

UNIVERSITY OF MINNESOTA

*Academic Health Center
Office of the Provost*

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February 28, 1997

MEMORANDUM

TO: Provostal Faculty Consultative Committee
FROM: Frank B. Cerra, M.D.
Provost for the Academic Health Center

For your information, please find enclosed the following:

- 1) Memorandum to the Academic Health Center Deans on the Development of School/College Strategic Plans and 1997-1998 Performance and Quality Measures
- 2) Two documents outlining the strategic plan

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February 4, 1997

MEMORANDUM

TO: All Academic Health Center Deans

FROM: Frank Cerra, M.D.
Provost for the Academic Health Center

RE: Development of School/College Strategic Plans and
1997-98 Performance and Quality Measures

The completed Interscholastic Strategic Plan for the AHC is attached. I ask that you share this strategic plan with your faculty, staff, students, and constituents and use it as the framework for developing a new strategic plan for your school/college. The plan should cover three to five years, as you believe appropriate, and should include up to six near-term goals you want to achieve for the school/college in 1997-98. Individual school/college plans will be reviewed by the AHC Deans' Council for their clarity and for their relationship to University plans, the AHC strategic plan, and the plans of the other AHC schools and colleges. Individual school plans should also address the long-range financial and human resources implications for the school and the AHC.

One of the issues we need to address is how we actually measure our success in implementing our strategic plans. It is important that we be able to monitor our success both as a guide to how effective our decisions are and as indicators of whether we are staying "on" or going "off track." Therefore, we need to develop some measures, a process for which there is a clear learning curve. The measures would be at the AHC and school/college level (not for individuals). For the 1997-98 year, I would ask that you develop:

- 1) Three to six measures of how well we are doing; one to two should be at the AHC level and three to four at your school/college level. The latter measures should be based on your specific school/college goals for 1997-98.
- 2) As we go through this process, we want to continue to improve the quality of the programs in our schools/colleges. Please develop up to six indicators of program quality. One to two should be at the AHC level and three to four should be specific to your school.

Academic Health Center Deans
February 4, 1997
Page Two

Each school/college will present its measures to the AHC Deans' Council. The Deans' Council will evaluate them for clarity and their relationship to University plans, the AHC Interscholastic Strategic Plan, and your school/college-specific plan. I would like to set time aside at Deans' Council meetings over the next several months to share and discuss preliminary drafts of the measures. I believe we can learn much from each other about how to develop performance/quality measures that are meaningful and useful.

Schools and colleges should complete the final drafts of their strategic plans, 1997-98 goals, and performance/quality measures and have them to me by May 15, 1997.

Thank you.

FBC/kva

attachment

ACADEMIC HEALTH CENTER
INTERSCHOLASTIC
STRATEGIC PLAN

February 1997

**INTERSCHOLASTIC STRATEGIC PLAN
FOR THE
ACADEMIC HEALTH CENTER
1996 - 1999**

The following document sets forth the current version of the interscholastic strategic plan for the University of Minnesota's Academic Health Center. Its purpose is to set the broad direction and emphasis for those programs and actions that reach across the AHC, i.e., that cross the current collegiate program borders. It is anticipated that individual colleges and schools will maintain their own strategic planning processes and internal missions, cognizant of and consistent with this overall plan. This plan is an ongoing work in progress; it has been crafted with broad opportunity for discussion and input from across the AHC. This plan, like all plans, will change. The spirit and commitment behind the planning process, our shared goal of leadership, excellence, efficiency, relevance, and the creation of a positive collaborative community, will not change.

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.

SIX STRATEGIC GOALS

- 1) enhance the competitive relevance and position of AHC education and research
- 2) meet relevant work force needs and ensure AHC's leadership role in the health professions through adjustments in the size and mix of enrollments and educational programs
- 3) improve the competitive position of clinical/outreach functions for all health professional schools and the AHC
- 4) enhance the environment to promote faculty and staff creativity, excellence, and productivity
- 5) strengthen financial management to promote flexibility, investment, and financial stability
- 6) maintain each profession's identity and excellence as AHC interscholastic programs develop.

Operating Principles

To achieve our missions, we will be most effective if we share a common vision of the principles upon which we base our work. These commitments provide a foundation for our strategic plans and a basis for our interactions with our constituencies and among ourselves. We will:

- 1) be more responsive to those we serve, remaining aware of our many market expectations and opportunities.
- 2) strengthen our collaborative partnerships with the communities we serve.
- 3) seek to provide leadership as each profession advances its vision of its role in health care and services.
- 4) insist on an efficient and effective management infrastructure to support education, research, and service.
- 5) integrate financial planning and management with our strategic and programmatic decision-making.
- 6) make continuing, prospective planning a core cultural value and invite widespread participation in the process.
- 7) adopt a philosophy of continuous improvement in our human resources development, planning, and operations.
- 8) provide opportunities, recognition, incentives, and rewards to enhance creativity, excellence, and productivity.

1996 - 1997: BUILDING THE INFRASTRUCTURE AND INITIATING THE INVESTMENTS

A. ACTIONS:

- 1) Establish an effective process for strategic planning and decision-making across the AHC. This includes the interface among professional disciplines and interscholastic programs.
- 2) Establish an efficient and effective support services infrastructure across the AHC using a distributed management model.
- 3) Establish an effective information technology platform across the AHC.
- 4) Establish an effective internal and external communications program.
- 5) Establish timely and effective financial planning and budgeting across the AHC that is integrated with programmatic and human resources development.
- 6) Facilitate an integrated fund raising and development strategy.
- 7) Initiate key strategic programmatic investments and development.

B. EXPLANATION OF ACTIONS:

ACTION 1: Establish an effective process for strategic planning and decision making across the AHC. This includes the interface among professional disciplines and interscholastic programs.

- 1) Integrate wide consultative input into the process, both internal and external
- 2) Core process management: Deans' Council
- 3) Time line: operational in 1996-97

ACTION 2: Establish an efficient and effective support services infrastructure across the AHC using a distributed management model.

- 1) Services: finance, human resources, communications, information technology, facilities
- 2) Process redesign done interactively with users
- 3) AHC level integration of policy and oversight, operations distributed to the level as close as possible to the day to day functions
- 4) Time-line: operational by June 1997
- 5) Cost: cost neutral by June 1999

ACTION 3: Establish an effective information technology platform across the AHC.

- 1) Hire a Chief Information Officer for the AHC, begin to assemble staff, and create a comprehensive information plan for the AHC, including education, research, clinical/service, and administrative systems
- 2) Initiate a program to require compatibility of information systems across the AHC
- 3) Initiate a program for implementation and coordination of an AHC-wide distance technology service
- 4) Develop a plan for faculty and staff education in the use of information technology
- 5) Time line: operational in 1997
- 6) Cost: will require an investment; offset by efficiencies and productivity

ACTION 4: Establish an effective internal and external communication program.

- 1) Hire Director of Communications, assemble staff, and develop communications plan
- 2) External: develop constituent based advisory groups
- 3) Internal: integrate faculty, student, and staff consultative processes; promote electronic communication
- 4) Time line: operational in 1997
- 5) Cost: will require an investment; offset by efficiencies and productivity

ACTION 5: Establish timely and effective financial planning and budgeting across the AHC that is integrated with programmatic and human resources development.

- 1) Establish financial systems for planning, modeling, budgeting, biennial budgeting for legislature, reporting, and management
- 2) Integrate the financial system with human resources planning
- 3) Integrate the financial system with programmatic decision making
- 4) Identify funds for the AHC investment pool and initiate programmatic investment
- 5) Time line: operational 1997
- 6) Cost: investment required, offset by efficiencies and productivity

ACTION 6: Facilitate an integrated fund raising and development strategy.

- 1) Create coordinated process for identifying and approaching opportunities, increased contacts and communication within and from the AHC

- 2) Coordinate development efforts with the communications plans
- 3) Initiate process review and planning process by July, 1997

ACTION 7: Initiate key strategic programmatic investments and development.

1) Interdisciplinary Curriculum and Education Programs: Development and Enhancement.

The principal curricular focus of the AHC will remain its collegiate professional education programs and graduate training programs. There is opportunity, however, to enhance the programs of individual colleges by taking advantage of educational opportunities that bridge across collegiate boundaries. Similarly, there is a need to improve the coordination or restructure some educational programs within the AHC.

- a. Rural Health Education Program
- b. interdisciplinary managed care curriculum for health professional students
- c. team care curriculum
- d. primary care
- e. chronic disease program
- f. program on aging
- g. population and community based intervention strategies, including enhanced education in public policy, social and environmental role in health events, epidemiology, biostatistics, health services organization, management and financing, outcomes assessment, and non-therapy based health interventions
- h. curriculum addressing the issues of biomedical ethics and health care ethics, including patient's rights and confidentiality issues associated with technology
- i. curricular emphasis on interpersonal skills, cultural competence, primary prevention and client/family/community participation, motivation, decision making, and health
- j. student placements at communities
- k. linkages/partnerships with health services providers and the managed care industry
- l. task force on allied health professional programs
- m. strategic task force on diversity in the health professional education programs
- n. encourage the creation of an interdisciplinary task force on graduate education (MS/PhD)

2) *Research.*

While most research activities in the AHC will come from faculty initiatives and external funding, the AHC will strategically invest in some key promising research areas. To that end, processes must be created that assure that those investments are properly targeted, well managed, and productive.

