, and their willingness to respond to the challenges.

Strategies for AHCs to gain market share include:
1) Develop own integrated network of primary care providers, or
2) Consolidate (partner or merge with competitors).

The first option requires considerable capital, major cultural change within the AHC system, the acquisition of management skills not well-represented at all AHCs, and involves considerable financial and programmatic risk (8). Developing a large network of one's own entails programmatic risk if aggressively managed care is not seen as (or cannot be made) compatible with institutional culture, mission and values (8). The second option entails the same risks plus the additional risk of potential loss of control not only of the clinical enterprise, but the education and research mission.

Other strategies for AHCs include:
3) Become a smaller (super)-tertiary care center (or alternatively a community-focused generalist institution providing secondary and some tertiary care), or
4) Divest patient care entities and focus on education and research missions; meet clinical needs through affiliation agreements.

The third option most closely approximates maintaining the status quo. In many ways this is the least attractive option because it provides the least flexibility to meet future challenges and does not adequately address the challenges to the education and research missions of AHCs. With this approach the AHC still remains a captive of the market rather than a major force in the market. It also requires selective contracting and very efficient risk and contract management. Most models of such an approach also predict financial failure in the short term. The basis for this failure lies in the high fixed cost structure of quaternary and upper tertiary care and the NIH-type research institution. It would also require severe "down-sizing" of programs and personnel.

The fourth option is a very different approach. It requires the AHC to refocus its energy and physical resources on its unique missions of education and

research. Implementation would be difficult and such a response represents a challenge to institutional and faculty ego (8). Loss of direct control over patient care facilities could lead to difficulties in meeting the clinical academic mission. Other major issues also arise that include: quality control of education, performance of clinical research, faculty outsourcing, loss of research productivity, funding, and curriculum designed to meet primarily business interests and endpoints. On the other hand, such a decision could free the AHC to develop creative, new approaches to providing clinical training sites, and could enhance the institution's ability to accommodate the shifts in focus from the provision of health care to the maintenance (and restoration) of health; from individual health status to population health status; from inpatient treatment to outpatient treatment; and from episodic, discontinuous care to long-term, continuous care.

Health care in Minnesota

Minnesota is a sophisticated medical market in an advanced stage of managed care competition. The University HealthSystem Consortium hired the consulting firm American Practice Management (APM) to survey and summarize the evolution of health care markets across the country. APM defined four market stages characterized by progressively greater degrees of provider network formation, delivery system consolidation, penetrance of capitated payment systems, and vertical integration (11). Minneapolis/St. Paul is a Stage IV market, the most advanced stage currently observed. Los Angeles, San Diego and Worcester, Massachusetts are also Stage IV markets. This suggests that relationships between physicians, hospitals, and payers is different in the Twin Cities from that in less developed markets. It also means that the future is unpredictable because there are no precedents to guide decision making.

In Minnesota, HMO (an HMO or health maintenance organization is a prepaid, integrated health care delivery system that is the most "managed" variant of managed care) enrollment varies by region. In the Twin Cities approximately 40% of the population receives its health care from an HMO (12). On the other hand, in the northwest region of the state only 2% of the population is enrolled in an HMO and in the central portion of the state about 10%. On average, about 25% of the state's residents are enrolled in HMOs. When one considers any form of managed care (see above definition), 75-90% of the population in Minnesota is enrolled in a managed care plan (12).

Consolidation of providers has also become more prominent in Minnesota. These include formation of large physician networks (clinics without walls, independent practice associations, large multispecialty groups) and integrated provider networks joining hospitals, clinics, physicians and other health care professionals. The Fairview system is an example of the latter. Formation of these networks was stimulated by the MinnesotaCare legislation in 1993 and 1994 and by market forces independent of legislative mandate.

Minnesota has an excess capacity of hospital beds (a discussion of the health professional workforce follows). In 1993, the average occupancy rate of Twin Cities hospitals was 65%. In northwestern Minnesota it was only 34%, in southwestern Minnesota it was 29%, and in central Minnesota it was 45% (12). Between 1988 and 1993, 13 of 148 hospitals in Minnesota ceased operation and the number of hospital beds decreased by 8.5%. In August, 1996, HealthEast announced plans to close HealthEast Midway Hospital and to close or relocate HealthEast St. Joseph's Hospital, two hospitals in St. Paul (13). Most predictions indicate a contraction of 1000 to 2000 hospital beds in the Twin Cities by the 21st century.

Health care in the Twin Cities Metropolitan Area

The Twin Cities health care market has become dominated by a small number of integrated delivery systems (IDS), organizations consolidating insurer, hospitals, and health care professionals. The major IDS are Allina, Health Partners, and Fairview Health Systems (part owner of Preferred One Health Plan). These three organizations control approximately 75 percent of the covered lives in Minnesota. Major insurers in addition to the former three organizations are Blue Cross Blue Shield of Minnesota, and Medicare/Medicaid. Buyers Health Care Action Group is a self-insured cooperative that in many aspects functions similar to an insurer for its members, a number of large corporations.

Enrollees of the plans offered by these IDS do not always receive care within the IDS, but it is clearly within the organization's and consumer's best interest to provide/receive the most coordinated care possible. It is also financially advantageous for an IDS to use its own hospitals if all other factors are equal. Therefore, it is important to know which hospital and major physician groups or networks are part of an IDS. Allina owns United, Unity/Mercy, and Abbott Northwestern Hospitals in the Twin Cities. HealthPartners owns Ramsey Medical Center. Fairview owns Fairview Riverside, Southdale, Ridges, and Northland Hospitals and will be acquiring University of Minnesota Hospital in January, 1997. Other major hospitals that are independently owned, although most have varying types of affiliations with insurers, are Hennepin County Medical Center, North Memorial Medical Center, Methodist Hospital (part of HealthSystem Minnesota), HealthEast (St. Joseph's, St. John's, Midway and Bethesda Lutheran Hospitals), Children's Health Care (Children's-St. Paul, Children's-Minneapolis, Children's-West), the Veterans Affairs Medical Center, and the University of Minnesota Hospital and Clinic.

Health care professionals are part of integrated provider networks and may be either salaried or affiliated through a contractual agreement, the latter usually a non-exclusive arrangement. The Park Nicollet Clinic, a multispecialty group, is part of HealthSystem Minnesota. Fairview Health Systems owns clinics (Oxboro, Family Medical Clinics, and others) and is also affiliated with Fairview Physician Associates. Similarly, the University of Minnesota Health System owns five clinics in the metropolitan area (Phalen Clinic, Staub Clinic, Columbia Heights Clinic, Community-University Health Care Center, and Interstate Medical Center) and is very closely affiliated with University of Minnesota Clinical Associates (UMCA). Aspen Medical Group is a large multispecialty group that has affiliations with several insurers.

Because of this extraordinary degree of consolidation taking place in the Twin Cities health care market, providers (hospitals and health care professionals) must have either strong ties with large insurers or must have a unique services and abilities that will guarantee a steady flow of patients. In 1995-96 there were 16,000 admissions and 415,000 outpatient visits to University of Minnesota Hospital and Clinic. Forty-nine percent of patients hospitalized at the University of Minnesota Hospital are from the Twin Cities metropolitan area, 30 % from greater Minnesota, and 21 % from other states (14). Thus, University of Minnesota Hospital captures about 3 % of the Twin Cities market and a larger share (19 %) of the greater Minnesota market.

A recent market research project by the National Research Corporation sampled 2564 households in Minnesota (15). Of 17 Minnesota hospitals evaluated, University of Minnesota Hospital ranked second in perceived quality of cancer treatment and third in heart care. Overall, University Hospital ranked 7th in perceived overall quality and 5th in image and reputation. As the preferred hospital, University Hospital ranked 16th. Although this type of survey reflects, in part, patients' previous experience with a hospital system (and University Hospital has only a 5% share of the Minnesota health market), it does suggest image and reputation problems that adversely affect ability to attract patients. A marketing analysis by GreenHouse Communications for University Hospital came to similar conclusions (14). That group found that University of Minnesota Health System (UMHS) had highest consumer preferences by product line, yet the Mayo Clinic was consistently preferred to UMHS by specialty preference and as a tertiary care provider. Strengths of UMHS were felt to be its greater Minnesota and out-of-state market share, its medical outreach activities, and its research and education capabilities. Weaknesses of UMHS were felt to be a lack of primary care physicians, low market share in the Twin Cities, poor image in the Twin Cities medical community, independence from large health systems and plans, small financial surpluses, and an inconvenient location. The few unique services offered by UMHS are treatment of cystic fibrosis,

childhood cancers, and organ transplants. The highly ranked oncology and cardiology services are not unique.

Financially, UMHS has struggled as have many other health care institutions in Stage IV markets. Compared with fiscal year 1994-95, in the year just ended (1995-96) admissions decreased by 6.7% and outpatient visits increased by only 0.8%. In fiscal year 1994-1995 there were net losses from operations of approximately $ 2.3 million. These losses were offset by income from investments. In 1995-96 net revenue from operations was only $396,000 and investment income was less than half of the previous year (16). Performance projections for 1996-97 indicate an approximately $8 million loss from operations in spite of major personnel downsizing. Projections for the future indicate a $100-150 million cumulative loss to the year 2000. It is also of note that major portions of UMHC operating revenue and physician income were used to support the education and research functions of the Medical School. In 1995-1996, approximately $52 million of UMHC expenses were to the Medical School, with a net expensing of $25 million. For the physicians, a net after salaries and practice expenses, of approximately $25 million were donated to the Medical School to support its education and research functions.

Competition has also affected utilization at other AHC health care facilities. The Dental Clinics had a 3 % decrease in patient visits in 1995 and no change in 1996 (17). The Veterinary Teaching Hospital census has increased by less than 3 % per year since 1994 (18).

Solutions

In broad outline, several initiatives will be needed to address this issue.

1) Formation of a single group practice (from 18 separate practice groups) for physicians that will:

- permit a more efficient business operation of the practice group
- facilitate more rapid and effective responses to the marketplace
- provide more efficient patient care
- allow payment of salaries for clinical work that are competitive with the marketplace

2) The AHC must make a transition over the next three years to a position of much less dependency on clinical income to support the education and research mission. The AHC must develop alternative sources of funding for education and research. This transition necessitates specific accounting of revenue streams and expenses for clinical service/outreach, education, and research and a compensation system that accommodates work in all three areas.

3) Completing the relationship with Fairview Health System while maintaining authority over education and research and preserving the public mission of the health professional schools. The relationship with Fairview will:

- provide a partner with an interest in the education and research mission
- increase access to patients at this hospital site and throughout the Fairview system
- maintain a flagship, university hospital on site
- provide new practice and programmatic opportunities for the faculty of many AHC schools: medicine, nursing, pharmacy, dentistry, public health
- help to stabilize one portion of the financial base of the AHC and its schools

The alternative to the Fairview relationship is to close the hospital. This event would be expensive, critically affect education and research programs in a number of AHC schools, and critically jeopardize faculty employment.

4) Establish new relationships with the community to support education and research. An example of this new relationship is the agreement between the AHC and HealthPartners and its Education Institute.

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2. The Health Professional Workforce

Current trends in health care include shifts in focus from the provision of health care to the maintenance of health; from individual health status to population health status; from inpatient treatment to outpatient treatment; and from episodic, discontinuous care to long-term, continuous care. This change in paradigm along with unrelenting pressure to reduce costs has resulted in an increased role for non-physician health professionals. Additionally, these forces necessitate a team approach to health care delivery, involving shared roles by nurses, nurse specialists and nurse practitioners, physician assistants, clinical pharmacists, physicians, and others. The educational implications are that we must consider what types of health care professionals to train, what quantities of health care professionals to train, and how we go about training our students.

National Workforce Requirements

Each analysis of physician manpower requirements has come to qualitatively similar conclusions, although there are quantitative differences among the studies. In general, there is an overabundance of specialist physicians, a shortage of primary care physicians, and a geographic maldistribution of physicians. Most forecasts of physician workforce requirements have assumed that in the future an increased portion of the population will receive their care from integrated managed care organizations (approximately 50%) and that staffing requirements can be extrapolated from data obtained from currently operating HMOs. Using these assumptions, Weiner suggested that if the number of practicing physicians remains stable, by the year 2000 there will be a surplus of 165,000 primary care physicians and an excess supply of specialists of 60% (19). The Pew Health Professionals Commission predicted a surplus of 100,000 to 150,000 physicians within a decade (20). Whitcomb took a different approach to analyzing workforce needs. He compared physician-to-population ratios in the United States with those in Canada, England and Germany (21). He found that our workforce is larger than that of England, similar to that of Germany, and smaller than that of Canada. When one adjusts for differences in the use of non-physician providers and the amount of primary care delivered by specialists, it was concluded that the current size of the physician workforce in the U.S. is adequate to meet population needs. The Council on Graduate Medical Education estimates that requirements will be 85-105 specialists and 60-80 generalists per 100,000 population (22). Predictions of greater than 200 physicians in patient care per 100,000 population in the year 2000 suggest that the supply will surpass these needs, even if U.S. medical graduates enter primary care fields in increasing proportions.

Workforce needs for other health professionals show similar problems. The Pew Health Professionals Commission predicted a surplus of 200,000 to 300,000 nurses as hospitals close, and 40,000 pharmacists as drug dispensing systems are automated (20). Studies of the nursing workforce suggest that the aggregate supply of nurses is adequate and will soon be excessive. However, there may actually be a surplus of nurses trained in 2-year programs but a shortage of baccalaureate and graduate level nurses (23). New needs in nursing professional are rising from managed health care (24). Nursing schools must decrease total output and change the focus of their training efforts. Work force requirements for other non-physician providers, such as physician assistants and nurse practitioners, are imprecise but must be considered in any overall strategy to meet the health needs of the nation.

The supply of veterinarians is predicted to exceed demand through the year 2000 (25). The supply of dentists is increasing by about 1/2 % per year, roughly the same rate of growth of the U.S. population, but is predicted to decrease after the year 2018 (26). On the other hand, the U.S. Public Health Service has reported shortages of epidemiologists, biostatisticians, environmental health specialists, and public health nurses and physicians (27).

Minnesota Workforce Requirements

Estimates of Minnesota's physician workforce requirements correspondingly forecast an excess of physicians, particularly specialists, that will worsen in the next 10 to 15 years (28). The supply of dentists is generally adequate, although there may be some problems with geographical distribution (29). For example, 43 % of practices in the northwest portion of the state were unable to meet all patient requests for care, whereas only 17 % of Minneapolis dental practices exceeded capacity (29).