- a. develop an ongoing strategic planning process to set broad programmatic areas for research investment
- b. initiate an internal competitive research pool of dollars for the AHC. Ideas and proposals solicited from the faculty, selection based on scientific merit, strategic importance, and fiscal opportunities
- c. initiate research support service infrastructure for enhanced private sector access and service
- d. consider and initiate targeted investments in areas of strength and potential in the AHC in:

basic science, examples might include

1. neuroscience programs
2. developmental biology
3. animal comparative genetics
4. drug development program
5. immunology
6. emerging infections and microbial pathogenesis

clinical science, examples might include

1. cancer
2. neuroscience
3. human genetics
4. biotherapy
5. geriatrics
6. outcomes research

population sciences, examples might include

1. disease prevention
2. community assessment
3. health promotion / disease prevention strategies
4. health services organization, delivery and finances
5. aging and long term care
6. environmental hazards
7. population outcomes
8. children, youth, and families at risk

biomedical engineering

ethics research

behavioral sciences related to family systems, psychological dimensions of health and illness, and sociology of health and illness

animal health and productivity

3) *Clinical Practice.*

Clinical practice will remain a key component of many AHC efforts. With the creation of the Fairview/U of MN relationship and the single medical FPO, new systems of practice and administration are needed. External competitive pressures on all clinical activities in the AHC demand new and creative approaches to the role of the AHC in clinical affairs.

- a. bring the Medical School FPO into full operational status by July 1, 1997
- b. develop or update FPO's for other AHC schools
- c. bring the opportunity presented by Fairview into operation
- d. enhance the Pharmaceutical Care Program
- e. enhance the utilization of advanced practice nurses (nurse practitioners, nurse midwives, clinical nurse specialists and nurse leaders-managers), physician assistants, and allied health professionals
- f. enhance the utilization of the Dental Clinics
- g. enhance the operation and competitive position of the Veterinary Teaching Hospital
- h. address issues for potential conflict of interest arising from clinical practice at multiple sites

**INTERSCHOLASTIC STRATEGIC PLAN
FOR THE
ACADEMIC HEALTH CENTER
1997 - 1999: CONTINUED INVESTMENT IN EXCELLENCE**

Strategic Goal 1: Enhance the competitive relevance and position of AHC education and research.

- 1) Expand and enhance Rural Health School with an integrated Greater Minnesota Network
- 2) Create a Health Care Systems Center for health care policy, education, and research
- 3) Greatly increase the use of on-line and distance technology-based education
- 4) Develop Education and Research Services Organizations to facilitate and promote education, research, and technology transfer, and to complement existing efforts in the university
- 5) Establish greater community partnerships in education and research

Strategic Goal 2: Meet relevant work force needs and ensure AHC's leadership role in the health professions through adjustments in the size and mix of enrollments and educational programs.

- 1) Develop a health provider work force needs assessment process
- 2) Initiate AHC-wide curricular and education program planning to address work force needs for health professionals and in research
- 4) Expand the scope of the Advanced Practice Nursing Program
- 5) Expand the scope of the Pharmaceutical Care Program
- 6) Develop new curricula for health professional students, e.g., managed care, team care, public health core, interdisciplinary core
- 7) Develop educational programs that can enhance professional experiences in a community based, non-hospital environment
- 8) Reduce the cost of education/training of health professionals

Strategic Goal 3: Improve the competitive position of clinical/outreach functions for all health professional schools and the AHC.

- 1) Assure that professional school group practices are operational
- 2) Complete the implementation of the Fairview relationship
- 3) Enhance the FPOs' position in competitive contracting: decrease the cost of patient care by AHC clinicians
- 4) Develop new clinical revenue through investment in new programs

- 5) Implement wide use of information systems and distance technology for clinical care
- 6) Enhance our community outreach abilities
- 8) Increase the linkages in all schools between private health service organizations and the AHC

Strategic Goal 4: Enhance the environment to promote faculty and staff creativity, excellence, and productivity.

- 1) Enhance faculty development programs
- 2) Enhance staff development programs
- 3) Develop effective human resources management support services
- 4) Improve merit recognition systems
- 5) Review and improve faculty evaluation systems and processes

Strategic Goal 5: Strengthen financial management to promote flexibility, investment, and financial stability.

- 1) Continue strategic planning and resource allocation via Deans Council utilizing the consultative process
- 2) Identify new revenue sources from programs, health systems, Fairview, government, and private fund raising
- 3) Seek infrastructure efficiencies across the AHC
- 4) Identify investment resources for education and research
- 5) Provide for work force adjustments in all categories via hiring practices, reassignment/retraining, incentives and exit strategies
- 6) Set benchmarks for infrastructure performance using best practices evaluation based on performance outcomes

Strategic Goal 6: Maintain each profession's identity and excellence as AHC interscholastic programs develop.

- 1) Facilitate and improve structure on-going collegiate level strategic planning processes
- 2) Enhance the linkages between the colleges and their constituent professional organizations
- 3) Improve public relations between each college and the public; assure a better understanding of the professions' role in Minnesota and nationally

Questions For President Designate Yudof

February 25, 1997 Forum with AHC Faculty

1. It is excessively difficult for faculty involved in the Family Practice Residency program to obtain tenure. **Do you have any plan which might facilitate this in the future?**
2. **What are your views on the current moves to reorganize biology on the Twin Cities Campus, and what end point would you personally like to see for this process?**
3. In light of the Department of Orthopaedic Surgery's excellent national rating and its efforts to remain one of the top research/clinical departments in the country, **what is your position on having non-University physicians being in charge of the University of Minnesota's varsity football and wrestling teams?**

The U of M's orthopaedic department lost the coverage of these two teams many years ago due to influence of Lou Holtz and his disagreement about return to play issues with Rob Hunter, MD (formerly at the U of M-now a nationally respected sports medicine physician in Aspen, Colorado). A private physician now covers the teams and this is a sore on the reputation of the Department of Orthopaedic Surgery and its Sports Medicine Institute nationally. Your views on this topic would be welcome as now we have a new football coach, a new orthopaedic chairman (soon to be picked), and a strong orthopaedic sports medicine division.

4. Now that the University of Minnesota has divested itself of ownership of University Hospital, the missions of the Academic Health Center appear to focus largely, though not exclusively, on research and education. Indeed, the missions of the AHC and the remainder of the University are now more similar than ever. Given that the AHC represents half of the University's people and dollars, **describe the relationship with the remainder of the University that would best foster common missions? What organizational and structural changes would you recommend to foster this synergy?**
5. You stated in an interview prior to accepting the position that you were opposed to top down management and the corporatization of universities. In addition you stated that decision making should primarily rest within the schools and be in the hands of the Deans. If that is the case, **how can you reconcile that view with what has been proposed by the AHC Provost which upon careful review can only be considered totally counter to what you believe?**
6. Given the contentious atmosphere at the University especially in regard to tenure, **would you be willing to declare a 2 year moratorium on any changes in the**

tenure code during which time any discussion of tenure would include the legitimate representatives of the faculty in the development of any proposed changes in the tenure code?

7. Three of the last 4 dean appointments in the AHC have been recruited "from inside". Many view this as an indication that the prestige of the AHC has dropped and that we will become insular and parochial. **What can you do to assist the AHC in drawing and obtaining national academic leaders?**
8. The AHC faculty have been very productive in obtaining sponsored funds from National sources, e.g. the NIH. Continued program development and grant infrastructure support require that a portion of indirect costs be available to individuals and departments and centers. This has not been occurring in recent years, resulting in major problems within the AHC. **Do you have proposals to remedy this problem?**
9. Please respond to the following concerns by faculty: **URGE IMMEDIATE REVIEW OF PROVOST OFFICE! NOT WORKING!**
 - Alarming proliferation of administrators in AHC provost office.
 - Seemingly arbitrary unilateral budget decisions from provost (see AHC strategic plan). Eg., civil service and P&A retrenchments: although couched as a "theory", the targets (5-15% reduction) are arbitrarily dictated with no assessment or regard for impact on each unit (colleges/departments).
 - Extremely poor performance in provost office with personnel matters such as:
 - long delays in P&T decisions and even longer delays in communication of decisions to affected individuals;
 - across-the-board (rather than targeted) freeze on tenure-track faculty hires;
 - dismal process in search for new Dean for Dental School (unsuccessful) and have heard numerous complaints about process for Medical School Dean search.
 - Provost office routinely projects medical school problems as all AHC problems, even though several schools (especially dentistry which has been fiscally responsible and proactive in reorganization/innovation for the past 8 years) have contributed little, if anything, to budget/legal/ethical problems yet now must share in incredible top/down dictates and micromanagement presumably designed to solve AHC (read medical school) money and faculty crises.
 - Incredible level of assigned responsibility of colleges/departments with no apparent tools (funds or real authority) to carve out their own destinies.
10. During the past 18 months the AHC has lived with the possibility of a massive re-organization based on the principles embraced in "re-engineering". Provost Cerra has advanced organizational proposals based on these concepts.

From what you know about re-engineering and the events in the AHC, would you support an organizational scheme along these lines?

11. The provost system created at the University was initially designed to overcome a perceived reporting bias against the AHC for the Vice President for Health Sciences and then spread to involve both the Minneapolis and St. Paul campus sites. Many faculty feel that the University worked best when we had deans and department heads as the strength of the institution and that the provost system has merely added another layer of unneeded, expensive beaurocracy.

Do you feel that the provost system has advantages for administration and would you consider eliminating it and returning to a system of proven worth?

12. I know you are well aware of the pending legal action against the University by the Justice system related to the Najarian ALG fiasco. However, the University of Minnesota is also not in compliance with the NIH rules by which secretarial, office staff and support are funded, because these functions should be met by indirect costs and departments have not received compensation for these functions.

Are you concerned that this violation of NIH regulations, if it is transmitted to NIH will add an additional layer of litigation in which NIH officers will join the suit against the U?

13. **What plans do you have for evaluating the administrative structure of the University, as well as the individuals holding current leadership positions?**

Are you planning to keep the current structure/individuals in place for a period of time or do you anticipate changes upon your arrival?

How will you involve faculty in any such evaluation?

Will you use our elected governance system or appoint ad hoc faculty committees?

How can you involve the AAUP, who has been very effective this year in preventing disastrous changes in our tenure code and otherwise protecting faculty interests and the academic integrity of the institution?

14. Given the extraordinary circumstances of the appointment of the current AHC Provost (i.e., he was appointed using emergency powers by President Hasslemo within days of the announcement of Brody's resignation without the benefit of an internal, let alone national, search, and without following EEOC guidelines), **will you commit to an immediate evaluation, with significant faculty input using the Provostal FCC and the AAUP, of the appropriateness of continuing his emergency appointment?**
15. **What do you know about reengineering and the CSC Index consulting firm's involvement with the AHC?**

Have you had studied any of the Index's consultants' books describing the heavy-handed tactics of reengineering to see its inappropriateness in a public research university and understand the harm that is being done in the AHC?

Have you had the opportunity to compare the Index consultants' templates for a reengineered AHC with the most recent plans to centralize power and money in the provost's office, significantly weakening our schools and departments?

16. I just learned that several faculty in our nationally prominent department have outside job offers. **What can you say to dispel my pessimism that, given Leo Furcht's latest scheme to implement reengineering (AKA Programs and Inter-Disciplinary Programs (PIDP) Implementation Task Force), the provost's office will welcome this potential source of funds for his untested, risky enterprise, rather than working hard to retain outstanding faculty for a nationally ranked department?**

If any of my colleagues choose to leave, what's the likelihood that their tenure lines will be returned to the department, given the provost's desire to fund AHC PIDPs that essentially duplicate our current schools and departments, with the important exception that our deans, department chairs, and faculty governance system have no authority, which instead rests entirely in the provost's office?

17. The indirect/direct costs associated with federally funded research grants have become a prominent source of concern to principal investigators and other faculty as the federal government is increasingly scrutinizing direct cost charges and indicating some items, routinely included as direct costs in the past, should be covered by the indirect costs associated with a given grant. The distribution of indirect costs is a university-wide issue, but is perhaps at peak concern in the AHC, given our current provost and his active attempts at centralizing funds including indirect costs. No one appears interested in seeking faculty input into this enormously important and complicated topic.
18. A discussion of the direct/indirect costs problems at a recently sponsored ORTTA presentation about how to be a good researcher, highlights the frustration of many faculty who never see any of the indirect costs, yet are being told by funding agencies that needed grant-related expenditures must come from the indirect funds. When faculty refused to be placated during the recent meeting by bureaucratic nonresponses to legitimate, pressing concerns, the administrator finally blurted out "We're not obligated by law to use the indirect funds for research!" A faculty member then pointed out that he would not lie to federal investigators if they came knocking at his door asking about the use of federal grant funds to support non-grant related activities like teaching programs, attendance at faculty meetings, writing of new grant proposals, or faculty committee assignments.

How will your administration improve the problem-solving process for issues like this?

Will faculty have other options with less potential to harm to our university than lobbying Congress to change the laws about the uses of indirect costs or acting as a whistle-blower with federal investigators?

19. Many successful programs in the AHC have operated for years primarily funded by federal research grants. These programs' successes are not just in the research arena, but have flourishing graduate teaching programs that are nationally ranked. The indirect costs associated with grants generated by these faculty historically have been diverted to other areas of the campus and few state dollars are appropriated to support active teaching programs. The current provost seems to want to continue this imbalance, or even increase it. It's not unusual for faculty to bring in over 75% of their salaries in federal dollars, yet still be active in teaching, department/university service, and developing new grant proposals.

Will you work towards a more equitable situation for these programs/faculty, who have years of productive service to the university?

Is it unreasonable to expect a certain baseline of funding for faculty salaries (perhaps 50%) to support teaching and university/department service?

20. In view of recent developments concerning tenure and in view of the continuing need for administrative flexibility to focus and restructure the University as well as recruit the next generation of faculty, **are you considering an enhanced early retirement option which would address the pre-Medicare gap problem and produce a substantive number of early faculty retirements as of July 1, 1997?**
21. **Do you plan to use the current U-wide and the evolving provostary faculty governance structures in your policy making and planning efforts? If so, how would you propose to do this?**

When do you think it appropriate to use outside consultants?

Do you have a plan for balancing pressures from outside constituents vs. faculty expectations?

22. Provost Cerra was appointed by President Hasselmo using "emergency powers" approximately one week after former Provost Brody announced his resignation. The emergency was the pending sale of University Hospitals to the Fairview System, and the perceived need to demonstrate that the University of Minnesota could be as quick and nimble as any business. Provost Cerra's appointment showed that the University need not be encumbered by quaint traditions like a nationally conducted, fair, and open search process for a leadership position responsible for over one-third of the campus.

Soon after his appointment, Provost Cerra ignored faculty calls to terminate the multi-million dollar contract with the Index Consulting Firm to "reengineer" the AHC. Many faculty members provided the Provost with documentation of highly questionable ethical practices, reported in the national press, of the firm's president (who was also directly responsible for the reengineering of the AHC) and other Index consultants; exorbitant fees; tactics destructive to morale; and some of the lowest efficacy ratings of management consulting firms. Provost Cerra gave many different responses to various faculty groups, but the most telling occurred in a large meeting with AHC faculty, students, and staff when we were instructed "to walk the talk" because reengineering was the only solution to overwhelming financial problems.

Will we be hearing from you, too, "to walk the talk" and unquestionably accept a new administrative structure for the AHC, perhaps more suitable for the research and development department of a company like Medtronics, rather than a great research university?

Will the AHC provost be allowed to continue to appoint sham "faculty" committees, who never meet, yet produce "reports" that simply regurgitate the Index consultants' overheads of a bloated administrative structure, financed at the expense of our current academic programs?

23. As a new faculty member, I am concerned about the competitiveness of our graduate students. **What should we do to enhance our profiles and attract top graduate students to Minnesota?**
24. The fastest growing part of the University system is the administration. The recently added Provost's office is continually hiring highly paid upper level administrators. Departmental budgets are getting cut an additional 15% in the coming year to pay for this added administrative load. Yet the real work of the University is faculty teaching, faculty research and faculty developed intellectual property. The administrators who really help advance faculty output are those secretarial, accounting, and support staff members within the departments. **What do you propose to do to curb this upper-level administrative overgrowth?**
25. The basic science departments in the medical school and the biological sciences departments are currently being "reorganized" into large "mega-departments" to "improve our national rankings". This will mean immediate and eventual disruption of departmental support services to faculty and research programs with moves across campuses and buildings. If money really does exist for this exercise in musical chairs, **why not give it directly to the existing departments for needed capital equipment, new faculty hiring, and seed money for new faculty research endeavors?**

Direct investment in faculty intellectual efforts is certain to pay off in increased numbers of grants and papers and consequently better rankings. Investment in organizational reshuffling may marginally improve the external perceptions of our

output, but it will not result in more papers, grants, patents, etc without additional resource availability at the departmental level.

26. As basic science faculty, we are currently undergoing
- a) Re-engineering of the AHC instigated by the Provost's office.
 - b) Resource reallocation based on still uncertain output measures and teaching loads instigated by the Provost's office.
 - c) Reorganization of the biological sciences departments instigated by the President's and Dean's offices.
 - d) Reevaluation of the entire curriculum for conversion to a semester system instigated by the Legislature.
 - e) Revision of the tenure code instigated by the Regents.

If we were to write a protocol to submit our rats to this amount of stress, it would not be approved. **What do you plan to do to improve the quality of employment conditions for the faculty?**

When are faculty-initiated research projects, teaching initiatives or group efforts going to be elevated to top priority?

27. Currently we are supposed to be lobbying our legislators for increased state funding for the University, specifically for faculty salaries. In a year of excesses in State income, some increase appears likely. Yet the Provost announces that our departmental budgets are going to be cut by 15% for the next academic year. There seems to be a contradiction here. Considering that last year the "bonuses" awarded to meritorious faculty members had to come out of existing departmental budgets, it appears that any hope for increases in some faculty salaries will come at the expense of laying off other staff members. **Are we supposed to go to our legislators and lobby for them to micromanage the University's budget to give the money directly to the departments and bypass the administration?**

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To: Provostial Faculty Consultative Committee members
Academic Health Center

From: Frank Cerra, Provost 

Subject: Legislative requests for investments in intercollegiate programs

As we all well know, the Academic Health Center is facing many challenges and new opportunities brought about by the changing health care environment. To meet them, we are working hard to take advantage of the AHC's tradition of excellence and its core strengths. The AHC is one of few comprehensive academic health centers in the country and a key intellectual resource for Minnesota. We touch the lives of each Minnesotan every day, playing a crucial role in the health of its citizens and the vitality of its economy. We have the support of key state leaders. We know we must continue to build on these strengths and evolve to meet the challenges we face, to enhance our reputation, and to add to the benefits we bring to society.

The faculty and administration have been engaged for the past several months in a process of re-defining our intercollegiate strategic plan. The PFCC has played a key role in these deliberations. The Deans' Council has been working hard to integrate and leverage efforts across the AHC to take advantage of our unique opportunities for synergy between the schools and colleges.

One result of this collaborative process has been development of several key strategic intercollegiate programs for investment. Beginning last summer with the development of many proposals from the faculty, cross-collegiate teams have been working to integrate the projects and ideas and to focus on the health and technology needs of Minnesota. Ten core investment proposals have emerged from that effort, proposals that will now be submitted to the Minnesota legislature for funding as part of the overall request from the University. The attached brochure presents a summary of those proposals. More detailed presentations are available on the AHC web site.

As our state's only integrated academic health center, we in the AHC have a unique responsibility to Minnesota. The State and the Academic Health Center are forging a new collaborative partnership to improve the health and quality of life of all Minnesotans. It is a partnership that is valuable to both. I think that these proposals are an exciting opportunity for the AHC and a good investment for our state.

I will do my best to make our case to the legislature on behalf of the AHC and I ask for your support. This has been an AHC-wide effort and foreshadows what we can accomplish as we work together.

Vickie Courtney
University Senate
428 Morrill Hall

**University of Minnesota
Academic Health Center
1997 Legislative Initiatives**

**Programs of Excellence
Improving Health and Quality of Life in Minnesota**

Research, Education, and Service programs

• **Center for Health Care Systems**

To take a close look at how well managed health care, which now covers 90 percent of Minnesotans, is meeting health care needs. We'll work with the Department of Health the state's major managed care organizations, and others to assess and model ways to improve health services for Minnesotans enrolled in managed care programs, reduce related costs, train health care students to work in managed care settings, and provide health care policy makers with reliable planning information.