Educational Challenges

Cost and length of training
The best available example here is with physicians. Currently, from entrance to medical school to licensure with care privileges takes eight years, requires an investment of $800,000, and our medical students graduate with $75,000 of debt. These costs of professional education are reflected nationally as well (30). They are then going into a market where the ability to repay the debt is substantially reduced. Similar scales of costs and student debt exist across the AHC for other health care professionals.

Relevance of training to the marketplace
Constituent surveys, student surveys, and the literature also make it clear that we are neither meeting the needs of the current health system nor providing leadership for its development into the 21st century.

Locus of training--Our current educational paradigm relies heavily on a hospital focus for care encounters with a heavy reliance on laboratory testing and inpatient services. Health systems are focusing on integrated patient care that is largely outpatient oriented.

Curriculum deficiencies--Virtually all constituents identify educational needs for all health professionals in information technology, basic business skills, and what might be called the structure of today's delivery systems. Health systems are placing great emphasis on information systems for medical care, patient education, performance evaluation and outcomes management. They are also employing distance technology for patient care and medical education. Providers are also being put at increasing financial risk by contracting methodologies designed to decrease costs and incentivize management objectives. There is increasing risk assumed by providers for customer satisfaction, care process delivery efficiencies, and medical outcomes performance benchmarks. Modern health care also demands knowledge and skills in such areas as epidemiology, population-based medicine, continuous quality improvement

methodology, evidenced-based medicine, outcomes assessment and management, and a basic understanding of health system function and process.

Team care--Health systems are currently implementing this concept wherein teams of health care professionals provide care to populations, communities, and individuals. In a similar manner, specialists are being employed to increase the knowledge base of generalists. Our current AHC curriculums do not adequately address these issues. The opportunity for developing team care programs is evident. There are currently 32 clinical training sites where clinical teaching activity by more than one AHC school or program occurs. Nine sites are concurrently employed by students and faculty from four or more AHC schools or programs.

Leadership in the marketplace
Most constituents remark that the medical professions are rapidly losing their leadership position in health care delivery. Much of this is related to the commentary presented previously in this section. In addition, there is a need in the market and in the AHC for the health care professional who is trained in administration, systems process, management and finance who can work to rebalance the value equation from its current emphasis on cost and business considerations to one where the quality side gains greater influence.

Solutions

There are a number of efforts currently underway in individual schools. Examples would include: development of a multidisciplinary National Rural Health Training School focused in Duluth; task forces focusing on primary care and a managed care curriculum; and the clinical pharmacy training program. A few interschool/AHC efforts have also begun, such as the AHC Team Care Taskforce and the community-based development of the Schools of Nursing and Medicine. The Medical School is also implementing a program to reduce medical student and GME specialists and subspecialist admissions over the next few years.

If we are to react to the marketplace and lead it, however, we need to leverage the resources of the AHC schools in an effective, coordinated and integrated manner. Major curriculum redesign and restructuring needs to be done on a short time-line. Considerations in this undertaking need to include: core courses for all health professions; specialty needs; professional requirements; rural vs. urban vs. academic practice; multidisciplinary, interschool teaching; development of master teachers; reducing the time and cost of education; quality control within the AHC and in the community; non-hospital focus; community and population based; and others.

These efforts will be major undertakings requiring resources, use of information systems and distance technology; recognition compensation and rewards for teaching--including promotions and tenure; greater use of community-based education and training, greater input of the community into curriculum and programs; changes in faculty, staff and student roles; and probably reductions in the faculty and staff workforce. AHC coordination will be appropriate in many areas, and AHC infrastructural services will need to be efficient and effective, e.g., HR, IT, space, budgeting. There will be a need for setting goals and priorities at the AHC level. Community-based advisory teams will also be essential to the process.

Funding for education is becoming an acute problem. The primary sources of funding have been Medicare and clinical work. Both of these sources are declining and are predicted to do so in the future. The Fairview relationship will only stabilize one source of funding. Clearly, this is a public policy issue and will need to ultimately be solved at that level. Proposals at the federal level, e.g., that of Senator Moynihan, have not been well-received to date at the State level, MERC (Medical Education and Research Cost Advisory Task Force) as part of the Department of Health was created in the 1996 legislative session. Some funding is expected in the 1997 session. This council will also begin to address workforce needs for the State. Health systems are beginning to recognize the need for medical education funding and that they and the AHC have a mutual dependency in this area. HealthPartners and the AHC recently signed an agreement for medical education that, together with the Fairview relationship, begins to establish a public utility model for health professional education with the AHC Schools at its hub. Other health systems appear to becoming interested in this model, providing a potential for a new mechanism of funding as the model evolves. AHC leadership is an essential component of achieving this goal.

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3. Competition for our Education and Research Programs

Education

The AHC does not have a monopoly on the provision of medical education. While this has always been true to a greater or lesser extent (nursing, Mayo Medical School, continuing education, other states, etc.) the dimensions and dynamics of education are changing rapidly. If it ever was, it no longer is true that somehow the supply of students (defined broadly) have no choice but to attend the University of Minnesota. Medical education is not the sole purview of the University. Even in the Twin Cities, other education institutions are competing with the university for health care students. (e.g., St. Catherine, St. Thomas; 31). The shift in education to a consumer responsive structure is not limited to Minnesota. Educational institutions across the U.S. are realizing that they need to tailor their educational offerings to the career needs of potential students and to educate people in a way that allows them to join a new and changing health care market in a mode of life-long learning.

The information collection process of strategic planning process came to the following broad conclusions about our education programs and the challenges it faces:

a) student requirements for our educational products are shifting dramatically
b) our curricular mix (quantity, cost, and quality) is significantly mismatched with our customers' requirements
c) the responsibility for funding our students' education has increasingly shifted away from general state revenue towards the students themselves
d) students and marketplace employers are demanding more "control" over education (32)

At present, the University of Minnesota holds an enviable place in national rankings of its health care education programs. The challenge is to maintain those positions or to enhance them in the face of stiff competition from other schools. *U.S. News and World Report*'s ranking of schools showed (33):

School of Medicine at Duluth:
    Rural Medicine: 2nd
    Primary Care Schools: 11th
College of Pharmacy: 3rd
School of Public Health
    Masters in Health Services Administration: 5th
    Masters of Public Health): 6th
School of Dentistry: 7th
College of Veterinary Medicine: 8th (as ranked by Gourman's (34)
School of Nursing: Masters in Nursing: 21st
Medical School Twin Cities: not ranked in the top 25

Each of the major managed health care systems in Minnesota either has or is in the process of establishing its own internal structure (program, institute, etc.) for research and education. For examples, consider the Group Health Foundation, ICSI, Health Partners Institute, among others. Health systems are developing and implementing their own journals, continuing medical education and outreach programs. They are actively piloting distance technology for clinical care, communications, and education. They are developing their own community based education programs. There is increasing pressure on the professional schools to outsource more education and training directly into the systems without academic input or oversight. This raises concerns about educational content, quality and the impartiality of information. Distance education technologies will certainly change the way clinical training is delivered, and will break down geographic protections for local medical educational institutions (35, 36, 37).