• **Center for Health in Aging**

To improve health care for Minnesota's growing senior population by expanding geriatrics education and interdisciplinary training; working with HMOs to provide more clinical training opportunities; creating a database of geriatric treatments and outcomes; designing cost-effective new ways to treat chronic illnesses, and creating a consortium of health care providers to test those models.

• **Rural Health School**

To provide more and better health care services to rural Minnesotans by integrating and building upon statewide efforts to recruit and retain rural practitioners. This involves training teams of health professions students in rural settings; using rural clinicians as teachers; establishing interactive electronic communications networks; developing community health programs; and helping rural communities adapt to managed care. (Continues a pilot program established by a 1996 Legislative appropriation.)

• **Adolescent Health Institute**

To reduce alcohol abuse, smoking, violence, and pregnancy among Minnesota youth by identifying the most effective interventions and working with communities to implement those strategies. "Best practice" intervention models will be shared with Minnesota health care practitioners, health policy makers, youth program planners, educators, and parents.

• **Center for the Brain**

To apply advances in AHC neuroscience research to develop and teach innovative and effective new treatments for acute and chronic pain, Parkinson's Disease and other movement disorders, Alzheimer's Disease, and epilepsy. Minnesotans who suffer from these common conditions will be the first to benefit as new therapies move from the laboratory, to the clinic, to the marketplace.

- **Enhancing Quality of and Access to Primary Care**

To develop, test, and educate working health care professionals and students in new models of primary care. The models will include greater use of team care, better ways to identify and treat high risk situations, better understanding of the social and behavioral determinants of health, and better use of primary care in managed health systems. The new education programs will integrate on-site education and information technology to improve learning by students and working health care professionals. We will invest in new research and management systems to create better ways for monitoring and improving access to primary care and for assuring quality of care in the new health care environment.

- **Cancer Sciences**

To provide Minnesotans with access to the newest and best ways to prevent and treat cancer by extending resources of the University's new Cancer Center. We'll accomplish this by educating citizens and health care professionals about cancer risks and new treatments, and by providing screening and counseling to diagnose and treat cancer as early as possible. Additionally, this initiative will strengthen Cancer Center research efforts to prevent and treat lung and breast cancers, the most common cancers among Minnesotans.

Core enabling technologies

These three initiatives will provide critical core technology that will support the development of laboratory and clinical innovations throughout the Academic Health Center.

- **Advanced Therapies Institute**

To develop new and better pharmaceuticals that act selectively against disease-causing cells and enzymes without harming healthy tissue. Targeted drugs are not only more effective, but have fewer side effects, which makes them particularly promising for cancer therapy. The Institute will link University and corporate drug development efforts to get new therapies to the public more quickly.

- **Biomedical Engineering Initiative**

To support development of electronic biomedical devices, bio-compatible materials such as artificial blood vessels, bio-engineered protein pharmaceuticals and cost-effective microtechnology, such as diagnostic tests on microchips, and micro-scale surgical devices. This initiative would provide funds for the Biomedical Engineering Center and the Microtechnology Laboratory, both of which collaborate with Minnesota's biomedical industry.

- **Genetics/Immunology Center**

To support core technology in genetics and immunology that would enable AHC researchers to develop DNA-based diagnostic tests, vaccines, and biological therapies for humans and animal diseases. This initiative will also support biotechnology industry in Minnesota, train Minnesotans for jobs in the growing biotechnology field, and attract millions of dollars in federal and corporate funding.

January 15, 1997

ACADEMIC HEALTH CENTER
STRATEGIC ISSUES DOCUMENT

Mission
Vision
Values
Challenges

February 1997

ACADEMIC HEALTH CENTER STRATEGIC ISSUES DOCUMENT

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ACADEMIC HEALTH CENTER STRATEGIC ISSUES DOCUMENT

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.
- 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.
- 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 specialist 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 be 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:

- 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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35. Friedman, The Virtual Clinical Campus, Academic Medicine, 71:647-651, 1996.
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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 by 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.

47. Academic Health Center: Major Academic Unit Expenditures: 1995-1996: pie charts
 - From the Academic Health Center Planning Data Book: 1994-1995
 - AHC major academic unit expenditures
 - AHC expenditures by academic unit
 - AHC full time equivalent personnel and expenditures: aggregate and by unit
 - AHC student application data, degrees conferred, and enrollments
 - AHC academic unit tuition cost increases 1978 -1995
 - AHC space use by academic unit
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 - Draft proposal for state request for biennium: 4 year financial framework
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56. Faculty salary data for the AHC.
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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 infrastructure 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 increase 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.

Medical School-Twin Cities
Case for Change
Alfred F. Michael, Interim Dean

The reasons for change are predicated on both internal and external events. Although the Medical School has had a major impact on Minnesota and national medical practices and has contributed significantly to research and education, it also had a long history of isolation from the community, and therefore the School and hospital were vulnerable to the profound changes in medical delivery systems and the development of managed care. The Medical School had done an exceptional job in physician education and in internationally recognized research. The patient supply on which the School depended for meeting its mission was seriously affected and is the principal reason for other down-stream events, including threats to financial viability and the potential loss of its academic programs and faculty.

Other changes that were stimulated by these forces include the need to:

- increase the relative proportion of primary care physicians
- decrease the number of medical students and residents being trained and develop novel educational programs for continuing education
- develop strategies for educational and scientific interactions with other Academic Health Center (AHC) schools/colleges
- aggressively connect and, in some cases, integrate, with certain community programs and physician networks
- develop effective communication programs, electronic and otherwise, both within the AHC but also with the state-wide health care community
- develop educational programs that ultimately meet the needs of patients and health care providers
- institute productivity and goal-oriented systems within the Medical School faculty
- develop effective financial accountability and management systems
- maintain and develop interactions with community hospital systems
- develop a single medical faculty practice organization

For the Medical School, the need for change is obvious, since its survival as a premier academic institution is threatened.

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 collegueship 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 or 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.

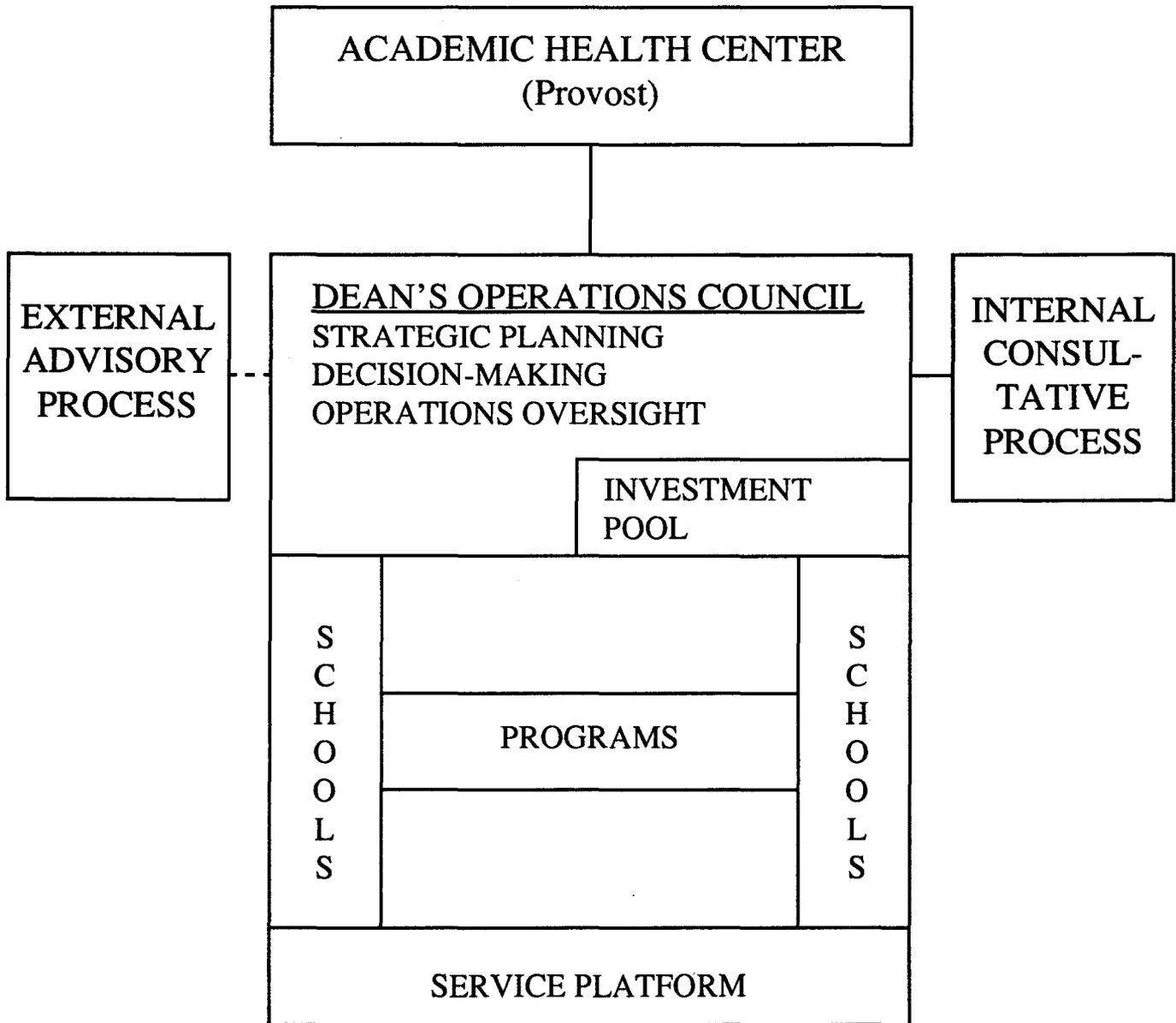
E. EVOLVING FUNCTION AND STRUCTURE

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 (see diagram attached)

- 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 service platform
 - 1) Provostial office staffing and infrastructure
 - 2) RSO/ESO modules
 - 3) interdisciplinary program management module
- E) strategic investment pool for new AHC initiatives

AHC: FUNCTIONAL MODEL



University of Minnesota Academic Health Center Center for Health Care Systems

Purpose: To find out how well the new health care systems are taking care of Minnesota through the Center for Health Care Systems—a multi-disciplinary effort that links the Academic Health Center, the Minnesota Department of Health, and major health care providers. This initiative will take a close look at the effectiveness and efficiency of managed care services.

Budget Request: \$3.1 million in 1998-99 and
\$3.5 million in 2000-01

The Need

Over the past 20 years, managed care has virtually replaced fee-for-service health care in Minnesota. In fact, 90 percent of Minnesotans with health insurance are covered by a managed care plan. Managed care quickly captured the market because it promised to control spiraling health care costs. Most people would agree that it has done a good job of that. And many Minnesotans are very happy with their care.

But the effects of the sweeping changes managed care has brought to health care delivery are not yet fully understood. For one, it has controlled access to specialty care by assigning "gatekeeper" responsibilities to primary care physicians. For another, it has shifted the focus of health care from treating individuals to treating groups. Yet another change is the inherent financial incentive to provide less care. What do these mean for the average Minnesota family?

Managed care already has improved the cost-effectiveness of health care and it has great potential to improve its quality as well. But we need a program to monitor its performance—a program that brings together academic

researchers, public policy makers, and representatives of managed care organizations themselves. We also need to develop curriculum and training to prepare our students to work in managed care environments.

The time is right for taking a close look at how well managed care is really taking care of Minnesota, and for helping it do a better job.

The Solution

Organized within the Academic Health Center, the Center for Health Care Systems will form an alliance that links several AHC colleges, the Minnesota Department of Health, and major managed care organizations in the Twin Cities to maximize the effectiveness of managed care programs and improve the health of Minnesotans. In part, the Center will:

- Construct a managed care database by integrating information from the University, the Department of Health, and managed care organizations, and conduct a survey of 5,000 families to assess the impact of managed care on the health of Minnesotans.
- Identify factors that adversely affect the health of Minnesotans

and develop managed care interventions to address these issues.

- Analyze the costs and benefits of procedures and technologies, with a focus on appropriate use of high-cost technologies.
- Train all AHC health sciences students to work effectively in integrated health care delivery systems, provide population-based cost-effective health services, and work effectively on a team.
- Design short courses and computer interactive educational programs for managed care employees.
- Initiate research and support research in progress in five areas concerning managed care: (1) internal organization; (2) strategy and marketing; (3) consumer satisfaction; (4) clinical processes and outcomes; and (5) policy.
- Serve as a resource on managed care issues and disseminate information through regularly scheduled publications and conferences.

The Impact

Quality of services provided by health care delivery systems such as managed care will be improved through an alliance of academic researchers, public policy makers, and industry representatives. Health care costs will be reduced, resulting in savings for state-funded health services and employers. Future health care professionals will learn how to provide high quality, cost-effective care in a managed care environment. Policy-makers will have access to research data and other resources that will help them formulate health care policies.

University of Minnesota Academic Health Center Center for Health in Aging

Purpose: To improve the health of our senior citizens, particularly the chronically ill, and reduce health care costs through the creation of the Minnesota Center for Health in Aging—a multidisciplinary center designed to improve health care delivery and expertise among health professionals who will care for the elderly.

Budget Request: \$3.4 million in 1998-99 and
\$3.5 million in 2000-01

The Need

The message isn't new. We need to do a better job of taking care of our senior citizens when it comes to their health, and we need to find more cost effective ways to do it. Nearly 600,000 people in Minnesota are 65 or older, with baby boomers on the verge of joining their ranks. Our senior citizens receive 30 percent of our nation's total health care (at a cost of \$50 billion annually), and of the 90 million Americans who suffer from chronic illness (conditions that persist over months/years), seniors bear the greatest burden.

Much of health care training remains focused on acute illness, with limited attention given to the pressing need to develop new approaches to chronic disease management. Current curricula provide only limited geriatrics training, and the research and educational opportunities that do exist are fragmented across disciplines. At the same time, clinical training opportunities have been severely curtailed as clinics have come under financial pressure to eliminate donated time and space needed for this purpose. Despite many qualified applicants, the gerontologic nurse practitioner program, for example, is limited in size because of a lack of clinical training sites.

We must increase geriatrics education for all of our students to not only enhance their skills and understanding of the social/psychological issues involved, but to ensure that all health services provided to the elderly affirm their self esteem and dignity. This education must improve existing programs across disciplines and continue to offer critical clinical experiences that provide feedback about the complexity of delivering care to the chronically ill. We must also improve delivery systems by developing new methods for managing these costly diseases and reducing disability among our elderly.

The Solution

The Center for Health in Aging will develop a multidisciplinary, leading-edge program in geriatrics education and research to improve the health of our seniors, particularly those suffering from chronic disease, and reduce associated costs. Through this center, the Schools of Dentistry, Medicine, Nursing, Pharmacy, and Public Health will converge on the pressing issues facing our seniors. In part, they will:

- Increase geriatrics education for all health sciences students, residents, and fellows by expanding curriculum for all entry-level students; incorporating geriatrics

components in existing courses; and designing additional training programs for generalist graduate students and those specializing in geriatrics.

- Ensure a multidisciplinary scope by analyzing curricula across all disciplines to identify opportunities for collaboration; designing interdisciplinary courses and training programs; and fostering interdisciplinary education and research.
- Increase clinical experiences by forming partnerships with HMOs and clinics; and expanding opportunities within, and community access to, University clinics.
- Enhance research by developing a database that records treatment and outcomes for participating geriatric patients; designing new models of care for chronic disorders based on studies using this database; creating a consortium of clinics and managed care organizations to test new models of delivering chronic care; and conducting a longitudinal study on the relationship between managed care delivery and outcomes.

The Impact

This multidisciplinary center will greatly impact our increasing number of senior citizens (and their family care-givers) by providing state-of-the-art geriatrics training to all health care professionals and finding innovative approaches to reducing morbidity, disability, and lost independence and dignity. In turn, it will reduce the high costs associated with these illnesses and benefit our State's economy.

University of Minnesota Academic Health Center Rural Health School

Purpose: To provide more and better health services to Minnesota's rural citizens by expanding the Rural Health School, a pilot program initiated by a 1996 Legislative appropriation that integrates and builds upon statewide efforts to train and recruit health care professionals to practice in rural communities.

Budget request: \$6.1 million in 1998-99 and
\$7.9 million in 2000-01

The Need

Recruiting and retaining enough health care professionals to provide care for rural citizens remains a serious concern. In January of 1996, for example, there were 300 unfilled openings for physicians and 80 unfilled openings for advanced practice nurses and physician assistants throughout greater Minnesota.

There are three reasons for this rural health care crisis: 1) Students trained only in urban settings are unaware of the rewards of small town life and unprepared for the challenges of rural practice. 2) Small towns can't compete with urban employers, who may spend more than \$50,000 on recruitment and offer incentives to attract the best candidates. 3) Health care professionals who *are* recruited often return to urban settings because of isolation and lack of professional enrichment opportunities.

Rural practice is more challenging than urban practice because of its breadth, which spans obstetrics to treating mining and farming injuries to geriatrics, domestic violence, and alcohol abuse. To further complicate this situation, the demographics of rural Minnesotans make them a high-risk population. They tend to have lower incomes, a higher rate of unemployment and underemployment, and a higher proportion of elderly. Consequently, they use more health care services and often have more complex needs than

urban patients.

To meet these rural health care needs, training must take place in rural settings and take advantage of expanded roles of nurses, physician assistants, pharmacists, and other health care professionals who work in synchrony with physicians to provide team care. These team-oriented approaches must be further developed to recognize, prevent, and treat health problems unique to our rural communities.

The Solution

The Rural Health School is a virtual "school without walls" administratively centered at the Duluth School of Medicine that uses greater Minnesota as its campus and rural clinicians as its teachers. Since it was established in 1996, it has integrated and built upon efforts of academic institutions and communities statewide with the goal of increasing the number of well trained health care professionals and improving the quality of and access to health care in rural Minnesota. To date, it has:

- Created an interdisciplinary rural training program for medical, nurse practitioner, physician assistant and pharmacy students. Teams have begun training at three sites: Grand Rapids, Moose Lake and New Ulm.
- Trained local clinician-volunteers to teach students.

- Enlisted the help of rural citizens to integrate students into the life of the community.
- Electronically linked rural training sites to each other and the University with interactive television and computers to decrease isolation and provide professional enrichment opportunities.

In the next biennium the Rural Health School plans to:

- Expand the number of rural training sites from three to nine, with each site serving another community.
- Increase the number of students to 300 trainees annually and the number of disciplines from four to eight or more.
- Teach students interdisciplinary strategies to recognize, prevent, and treat individual as well as community health problems.
- Teach students how to use telemedicine (interactive television designed for medical use) to consult with specialists at the University and elsewhere to diagnose and treat disease.
- Conduct research to evaluate students' educational experiences, compare new rural health care delivery models with traditional care, compare treatment outcomes at different sites, and launch a pilot study to reduce alcohol abuse.
- Expand services to recruit and retain health care professionals.
- Help rural communities develop strategies for adapting to managed care.

The Impact

- This initiative will improve access to and quality of health care for one of Minnesota's most underserved populations.

University of Minnesota Academic Health Center Adolescent Health Institute

Purpose: To reduce four major causes of death and disability among Minnesota youth and related health care costs through the creation of the Adolescent Health Institute—a new University-community initiative designed to identify, promote, and adapt best practice interventions in Minnesota communities.