In medical continuing education (arguably the largest market for health professional education and the most affluent one) there is growing competition from biomedical and pharmaceutical companies, medical specialty organizations, for-profit education, and even from University faculty led organizations to attract the practitioner. The market is national and demanding. The advent of distance education, the internet, world-wide web, and CD-ROM technology will further erode continuing education offered in the traditional, one profession group focused, on-site didactic mode. Similarly, public education efforts will look to a broader array of providers and vehicles. The AHC must re-organize its outreach programs to capture a broader and more diverse audience. If it does not, its continuing education and outreach programs may find themselves without a constituency (38). The AHC risks losing an important component of our service (and therefore justification to the state) if we let medical continuing education slip away from us.

Research

Similarly, our research efforts face an intense and broadening base of competition. Viewed broadly in the U.S., the number of organizations competing for federal research dollars is increasing and the success rate of grant applications in general is declining with the added competition. While the University of Minnesota has thus far held its own in research funding, to remain competitive we must constantly improve our capabilities and invest in research and its supporting infrastructure (39,40). The loss of clinical revenue/profits to subsidize research will have a negative impact on our ability to fund and develop research. Within the AHC, tighter budgets will place an increasing burden on our ability to provide seed money, general research infrastructure support, bridging support, and faculty and staff salaries to support research. Other organizations, again notably managed health care organizations, are entering the research arena as new competition (41), particularly in the areas of outcomes research and health systems research.

Conversations with external funders during the strategic planning process made it clear that some of our external research funders think that working with the university can be difficult. They feel that the university's bureaucracy is particularly cumbersome. The study of the AHC and its research environment concluded:

a) growth in funding sources for health science research has continued to decline, while research costs have continued to increase
b) competition for health sciences research funding has continued to intensify
c) successfully competing for scarce research funding requires a reputation for research excellence
d) establishing research focus and interdisciplinary collaboration are the keys to achieving research excellence (42)

Competition in Minnesota is increasingly coming from the health systems themselves and from other educational institutions in the state. Managed health care systems are recognizing the value in the data from their internal patient care enterprises, both as a way to distinguish themselves in the market (43) and as a valuable research resource. It can no longer be assumed that Academic Health Centers have a lock on access to patient encounters and the basic resource needed for clinical and outcomes research. In veterinary medicine, a two year old, national, corporate small animal health care provider now sees 10,000 small animal cases per week and collects the data in standardized formats in a fully integrated networked database. Most veterinary colleges see fewer than 10,000 small animal cases per year. It is by no means clear that health care systems, national pharmacy chains, dental insurers, or veterinary corporations will

see it as in their best interests to provide access to their patients or to their data systems to academicians.

There are increasing concerns about our ability to finance our graduate training programs. While graduate students are key to manpower needs in on-going research, at the same time doubt is being expressed about whether there will be a continuing market for the graduates of our advanced research degree programs (44). Indeed, most graduates are now employed by non-University employers. Graduate students and their future employers are also expressing a greater need for curriculum that includes education in information technology, basic business skills, and basic medical knowledge. More and more of the nation's graduate students are not U.S. citizens, raising questions of where financial support for these positions should originate. Likewise, an increasing proportion of graduate and health professionals are leaving the State, raising the question of who is responsible for the costs they add to the system. Our graduate programs are themselves facing competition for the best students and national rankings of some programs are declining (45, 46).

Solutions

There is increasing competition from many sources for both research and education programs offered by the academic health centers. These competitors are not just other Academic Health Centers or universities, but increasingly are health care providers, corporations, not-for profit foundations, and others. In order to remain competitive in a market with tightening resources and increased numbers of competitors, our AHC must develop effective and efficient means to respond to a changing marketplace and greater demands from our "customers". This will proceed on several levels:

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1) strategic investments to enhance the excellence of programs so that they are at the competitive forefront,

2) improved operational processes that allow us to accomplish our primary missions with a minimum of impediments and administrative overhead,

3) curriculum redesign and restructuring as discussed in the previous section,

4) major investments in information systems education and training,

5) the finalization and implementation of the AHC strategic plan currently under consultative development, and

6) the evolving reorganization of the biologic sciences.

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4. Finance Challenge

Background and Status

The AHC faces several significant challenges that relate to our financial position and to our future (47). We can no longer depend on the profits from clinical activities to subsidize education and research. In real dollar terms, the amount of money we receive from the state is diminishing. The governor and the legislature are committed to assuring that the money they invest in the University are effectively spent and are impatient with the pace of change and responsiveness to their concerns (48). While we hope to be convincing of the value of the AHC to the citizens and economy of Minnesota, we must be prepared to manage our affairs without large infusions of additional revenues from the state (49). While the University of Minnesota continues to hold its own in competing for research dollars in medicine (50), competition from other research entities and an overall tightening of research funding will demand

that we become more efficient in conducting sponsored research. There is significant potential that government sponsored graduate medical education funding will be reduced. The Academic Health Center must plan proactively to meet these challenges. The AHC must develop the operating and fiscal flexibility it will require to meet a changing economic environment.

The University of Minnesota Academic Health Center is not unique in the challenges to be faced. Support for medical schools across the U.S. over the last three decades has grown dramatically and the total number of faculty in medical schools has grown similarly (51). The most significant growth has been in grants and contracts (and indirect cost recovery) and in clinical income (hospital reimbursement and faculty practice revenues). These are precisely the areas that are now declining, the first as a result of changes in federal funding (actual or likely) and the second due to the impact of managed care on AHC hospital populations and income (52, 53, 54). The loss of clinical revenues is most pronounced in regions where managed care has become a significant factor in the health care market. Minnesota leads the nation in the proportion of all health care that is provided through one version or another of managed care (over 90% of the hospitals and 90% of population) (55).

Over the same three decades, the number of U.S. medical schools increased slightly (mostly during the 1970s) and the total number of medical students rose in parallel. In contrast, the number of faculty members has increased very significantly and linearly since the early 1960s, fueled by the growing research and clinical funding base. The overwhelming majority of the growth in faculty numbers has been in clinical faculty (51). To the extent that these faculty are tenured and unable to support their own salaries from clinical revenue, serious pressures are brought to bear on the general operating budgets of AHCs. There will be continued pressure against providing adequate faculty raises, already an issue for maintaining the competitiveness of the AHC (56,57).

As with all Academic Health Centers, there has been major growth in the non-faculty categories of human resources such that total human resources constitute the major category of expenses in the AHC and all its schools.

For fiscal year 1994-95, the AHC reported a net operating surplus of $11,043,000 (58). This number is misleading, however. The $11,043,000 is made of a $14,605,000 surplus in restricted accounts (principally research dollars committed to projects, but not yet spent), and a $3,562,000 deficit in state supported Operating and Maintenance funds and other non-restricted funds. In 1995-96 the AHC posted a net loss of over 1.8 million dollars.

Financial projections for the next several years for the AHC are fraught with uncertainties. Our financial position may be dramatically affected by the Fairview merger and performance of the hospital, by Federal legislation for graduate medical education, and by the state legislature's funding support. Projected fiscal status in a scenario that extends the general status quo trends (except for hospital revenues) and that seems to be a reasonable possibility shows the AHC in significant operating deficit for each of the next three fiscal years and of continuing to use its reserves to support its operating deficits. These trends are more or less true for all AHC schools as well as the AHC as a whole. If this worst-case scenario were to play out as modeled, the AHC will have expended its reserves by the end of fiscal year 1997/1998 and could be more than sixty million dollars in deficit be the end of the 1998/1999 fiscal year (three years from now) (59). Responsibility Center Management does not offer much hope of correcting these problems and may make them worse as other costs, such as space charges, become shifted into each center. The inadequacies of current education space and the need for facilities renewal will also accentuate these problems. Obviously, this fiscal future cannot be accepted.