Budget Request: \$2 million in 1998-99 and \$2 million in 2000-01

The Need

Things have changed since we were kids. For us, good health meant being immunized or treated for infections. Today, social ills are the major killers of young people, accounting for nearly 80 percent of all deaths in the second decade of life. Of these, tobacco, alcohol, violence, and teen pregnancy are the most serious threats, in terms of deaths, lost productivity, and consequences for our children's future. They also represent major social and economic costs to our state.

Eighteen percent of urban and 15 percent of rural Minnesota girls become pregnant before completing high school, costing the state at least \$400 million per year. And, of the 3,000 children and teens who start smoking every day, one-third will die prematurely from this preventable cause. Fortunately, good interventions work. For every dollar invested in tobacco-use prevention, for example, more than \$26 is saved in health care costs.

Clearly, we must do more to prevent risk-taking behavior in these areas. It is time to set a standard that advances effective preventive programs and eliminates those that have marginal impact. We

must bring expert knowledge to bear on these interrelated issues to identify best practices based on existing research and ensure that everyone concerned is informed, trained, and involved. We need to create a new model in which we work with communities throughout Minnesota to help them develop, implement, and evaluate programs, as well as ensure that policies, practices, and educational programs are adapted to meet their needs.

The Solution

Through the Adolescent Health Institute, experienced, nationally acclaimed faculty from the Schools of Medicine, Nursing, and Public Health will focus on these four interrelated social morbidities that cripple the capacity of our nation's youth. This initiative will establish an important educational exchange between Minnesota communities and the University as well as among students from a variety of disciplines. In part, the Institute will:

- Draw on community input, existing research, and studies in which faculty members are currently involved to identify best practices for reducing risk-taking behavior among our youth.

- Help Minnesota communities evaluate existing community youth-focused intervention programs and adopt/adapt best practice interventions.
- Strengthen communities' abilities to evaluate interventions by providing small grants and stipends, technical assistance, and ongoing training in prevention methods through on-site and distance-learning technologies.
- Invite community experts to the University to train students and faculty in community needs and to develop skills in program development and evaluation.
- Disseminate best practice syntheses and other information to practitioners, program planners, health educators, policymakers, schools, and parents through a variety of vehicles and develop a partnership with industry for "marketing" this information.

The Impact

This initiative will reduce the major causes of death among young people and related health care costs. It will better train students and community providers in developing and evaluating successful interventions and ensure that research is driven by community needs. Finally, it will provide a standard and necessary data for policymakers and community program planners to develop effective policies and services.

University of Minnesota Academic Health Center Primary Care Quality and Access

Purpose: To create education and training programs to prepare primary care professionals for their expanded roles in new health care delivery systems, to enhance quality and access to primary care, and to develop new models for providing primary care, particularly to special needs groups that may fall outside of a population-based system that focuses on needs of average citizens.

Budget request: \$6.9 million in 1998-99 and \$7 million in 2000-01

The Need:

Primary care practitioners, the doctors and nurses we rely on for routine health care like well check-ups, treating infections, and monitoring chronic illnesses, have expanded roles in today's health care delivery systems. As practitioners who act as a point of entry to the health care system and control access to specialists, they must be attuned to a very broad range of medical and psychosocial conditions and have the judgment to know when and where a patient should be referred. In essence, primary care providers are responsible for managing all of our health care needs.

The education and training of many of today's primary care practitioners did not prepare them for that pivotal role, nor are curriculum and training programs for health professions students yet adequate to prepare future primary care practitioners.

Minnesotans need to be confident that their primary care practitioner is capable of providing a broader range of care than in the past and is capable of managing each patient's total care in a complex health care environment.

Special needs groups may be at a particular disadvantage in the new hierarchy of managed care. In a system designed to serve the average person, it's likely that many vulnerable groups aren't being served adequately. Even though Minnesota has one of the

most advanced health care systems in the world, the health statistics for some groups are very poor.

The Solution:

The Center for Primary Care Research and Education, working in concert with the Center for Health Care Systems, will draw upon AHC expertise in medicine, mental health, nursing, pharmacy, and public health to develop new models for delivering primary care that ensure all of our health care needs will be fully met, and that high-risk groups will not be left out of a system designed to serve the common good.

To achieve this mission, the Center will address three questions: 1) How can we assure quality for all, including special needs groups? 2) How can we assure access to all? and 3) How do we teach practicing primary care practitioners the new skills they need? The answers will provide a foundation for developing new delivery models and education and training programs that will improve the quality and breadth of primary care in the State's private and public health care systems.

Our three major efforts will be interdisciplinary primary care education; developing systems to transfer knowledge to primary care providers; and researching and developing primary care "best practices."

Some specific goals are to:

- Develop new models to educate health professions students in providing primary care.
- Provide continuing education for practicing professionals.
- Increase training in clinical settings where primary care is delivered.
- Partner with Minnesota health care organizations to develop and teach new primary care models.
- Generate knowledge about primary care in managed-care settings that will enhance the health of Minnesotans.
- Become more self-sufficient in supporting primary care research and development.
- Build a team of researchers who can contribute to improving primary care and population-based health in Minnesota.

Initially, we will focus our efforts where our help is most urgently needed, on three high risk groups that may fall between the cracks of Minnesota's health care systems:

- Children with complex medical needs
- People at high risk for HIV infection
- Ethnic minorities

Developing primary care models for these groups will provide knowledge that will be important in addressing needs of other vulnerable, hard to reach groups. It will also provide a foundation for improving primary care for all people in Minnesota.

The Impact:

This initiative will ensure that primary care professionals are well prepared for their expanded new role in our managed care system and ensure high quality primary care for all Minnesotans. It will also ensure that primary care needs of high risk groups who fall outside of the health care system are not neglected.

University of Minnesota Academic Health Center Center for the Brain

Purpose: To better understand and develop effective new treatments for nervous system disorders, particularly pain, movement disorders, Alzheimer's Disease, and epilepsy by integrating and enhancing the Academic Health Center's neuroscience research efforts.

Budget Request: \$5.2 million 1998-99 and \$3.5 million in 2000-01

The Need

The complexity of the nervous system and the diseases that affect it have slowed progress in what is often called medicine's last frontier. But scientists are beginning to make headway. They are learning how brain cells grow, how electrical and chemical signals control thought and movement, how to visualize the brain at work, and what genes underlie brain diseases. As the "Decade of the Brain" draws to a close, they are on the verge of landmark achievement—restoring lost brain function with prosthetics, cellular and gene therapies, and transplanted nerve cells.

Hundreds of thousands of Minnesotans suffer each year from chronic brain disorders that compromise their ability to function mentally and physically.

The need now is to move quickly to transform laboratory findings into innovative, effective treatments that will benefit people in Minnesota and beyond who suffer from these devastating illnesses.

The Solution

With more than 80 researchers in seven colleges and 22 departments, neuroscience is one of the University's largest scientific efforts. Last year, members were awarded \$24 million in federal funds and published 700 scientific papers.

This initiative will strengthen four

existing areas of research excellence and focus interdisciplinary resources on four common brain-related conditions: 1) Pain Management and Research; 2) Parkinson's Disease/Movement Disorders; 3) Alzheimer's Disease; and 4) Epilepsy Research and Education.

Creating a Center for the Brain is also proposed to oversee these initiatives, seek new federal and private funds, coordinate AHC neuroscience education, educate health care professionals about treatment advances, and transfer new technology into the community and the marketplace.

Pain Management and Research

Ranging from acute post-surgical pain to migraines to chronic backaches, pain is a universal problem that costs the U.S. over \$80 billion annually, accounts for 15 million lost work days in Minnesota alone, and takes a heavy personal toll.

To create new and better treatments, this research team will focus on understanding pain pathways in the nervous system, cellular and chemical changes that accompany pain, and the brain's natural mechanisms for controlling pain. Clinical faculty will bring the latest pain management techniques to patients.

Parkinson's Disease/Movement

Disorders Some 60,000 Minnesotans and two million Americans suffer from disabling movement disorders, which cost \$10 billion a year and greatly diminish quality of life.

AHC studies of neuromotor control,

the genetic basis of movement disorders, and regeneration and transplantation of diseased brain cells provide a strong interdisciplinary research foundation for this initiative. In the clinical arena, Minnesotans will have access to the newest drugs and surgical techniques.

Alzheimer's Disease

Alzheimer's disease is one of the most rapidly growing health care problems in the United States. By 2050, the number of Americans with this debilitating condition will increase from four to 13 million.

Gains in understanding the nature of this disease are raising hopes for a cure. Scientists now know that brain cell death is caused by storage of abnormal proteins. Last year, an AHC researcher made national headlines for developing the first animal model to study Alzheimer's disease and test new treatments. This interdisciplinary team will study how and why the proteins are stored, development of animal models, transplantation of brain cells, new drug therapies, and disease risk factors.

Epilepsy Research and Education

Program: Epilepsy—seizures caused by abnormal electrical activity in the brain—will affect three percent of Americans during their lifetimes. Children and the elderly are most vulnerable.

This program, centered in the College of Pharmacy, will focus on assessing new drugs spawned by a growing understanding of the disease. Emphases will be on treating children and the elderly, developing models of cost-effective team care, and studying risk factors and outcomes.

The Impact

Cost-effective new treatments for common brain disorders will move more rapidly from the laboratory to the clinic to the marketplace. Minnesotans will be the first in the nation to benefit.

Academic Health Center University of Minnesota Cancer Center

Purpose: The University of Minnesota Cancer Center is a vital resource for Minnesota's citizens and health care professionals. This initiative will provide outreach services and education that will extend the Cancer Center's wealth of knowledge about the latest and best ways to prevent and treat cancer to all Minnesotans. Continuing support for the Cancer Center, which conducts pioneering research on many forms of the disease, will help reduce incidence, deaths, and costs of treating these illnesses.

Budget Request: \$3.3 million in 1998-99 and \$3 million in 2000-01

The Need

In 1996, 22,000 Minnesotans were diagnosed with cancer and 9,000 died from the disease. Despite progress in cancer prevention and treatment, our aging population makes it likely that more Minnesotans than ever will die from cancer in 10 to 20 years. But many of those deaths can be prevented.