Solutions

The Academic Health Center is not a business, but failing to operate the AHC in a business-like fashion will place our institution at risk. While it is not the primary goal of the AHC to make money, finances are a driving force in our decisions and place major constraints on our choices. Without a strong financial position, we face the decay of existing programs, the deterioration of our human resource base, and the stillbirth of promising new ventures. We must attend to financial concerns. We must introduce fiscal incentives into our operations. The current financial challenges we face will not be easily met. We must seek new sources of funding to support our key programs, to strive for operational savings wherever we can, and to expand the efficiency of the service we provide to our constituencies, both external and internal.

Several simultaneous initiatives will be needed to address the fiscal challenges. First, we must seek to capture whatever efficiencies in operations are available across the AHC. In many cases, this will involve moving the general oversight of the function centrally, while retaining operating service delivery at the local level (distributed management). We must look across the colleges in the AHC and seek synergies in curriculum, research, and clinical activities that can spread overhead costs, reduce redundancies, and leverage expertise as widely as possible. We must adopt technologies that improve our efficiency, effectiveness, and productivity. Our information systems must tell us what our real costs are so that we can make informed decisions about priorities and strategic initiatives.

The AHC must seek new or expanded sources of revenue from education, research, and clinical service. We must make our case to the state that we are an investment in Minnesota's future; an investment that pays large returns to the state's health and economy. We must make strategic investments in new technologies that have the potential for commercialization and must make our technology transfer process more effective and attractive to the external market. We must enhance our fund raising and development efforts.

Solving these problems will result long term in fewer employees in the AHC, both faculty and staff. It will also require reorganization of administrative and management functions. There will be change. We will do this together. We will develop programs in the AHC that will support our employees as they work to make the necessary changes. We will emerge from this process of redesign as one of the leading academic health centers in the United States and beyond.

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5. Current System Structure and Function

The AHC has numerous operating system and organizational structural barriers to the efficient delivery of education and clinical services and the performance of research. Needs, difficulties, or issues that are common to more than one school or college are identified below.

The AHC operating expenses are outpacing its sources of revenue. Its management system is costly, burdensome, unresponsive, and ineffective. Reporting relationships are often confused, ineffective, inefficient, and duplicative. Many administrative activities are duplicated at the school and department level. At the same time centralized (school-wide) administrative support structures (e.g., human resources, finance, facilities) are inadequate. In many schools there is reliance on a limited number of staff in the Dean's Office to perform a wide variety of administrative tasks and often there are "non-specialists" performing specialized work. There is a lack of adequate information systems for financial management that has required widespread use of locally designed shadow accounting systems. There is also a critical lack of adequate computer support services, student access to state-of-the-art computer facilities, and funds for replacement of outdated computer equipment.

The AHC education programs are limited in their effectiveness by inertia regarding curriculum revision, a lack of interdisciplinary coordination in educational programs, and a lack of adequate classroom facilities (quality and access). Education efforts are further hampered by a difficulty in developing, evaluating and maintaining clinical sites in adequate numbers and a lack of interdisciplinary use and development of sites without centralized coordination.

AHC research efforts are impeded by a need for capital investment in major equipment as well as routine equipment maintenance and repairs. Grant administrative and support systems are sometimes unresponsive to the needs of researchers and sponsors. There is a need for a rational and fair procedure for allocating and reallocating laboratory space and a mechanism to promote optimal use of equipment across units. Importantly, research "customers" have difficulty accessing researchers and developing partnerships with the AHC and its faculty. The process of oversight for conflict of interest has become an hindrance to university researchers seeking to establish relationships with industrial partners.

Solutions

1) Redesign the intrastructure of the AHC for efficiency and effectiveness based on principles of distributed management--information systems, human resources, public relations, facilities management, and financial planning and management.

2) Redesign the AHC decision-making function to:

a) promote interdisciplinary activities
b) retain professional (school) identity and leadership based on consultative governance

3) Develop and implement a focused strategic plan via the consultative process that

a) promotes strategic initiatives and investments
b) promotes growth
c) has clearly defined roles and responsibilities
d) has clearly defined deliverables and benchmarks
e) is integrated with human resources and financial plans

6. Case for Change for Individual Schools

Each profession/college faces unique pressures and challenges in the current environment. They are outlined in the following pages.

Duluth School of Medicine
Case for Change
Ron Franks, Dean

Forces Driving Change

Finances:

- We are heavily dependent upon State funding, (-75% of operating budget) which is increasingly unstable. We have sustained $735,000 in recurring retrenchments and reallocations on a $6 million base of State support over the last six fiscal years.

- We have limited flexibility in O&M, with 95% of State funds tied to salaries, 87% of which are for faculty, 34 of 36 being fully tenured. Only one faculty of the 36 is younger than 40 (38 years of age).

- Over 60% of faculty salaries are below the twentieth percentile.

- Increasingly, our faculty salaries are drawn from diverse revenue streams, usually more "soft" than "hard." With most faculty on nine-month appointments, their research grants fund up to 20% of their compensation. Further, the School has awarded one-time bonuses, rather than recurring raises, for FY96 and FY97 for meritorious accomplishments.

Education:

- We are experiencing increasing pressure from students and physicians in rural communities to make the basic science curriculum more relevant to the future practice of medicine.

- Our students are requesting greater integration of basic science instruction across discipline lines, asking that we be increasingly correlated with clinical cases.

- We must decrease the length and cost of professional education, as students leave medical school now with an average indebtedness of $60,000.

- To continue to successfully educate future rural family physicians, we must maintain the unique learning environment created by our faculty, staff, and students which mimics a "small town atmosphere." According to our students, this atmosphere strongly reinforces their commitment to eventually practice in a rural community.

We must increasing the integration of our curriculum with the TC-MED educational program to ensure a smooth transition for our students after they complete their first two years at UMD.

Research:

- Basic science research at the School of Medicine is increasingly difficult to support due to reduced number of basic science faculty during a period of increasing competitiveness for research funding nationally. The need for a critical mass of faculty with the right research interests and skills is essential if we are to create the proper research environment. Equally important is the upgrading of research equipment -- much of which is over twenty years old. Careful recruitment of new faculty plus greater collaboration with other faculty across the AHC will help us achieve this critical mass of faculty.

- Need for faculty development is essential for a significant number of our faculty, most of whom are in mid-career or later.

- Clinical research, especially as it relates to rural health, will increase at the School, partly through collaboration with area clinical faculty, requiring different infrastructure support than currently available.

Resistances to Change

- Most faculty are risk averse, desiring a stable funding base so that they may conduct their academic work of research, education, and service while enhancing the reputation of the School/AHC/University. Being increasingly dependent on "soft money" is not seen as opportunistic, but rather as threatening.

- Desire for autonomy from the TC Medical School could inhibit collaborative efforts in both research and education.

Opportunities

Rural Health School:

While there are many opportunities available to the School, the most promising is the continued development of the Rural Health School (RHS) with its interdisciplinary educational programs for students headed for practices in rural communities. The RHS will expand its educational planning to include pre-clinical experiences, as well as further rural interdisciplinary clinical rotations now in pilot phase. These additional educational experiences will further ensure the proper preparation of future rural health professionals. The RHS has plans to expand to include community development programs and rural health research initiatives, both aimed at enhancing the health of the citizens of rural Minnesota and the surrounding region.

The future of the Medical School depends on its ability to change. The School has an outstanding basic science and clinical faculty who have made important contributions to education, research, and the development of state-of-the-art medical care. However we have not been well positioned in or connected to the community, leaving us vulnerable to the profound changes induced by the early appearance of highly competitive managed care systems in Minnesota, seriously affecting patient supply and the viability of our hospital. The recent development of the Fairview-University Medical Center will help reposition the clinical enterprise in the community. The end result has been a decrease in the clinical dollars which have long supported the Medical School's mission of education and research, and a process that will be severely challenged as resources become limited.

In spite of these changes sponsored research and training grants have continued to grow. Last year the Medical School received over $105 million, reflecting the excellence of our faculty.

Changes that are essential as the School looks to its future:

- Develop fiscal stability and strengthen the financial base.
- Develop an action plan that will align and focus resources to our mission, goals, and priorities.
- Develop a 'faculty first' program that recognizes that the faculty is the core of the Medical School; develop systems that support faculty efforts as leaders and innovators of change.
- Reevaluate and change the medical student educational programs consonant with the recent internal and external Liaison Committee on Medical Education reviews.
- Develop a comprehensive graduate medical education governance program within the Dean's Office.
- Develop an innovative clinical model system that will provide growth and options for academic physicians, and promote faculty interactions with community physicians.
- Develop productivity and goal-oriented systems for Medical School faculty and staff.
- Reorganize the administrative structure of the School as a highly efficient operation with appropriate oversight and accountability.
- Finish the development of a single faculty practice organization to position the clinical enterprise in the competitive system.
- Promote the Medical School as a community resource throughout the state by effective communication about what we do and our successes in clinical care and science.
- Develop strong interdisciplinary programs and interactions within the School and the Academic Health Center to foster research and education.
- Right-size the number of physicians and scientists that we train to meet the needs of our society.

School of Nursing
Case for Change
Sandra Edwardson, Dean

Research

After a ten year realignment process, we are now able to recruit a core of faculty prepared to do clinically relevant (as opposed to educational) research. This gives us the expertise necessary to compete for extra support at the same time other schools of nursing are also achieving this capacity and funding levels are declining. The implication is that we will need supportive colleagueship and infrastructure to compete successfully.

Education

We have a structural deficit as a result of launching the nurse practitioner programs without new funding. Because we needed faculty with special certification, new faculty were added. The state of the profession is that few of these individuals are doctorally prepared and eligible for graduate school appointments. Our heavy dependence on state subsidies for faculty support results from a lack of tradition for faculty practice as part of the faculty role. Our challenge is to develop relationships with managed care organizations and hospitals toward the goal of gaining practice privileges, reimbursement, and a recognition of teaching and research as a legitimate component of the practice role.

Because nursing education is an intensely local market, we must be responsive to community demand to maintain our market niche and retain our leadership position among the state's 8 BSN and 6 MS programs.

Interdisciplinary Efforts

Faculty in nursing have had a long-term yen for meaningful interdisciplinary collaboration. This desire is tempered by the fear (based on past experience) that physicians will invariably insist on PI/leadership roles with nursing faculty as "staff."

The College of Pharmacy
Case for Change
Marilyn Speedie, Dean

Professional Challenges and Opportunities:

The profession is at a crossroads. It seems clear that the need for pharmacists in the traditional distributive role will decrease substantially in the next decade. Pharmacists will probably maintain control and oversight over drug quality and drug distribution, but the physical work will be performed by technicians, robots, mail order, etc. There is, however, an enormous need for pharmacists to provide pharmaceutical care, i.e., therapeutic drug monitoring on a patient-specific (not site-specific) basis. The role is easily justified based upon estimated costs of drug 'misadventuring' on the health care system. There also continues to be a role for clinical pharmacists in institutional practice, a role that was developed in the 1970s, that is often more physician-focused (i.e., providing consults to physicians) than patient-focused. The pharmaceutical care model of practice is being practiced in the community pharmacies and ambulatory clinics of Minnesota to a limited degree. The challenge over the next short period of time is to overcome the barriers (e.g., reimbursement for services, re-education of practitioners) to having this be the universal mode of practice. The entry level PharmD curriculum, which is beginning its 2nd year of implementation, is an important first step, The College must work with the profession to ensure a successful transition. Team care, the development of pharmaceutical care models throughout an integrated health system, and the development of the community pharmacist as an accessible primary care provider are all important initiatives in this regard.

The 'Case for Change' in the College of Pharmacy:

The particular challenges facing the College of Pharmacy have mostly to do with our need to invest in some important initiatives, outlined below, and our lack of flexible investment dollars to do so. The needs are:

1) to complete the transition to the new curriculum (entry-level PharmD) will require return of tuition dollars generated by increased enrollment. (The curriculum is about one-quarter implemented and one-half funded.)

2) to participate in the change of the pharmacy profession requires funds for developing models of practice and sites for student clerkship, particularly in collaboration with the Fairview Health System. (Our model is to send faculty to sites for a period of time--2-3 years--to establish the practice and supervise students, with the site then taking over the pharmacist's support costs and the pharmacist providing students' experiential education.)

3) to offer a 'non-traditional' PharmD (e.g., by distance learning, off-site), or to develop other programs for retraining B.S. practitioners. (The demand is high; the college is very late in responding. The program, once underway, could probably be self-supporting.)

We also have some particular financial problems:

1) Salaries are the lowest by far of peer schools. We are about $200,000 short (over 38 faculty) of 50th percentile salary levels.

2) We have retrenched faculty positions twice (3 positions total) to generate dollars for retrenchments and/or raises. We have no more cuts to make for the next round.

3) We need an increased number of experiential sites for training our students, We have been paying a limited number of our sites, but the likelihood is that we will need to pay more as our need increases, unless we can get Fairview to provide a significant number of sites without payment from the College.

Forces For/Against Change:

For: The reorganization of the College is promoting discussion across barriers, the current support in the AHC for interdisciplinary programs is a positive force.

Against: Faculty morale issues; lack of sufficient funding to expand both research and educational efforts.

School of Public Health
Case for Change
Edith Leyasmeyer, Dean

Need for Change

Ongoing marketplace changes mean that health care provider organizations are placing greater emphasis on population-based prevention. Nevertheless, decreasing Operating and Maintenance funds make it difficult for the School of Public Health to promote public health expertise as aggressively and as widely as is warranted by these marketplace changes. Increased competition for sponsored dollars also threatens the School, which depends on such support for well over two-thirds of its funding.

Opportunities

The nation's turn toward population-based prevention and managed care puts the School of Public Health in a position to impart its expertise to students across the Academic Health Center. With the expanded interest in public health comes the responsibility for the School of Public Health to respond to new audiences in new formats. Distance education, summer continuing education, evening courses and courses tailored to the needs of clinical practitioners, will help the School of Public Health address growing educational demands. Additional student field placements, collaborative research--with units inside and outside the walls of the AHC--along with faculty appointments for community practitioners, will tie the School of Public Health more closely to its various constituencies. New organizational structures like the Managed Care Institute and other centers whose activities span disciplinary boundaries will also help meet identified educational and research needs.