For example:

- At least 85 percent of lung cancer is caused by cigarette smoking, yet approximately 25 percent of our adult population still smokes.
- Ninety percent of women with early-stage ovarian cancer do not get the most advanced care.
- Some families are genetically predisposed to cancer. New tests make it possible to evaluate their risks; counseling can provide guidelines for prevention, early detection, and treatment.

Although scientists worldwide are making steady progress against cancer, it's clear that effective new prevention and treatment methods aren't moving quickly enough into the community.

As one of the nation's leading cancer research institutions, the University of Minnesota Cancer Center's top priority is to develop innovative, effective ways prevent, detect, and treat cancers. But we have another important job: ensur-

ing that our health care professionals and citizens have access to the most advanced methods for preventing and treating these diseases. We have the best and latest information at our fingertips, but lack the financial means to make sure every Minnesotan can benefit from our knowledge.

The Solution

Created in 1994 by Legislative appropriation, the Cancer Center has enhanced the University's position as one of the nation's leading cancer research institutions. Since we opened our doors, we have recruited exceptional new faculty, published exciting research findings, and have begun to share our discoveries with Minnesotans. With the requested funding we will continue to advance our understanding of cancer.

One accomplishment we're very proud of is the Familial Cancer Program, which provides counseling, risk assessment, and genetic testing for members of susceptible families. Over the coming four years we hope to develop other new ways to reach citizens and health care professionals with life-saving information.

Here are some of the ways we plan to use the requested funding to disseminate more information throughout Minnesota:

- Share discoveries and information about best prevention and treatment methods with Minnesotans through conferences, continuing education programs, open houses and tours, publications and news releases, community meetings, a cancer information line, and a speaker's bureau.
- Develop an interactive database to help physicians diagnose, stage, and treat patients with cancer, as well as to enroll patients in clinical trials of new treatments.
- Design an Internet web site for all Minnesotans that contains timely information about cancer treatment options and prevention strategies.
- Create a state-wide program for assessing familial cancer risk based on a community program the Center initiated in greater Minnesota.
- Develop a program in chemoprevention—a promising approach that uses chemicals found in foods—to prevent lung cancer in smokers and former smokers.
- Improve diagnosis and treatment of breast cancer by identifying genetic alterations that may predispose certain women to this disease and develop new technologies to detect breast cancer earlier than possible with mammography.
- Use "natural killer cells"—cells in the immune system that can be activated to kill cancer cells—to eliminate any breast cancer cells that may remain following standard therapy.

The Impact

Continuing funding will enable the Cancer Center to keep citizens and health care professionals informed about the latest and most effective new ways to prevent, detect, and treat cancer. Support will also help the Cancer Center strengthen its efforts to develop prevention and treatment methods for lung and breast cancers—the most common cancers in Minnesota. Overall cancer incidence, morbidity, and deaths will be reduced.

University of Minnesota Academic Health Center Core technology: Advanced Therapies Institute

Purpose: To improve health and contribute to the state's economy through the creation of the Advanced Therapies Institute—an interdisciplinary institute that will promote research to discover, design, and develop new drugs that act selectively against disease-causing cells and enzymes, and that have minimal side effects.

Budget Request: \$2.4 million in 1998-99
and \$2.3 million in 2000-01

The Need

There's good news about the development of effective drug therapies for diseases that are both difficult and costly to treat. Recent advances in molecular biology and other fields have increased our understanding of the underlying causes of cancer, cardiovascular, and neurological diseases, among others. We are now poised to make long-awaited breakthroughs in designing and developing drugs to treat these and many other illnesses selectively—without harming healthy tissues and causing unwanted side effects.

Unfortunately, many potential drugs may never materialize because the "pipeline" that runs from the promising laboratory idea to production of a new drug is both long and obstructed. This obstruction is due in part to specialization in this field and lack of interaction among researchers.

Because of the complexity of drug design and development, academic researchers typically focus on one step in a lengthy process. Their work is carried to the next step only if a colleague learns about it,

often through a professional journal, and chooses to develop it. Small pharmaceutical companies, on the other hand, have a different kind of problem. They often lack some of the resources and expertise needed to move from one end of this long pipeline to the other.

To take advantage of opportunities to develop effective new drug therapies, we need to bring specialized scientists, clinical researchers, and members of the pharmaceutical industry together and get these drugs into the hands of health practitioners and patients more quickly.

The Solution

The Advanced Therapies Institute will create a multidisciplinary, integrated approach to developing new drug therapies for disabling and life-threatening diseases. Faculty scientists will draw on Academic Health Center strengths in cancer, neurological, immunologic, cardiovascular, infectious, and genetic diseases as they collaborate to develop these new therapies. Through the Institute, specialists from multiple disciplines will jointly conduct research on potential drugs, ultimately licensing

promising therapies to companies for further development. They will also lend their expertise in drug development to companies with products in the pipeline. In part, this Institute will:

- Provide opportunities for AHC scientists to collaborate on new drug therapies that will save lives and money.
- Involve clinical researchers early on in the drug development process.
- Collaborate with the pharmaceutical industry on drug design and testing and provide assistance to companies as needed.
- Offer multidisciplinary educational programs to students, researchers, and industry members, and train graduate students to work in interdisciplinary environments.
- Facilitate grant applications and administration.
- Provide seed money for promising projects to attract external support.

The Impact

The Institute will improve the health of Minnesotans and the health of Minnesota's economy by advancing development of new drugs that target disease-causing cells and produce minimal side effects. Patients will benefit from more effective, less toxic treatments; AHC scientists will see their ideas for new drugs brought to fruition more quickly; pharmaceutical companies will benefit from collaboration with scientists; students will be trained to practice this approach to drug development; and new companies will be attracted to our state.

University of Minnesota Academic Health Center Core technology: Biomedical Engineering

Purpose: To continue to improve the health of Minnesotans and the state's economy by developing innovative, cost-effective biomedical technology through the Biomedical Engineering Center—a multidisciplinary initiative created by a 1989 Legislative appropriation that brings together medical professionals, engineers, and industry.

Budget Request: \$3.3 million in 1998-99 and
\$2.7 million in 2000-01

The Need

As we approach the 21st century, one of health care's greatest challenges is to develop affordable innovations in health care technology. Meeting this challenge will depend upon combining the insights of medical professionals, the creativity of bioengineers, and the resourcefulness of industry.

When these groups work together, the possibilities expand dramatically. Integrating academic and industry talents has already enabled the Biomedical Engineering Center to compile an impressive list of such innovations in developing biomaterials, drugs, and medical devices. That list includes 35 inventions, 19 patents (with many others pending) and numerous licensed products.

Research in this area must continue to grow, for the benefit of medicine and Minnesota. Some of the most critical needs are:

- Biomaterials to bridge human tissues and synthetic materials to produce the "next generation" of implanted medical devices, such as prosthetic joints and heart valves, which will be more compatible with the human body, less likely to cause complications, and more durable.
- Bioengineered peptide-based drugs to inhibit the spread of cancer, heal wounds, reduce chronic inflammation associated with arthritis and other autoimmune diseases, and reduce tissue damage from strokes and heart attacks.

- Biotechnology to make genetic testing less expensive and more widely available.
- Applying microelectromechanical systems (MEMS) technology developed in the computer and engineering industries to health care. This could result in electronic medical devices such as sensors to monitor blood sugar levels, for example, on computer microchips smaller than the thickness of a human hair.
- Surgical microtechnology that will enable us to meet demand to provide less costly and less invasive surgical procedures, a demand that is evident by the increase in the number of same-day surgery centers in Minnesota.

The Solution

The Biomedical Engineering Center will form a partnership with the University's Microtechnology Laboratory and Molecular Diagnostic (genetic testing) Laboratory to foster collaboration among medical professionals, engineers, and industry with the goal of designing cost-effective, innovative technological solutions to common, life-threatening clinical problems. Over the next four years, this partnership will accelerate the development of biomaterials, compounds, and miniaturized devices, and the transfer of these cutting-edge technologies into the marketplace. Some goals are to:

- Design biomaterials that enhance

the cellular/tissue response, biocompatibility, and performance of implanted devices using cell adhesion-promoting synthetic peptides.

- Develop novel compounds that control inflammation, cancer, and other diseases through research in cell adhesion and peptide-based therapeutics, working with the Advanced Therapies Institute.
- Build a cost-effective microelectromechanical MEMS-based genetic testing system and test this system in our Molecular Diagnostics Laboratory (MDL)—one of the nation's leading laboratories for gene-based testing.
- Create new MEMS-based microscale surgical instruments and bioanalytical testing devices.
- Design MEMS-based devices that monitor drug delivery or administer drugs in areas that are difficult to access.
- Facilitate early-stage research for faculty/industry by offering expertise and instrumentation critical during the "proof-of-concept" stage.
- Expand the Industry Fellows program in which industry scientists/engineers participate in academic research activities, and develop a fellowship program that places faculty in industry settings.
- Teach the next generation of engineers, scientists, and physicians about emerging biomedical engineering technologies.

The Impact

This Center will improve health care at reduced cost and ultimately enhance economic growth and international recognition for Minnesota. The sophisticated medical devices and novel compounds and biomaterials developed at the Center will be brought to market, which will contribute to Minnesota's burgeoning biomedical industry, increase the number of start-up companies, and create jobs.

University of Minnesota Academic Health Center Core technology: Genetics and Immunology

Purpose: To promote genetics and immunology research at the University and translate discoveries into DNA-based diagnostic tests, vaccines and biological therapies that will benefit humans and animals in Minnesota and beyond. This initiative will provide enabling technology that will advance all of the Academic Health Center's scientific and clinical research efforts.