Challenges

The School's major challenges stem from the fact that it has been continually rewarded for doing what it does best, and only what it does best. Because the School of Public Health faculty have depended heavily on outside support, they have earned an admirable track record in research, but have little incentive to disrupt that success by undertaking potentially risky educational and collaborative ventures. Research contributes greatly to the University's reputation as a generator of knowledge, but does little to build grassroots alumni and community support for the School of Public Health, the Academic Health Center, or the University.

College of Veterinary Medicine

Case for Change
David Thawley, Dean

Challenges Facing the College of Veterinary Medicine

A. External Challenges

1) Corporatization of Companion Animal Practice

Over the past 5 years the establishment of several large national corporate veterinary practices have significantly impacted urban practice. The Twin Cities had been targeted by one of these corporations. In 1996, this practice was the largest single employer of graduates from the University of Minnesota College of Veterinary Medicine. This Corporatization presents challenges to the College in both educational and public relations as the College adjusts to this new professional environment.

2) Corporatization of Food Animal Production

Swine, Poultry, and Dairy Production are rapidly becoming dominated by large integrated corporations. The role of the veterinarian in these enterprises has broadened significantly to involve more management and production decision making responsibilities. The CVM is a national leader in preparing veterinarians for this new role. It has become a very difficult challenge and costly for the College to keep pace with the rapidly changing needs of the new agribusiness.

3) Demand for Improved Safety of Foods of Animal Origin

The safety of foods have become a national priority. The veterinary profession is required to play a lead role in protecting the public health from potential hazards from foods of animal origin. This has placed an extra burden on the College at the curricular, research, and services mission.

4) Opportunities in Molecular Biology, Molecular Genetics

The CVM is very well placed to exploit opportunities in molecular biology and genetics. It has nationally leading programs in molecular immunology and animal genomics. These are consistent with the priorities of the Academic Health Center.

5) Need for Re-training/Continuing Education of Veterinary Practitioners

The veterinary profession is currently undergoing monumental change, particularly associated with number 1 and 2 above. The College has taken a lead role in the retraining and continuing education of existing practitioners in order to permit their adoption to this changing work environment.

B. Internal Challenges

1) Highly Tenured Faculty, Personnel Bound Budgets

The College of Veterinary Medicine has historically had a highly tenured faculty (over 95% in 1990). In addition, in 1990 approximately 92% of budget was spent on personnel resources. Since 1990 the College has attempted to lower both parameters to provide more programmatic and fiscal flexibility.

2) Competition for the Veterinary Teaching Hospitals from Private Specialists

Since 1990 there has been a considerable increase in competition experienced by the Veterinary Teaching Hospitals. The College is dependent on its hospital for the clinical education of DVM students, residents, and interns. The VTH is meeting this challenge by the expansion of services provided by non-regularly appointed faculty. To date this has been very successful.

3) Shrinking State Funding for the College of Veterinary Medicine

Over the past decade, state support for the College has dropped from 49% to 33% of the budget. This has necessitated increased emphasis on revenue generating activities such as clinical service, diagnostic centers, and contractual research.

4) Veterinary Student Debt

In 1996 students graduated with a mean debt of $45,000. This is a considerable burden on students who graduate with a mean income of $32,000, and presents a challenge to the College to provide sufficient financial aid.

School of Dentistry
Case for Change
Michael Till, Interim Dean

The Case for Change in Dental Education

The "Case for Change" for dental education is based on a variety of factors. First among them is that change is inevitable, and it is incumbent upon those involved in the dental educational enterprise to influence change in a direction that will provide benefit to the state and region. Oral health is a vital component of total health and is a contributor to the Quality of Life expected by citizens of Minnesota. The School of Dentistry envisions that change will emanate from the following areas and we intend to be prepared to deal with each of them.

I. Undergraduate Education

The primary responsibility of the University of Minnesota School of Dentistry is to produce well-qualified dentists for the state and region. In contrast to other components of the health sciences, and especially medical education, the clinical component of the dental curriculum involves direct patient care by undergraduate students, under close supervision of faculty. Students learn by treating patients rather than observing an instructor. A major concern for dental education throughout the country is the continued availability of teaching patients. The advent and expansion of dental insurance, managed care, and

population based contracting, coupled with severe access problems, portends great changes in the availability of future patients. The competitive advantage in cost of care that dental schools have traditionally enjoyed has virtually disappeared. The School of Dentistry together with the Academic Health Center must aggressively seek patients for all components of the AHC. Furthermore, patient amenities such as convenient, no-cost or inexpensive parking will have to be worked into the mix. Patients simply will no longer tolerate "institutional" treatment. Thus, among the first changes required of schools of dentistry will be revision of attitudes toward patients. In the current vernacular, we must become much more "user-friendly." Our curriculum must reflect patient service as much as education. Finally, we will need to develop innovative marketing plans and to ensure that our clinics are available to patients at hours that are convenient to them, rather than being determined by dental school or AHC convenience.

Specific changes envisioned in the undergraduate dental curriculum include expansion of the medical content. Dentists are primary care providers in the truest sense and in many smaller communities throughout the state are the most readily available health professional. The fact that the dental profession has had considerable success in educating patients to the need for regular recall visits places dentists in an ideal position to provide more initial health evaluation and consultation. The dental curriculum of the future will contain considerably more medical content. These components will be ideally suited for an interdisciplinary format that takes advantage of the expertise of contributors from throughout the entire AHC.

Over the next several years we expect the undergraduate dental curriculum to evolve toward much greater use of educational technology. Primary areas of involvement will include computer assisted instruction, distance education, and most importantly, patient simulation. Each of these capacities is being developed at present, and when perfected should contribute significantly to the quality and efficiency of dental education, especially reduction of dependence on live patients in the undergraduate curriculum

Other changes being promoted by the School of Dentistry include increased flexibility of the entire curriculum. This will give individual disciplines greater opportunity to design programs that will meet the specific needs of the students and population served by the school. In keeping with this initiative, team teaching, both within the School of Dentistry and the Academic Health Center is needed. Careful analysis of components of all health sciences disciplines must be undertaken so that multidisciplinary courses can be developed. This approach will offer the benefits of not only increased flexibility, but also potential reductions in costs, and most importantly, cross fertilization of knowledge and ideas among the various components of the health sciences.

II. Graduate Education

Advanced education for dentists, including programs which award a terminal degree (Masters of Doctorate) together with residency programs aimed specifically at preparing specialists for dental practice, also will be subject to change. Over the years, the criteria required by the Specialty Boards in each discipline have been prominent determinants in content and length of graduate programs. More recently, a strong desire to keep programs at the cutting edge of the profession, plus the economics of the marketplace, also have become contributors to enforced change. Like undergraduate education, increased flexibility within programs will become the hallmark of advanced education. Programs will be tailored to the specific needs of the participants as well as the types of practices they are likely to enter. It also is anticipated that greater emphasis will be placed on interdisciplinary core courses and team teaching. The School of Dentistry does not intend to decrease the emphasis on research as a principal component of graduate education.

III. Continuing Education

Electronic technology has ushered in new potential in continuing education and schools which recognize the value of this medium will prosper. Although we do not anticipate a major change in the utilization of our conventional continuing education offerings, we are looking forward to developing our capacity for distance education beamed directly to dentists' home computers or to educational facilities located in schools or community colleges throughout the state. When this capacity is available, it should not be necessary for dentists or other professionals to travel to a Center (e.g., UM School of Dentistry) for continuing education. Rather, programs will emanate from the University, but practitioners will have access to interactive computers, television and other modern electronic approaches in the localities of their homes. Our objective will be to increase access of practitioners to the latest information they might need in their practices.

IV. Research

At present, research activities within the School of Dentistry are active and robust. However, as funding from both government and industry becomes more limited, change will be necessary. The School of Dentistry is moving proactively to develop collaborative research projects with other components of the Academic Health Center, plus other universities, research centers and industry. The emphasis of research in dentistry also is undergoing change. It is evolving away from individual, limited projects toward more extensive projects under the umbrella "Centers of Discovery." Multidisciplinary collaboration will be mandatory to compete effectively for funding for these Centers.

V. Service

Throughout its 110 year existence, the School of Dentistry has conducted clinical education in the general and specialty clinics of the school and University hospital. This method has proven to be effective but in modern times does not meet the demands of the community. Schools of Dentistry throughout the country are developing cooperative programs designed to provide students with experience in providing care in community settings, especially those which involve underserved populations. In most instances, these outreach programs are conducted in Community Health Centers, Public Health Clinics, Indian Health Service Clinics and clinics established especially to serve migrant workers and others who encounter difficulty in finding access to dental care. Our aim is for the School of Dentistry to become the source to which professionals, community leaders and others involved in providing care at the community level turn for expertise and assistance. For example, the School of Dentistry, in cooperation with the Minnesota Dental Association, the Minnesota Department of Human Services, the Range Community College (Hibbing, MN) and local dentists in St. Louis county, is planning a satellite facility aimed primarily at patients who are covered by Medical Assistance, General Assistance Medical Care, and MinnesotaCare. We also are looking into the possibility of arranging for dental students to receive preceptorships in the private offices of participating dentists throughout the state and region.

VI. Student Indebtedness

A major factor influencing change in dental education is the rapidly rising indebtedness of our students. At the time of graduation from dental school, the average Minnesota student owes $49,000 and the national average is $60-70,000. This debt load presents extreme hardship for students during their years in dental school and after graduation. Many students are forced to work part-time or full-time which can be detrimental to their education. More importantly, the high debt load limits students' opportunities following graduation. Rather than having a full range of opportunities available to which they are entitled by their degree, including private practice and graduate education, many students find it necessary to accept lesser employment simply because of the demand placed upon them to service their debt. Innovative programs, including scholarships, loans, pay-backs, work-study, and part-time study over an extended

number of years will have to be developed.

VII. The Future

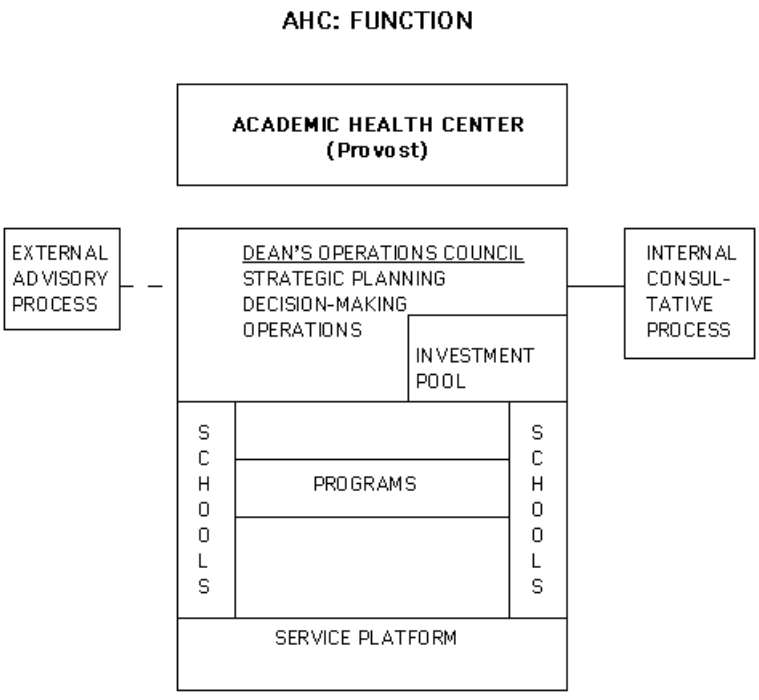
The School of Dentistry accepts its responsibility to operate at the highest degree of efficiency possible. At the same time, it is not possible to continue to meet obligations to students and the State of Minnesota in the face of constant financial limitations. A stable funding base of state appropriated funds is necessary so that long-range plans can be made and carried out.

A second responsibility of the School of Dentistry is to increase the amount of non-appropriated funds. Securing grants from government and private industry will become more important as a means of funding dental education. Philanthropy also must be maximized.

Due to its unique geographic location, the University of Minnesota School of Dentistry has become the defacto regional school for the upper midwest. We are the only dental school in the northern tier of states between Chicago and Milwaukee to the east, and the Pacific northwest. In addition to providing education for more than 80% of dentists practicing in Minnesota, 57% of dentists in North Dakota and 30% in South Dakota hold Minnesota degrees. A reasonably large number of dentists in Wisconsin and Montana also have been educated in Minnesota. The potential contribution to these states promises to become even greater in the area of continuing education as distance technologies are brought on line. These facts suggest that considerably more emphasis from the School of Dentistry, the AHC, the University, and the Minnesota Legislature should be placed on securing greater funding from the states which reap educational benefits from Minnesota.

E. EVOLVING FUNCTION AND STRUCTURE

Structure must support function. We have three inter-related and inter-dependent activities: research, education, and clinical service and outreach. Each of these activities also has different, though sometimes overlapping, goals, outputs, resource needs, time constraints, constituencies, management service needs and leadership, and performance expectations. The Academic Health Center needs an operating model that coordinates education and research across the member colleges, supported by clinical and outreach services. The operating environment must provide AHC-wide services that are responsive, efficient, effective, and accountable in supporting the education and research functions, e.g., information system, financial services, public relations and marketing, facilities coordination, human resources services. There must be a distributed management model that provides for AHC-wide policies, procedures and guidelines, clearly defined areas of decision authority and accountability. The operating environment will work best when the four elements of operational responsibility, authority, resources, and accountability are joined and distributed out to a point of decision in the organization as close as possible to the people being served. The operating model will change over time and will require periodic performance evaluations. Implementation for education, research, and clinical service/outreach activities will require pilot testing and will proceed at differing rates.



AHC Functional Model

A) school function, identity, and structure retained
B) school Dean authority, responsibility, and accountability retained
C) AHC authority, responsibility, and accountability resides in Provost in consultation with Deans Operating Council and faculty/staff/student consultative governance process
D) distributed management infrastructure being developed
    1) Provostial office staffing
    2) RSO module

3) program management module

E) new grants management process

1) emanates from University Grants Management Group
2) defines: roles and responsibilities information system support educational programs and support
3) operating unit: principal investigator and local business manager--have authority, responsibility, and accountability
4) oversite: department/program head, dean, University (VP Research, ORTTA)
5) now being implemented for federal funding sources

FEEDBACK

Academic Health Center Homepage