Budget request: \$4.3 million in 1997-99 and
\$4.6 million in 2000-01

The Need

Medicine's quest to detect, prevent and treat disease had led to the very wellsprings of life and good health: the genome and the immune system. New understanding of genetics and immunology is enabling scientists at the Academic Health Center and other research institutions nationwide to detect and correct disease-causing genetic flaws, create better vaccines for existing and emerging diseases, and manipulate the immune system to treat cancer, autoimmune diseases, and AIDS and to prevent rejection of transplanted organs and bone marrow.

The potential of these new strategies to protect and improve human and animal health is enormous. The economic potential for developing new biological health products is equally great.

To realize these human and animal health benefits, as well as economic benefits for the state, Minnesota must make a financial commitment to excellence in the core technologies of genetics and immunology.

The Solution

This initiative will coordinate and

strengthen immunology and genetics research in three existing programs: The Center for Immunology, the Institute for Human Genetics, and the College of Veterinary Medicine's Comparative Genetics Program.

Immunology is a long-standing strength at the University of Minnesota, beginning with pioneering basic research in the 1970s that laid the foundation for the University's leadership in bone marrow transplantation. Last year, the Center for Immunology was created to coordinate efforts of 45 immunologists throughout the Academic Health Center. Also last year, a team of researchers at the Institute of Human Genetics, which includes 44 AHC faculty, launched the state's first gene therapy trial. Institute scientists are nationally known for discoveries in the genetics of neuromuscular diseases. And researchers at the College of Veterinary Medicine are noted for their creation of a vaccine for a porcine virus that caused devastating losses in Minnesota's swine industry several years ago.

Each of these programs is a "center of excellence" in its own right. Combining their expertise and resources will create a synergy that is expected to enhance creativity and accelerate the

pace of research.

This initiative will provide biotechnology capabilities that will have applications throughout the Academic Health Center.

Requested funds will support:

- Centralized research facilities that will enable researchers to conduct specialized research in genetics and immunology, such as identifying disease-causing genes. One immunology research focus will be xenotransplantation—using organs from animals such as pigs to replace failing organs in humans.
- Recruitment of faculty who can bridge the gap between laboratory discoveries and clinical or commercial applications.
- Collaborative research projects likely to lead to patenting, clinical applications, and/or corporate licensing for commercial products.
- Undergraduate, graduate, and post-doctoral education and training in immunology to support research efforts and prepare students for careers in the growing field of biotechnology.

The Impact

This core technology initiative represents an investment in genetics and immunology research that will pay dividends to the state for years to come. Those dividends include access to new genetic tests, vaccines and biological therapies; development of Minnesota's biotechnology industry; educating and training Minnesotans for biotechnology careers; and attracting millions of dollars in federal and corporate funding.

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Academic Health Center Job Description for the Dean

The general role of the Dean of an AHC school is to function as the chief executive officer for the school. The Dean is responsible and accountable for all activities and programs within the school. The Dean is the principal spokesperson for the school and its constituent professions to the AHC, University, and in the public arena. The Dean serves on the AHC Deans Council and reports directly to the Provost of the AHC.

More specifically, the Dean's roles and responsibilities are to:

A. with respect to the AHC:

- represent the school in the AHC Deans Council and in AHC activities
- participate in development of the AHC's strategic plan and its implementation
- participate in the development and implementation of AHC policy, procedures, interscholastic programs, and operations
- promote communication internally and externally

B. with respect to the school:

I. GENERAL RESPONSIBILITIES

- provide oversight of all University, AHC, and school policies and procedures within the school
- represent the school and its professions to the various public constituencies
- lead the development of the school's strategic plan

II. MISSION LEADERSHIP

- provide leadership for and be responsible for the quality, efficiency of delivery, relevance and value of educational programs
- provide leadership in the development of research, be responsible for creating an environment of research creativity and innovation, and be responsible for the efficiency and performance of research programs administered within the school
- provide leadership and oversight for service programs, including access, quality, scope and content of clinical programs, service, and outreach
- promote and provide leadership for the profession at the local and national levels

III. ADMINISTRATION

- serve as the Chief Executive Officer of the school
- delegate administrative authority within the school
- develop and manage the administrative support systems for the school
- lead the development of and oversee school policies and procedures
- acquire the resources necessary for the school to fulfill its mission

Fiscal Management

- develop a financial plan and budget for the school consistent with the school's strategic plan
- exercise budget authority and accountability for all funds of the school from all internal and external sources
- manage the allocation of resources, oversight, and monitoring of financial performance
- guide the school's development and fund raising program

Human Resources

- develop a strategic and an annual plan for the school's human resources
- allocate budgets and personnel in support of the plan
- assure effective human resource development
- oversee and implement policies and procedures within the school for performance evaluation, merit awards, promotion, and tenure
- oversee and implement university policies within the school relating to human resources, including recruitment, hiring, discipline, and dismissal

Facilities

- develop strategic plans and mission needs assessment for facilities for the school
- manage and allocate physical plant and equipment assigned to the school

IV. GOVERNANCE

- lead the faculty of the school in the context of shared academic governance

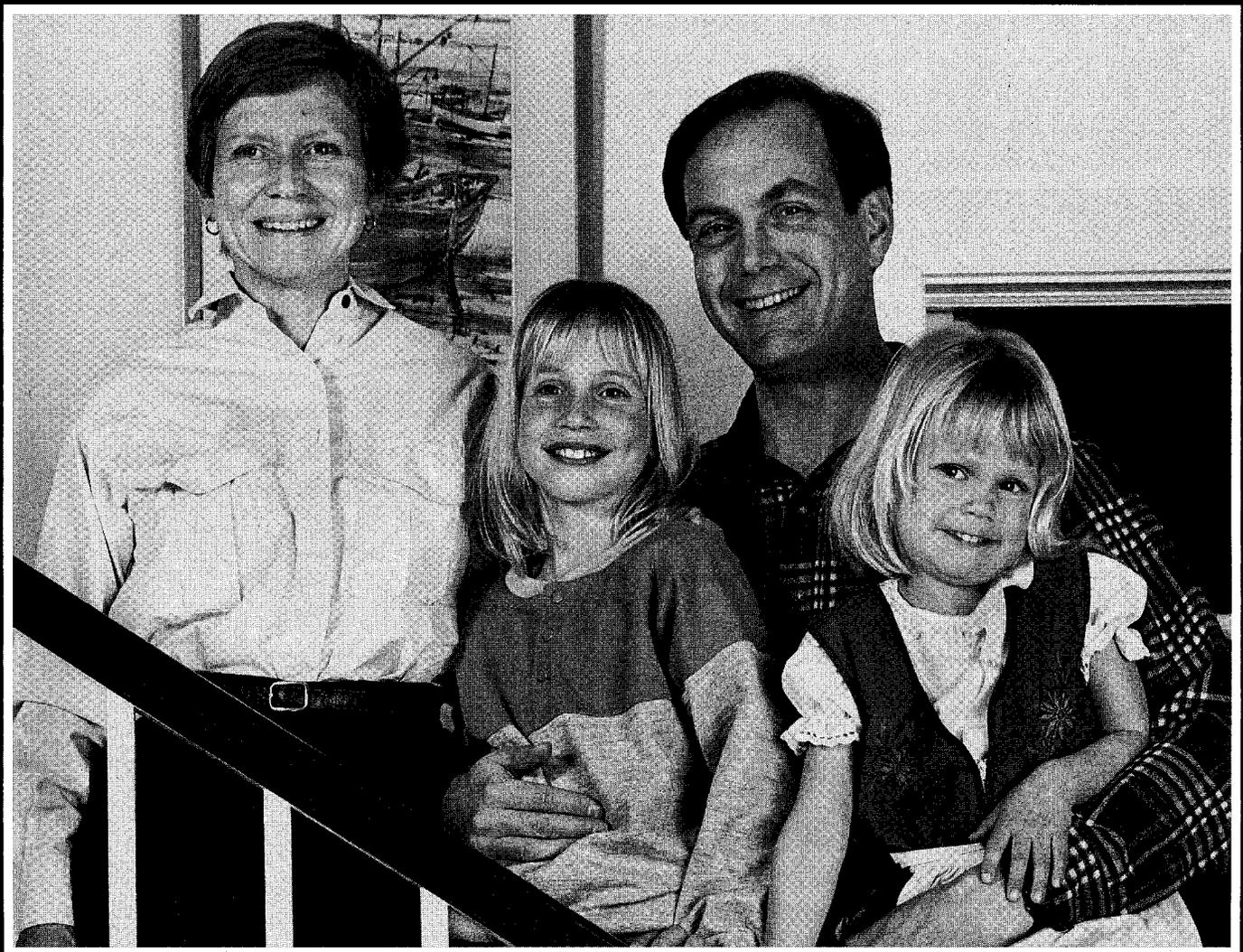
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UNIVERSITY OF MINNESOTA

**Academic Health Center
Programs of Excellence**

Improving Health and Quality of Life in Minnesota

1998-1999 LEGISLATIVE REQUEST



The Academic Health Center is one of Minnesota's most valuable health care resources

The Academic Health Center has long been a valuable asset for our state in providing health care and advancing medicine, dentistry, veterinary medicine, public health, pharmacy, and nursing. We also provide a foundation for our state's growing health care community and biomedical industry. The work of the AHC's seven schools and of its graduates touches the lives of every Minnesotan every day.

We've heard the concerns...

You've told us that the AHC is not adapting quickly enough to the changing health care industry, that we need to devote more of our energy to the special needs of Minnesota's citizens, and that we need to operate in a more business-like and user friendly way.

and we are responding to Minnesota's changing health care needs.

To better serve Minnesota's health care needs, we are reorganizing the health center to integrate and refocus the resources spread across our seven schools. This integration is an essential first step because health care is increasingly provided by interdisciplinary teams, and because interdisciplinary scientific research is more productive and efficient. This effort is guided by a strong administrative commitment to look beyond the institution's walls to plan our strategic direction.

But there are more challenges to face...

Although the University is Minnesota's land-grant institution, the AHC has relied heavily on patient care revenues and federal support to fund education and research. Most Minnesotans would be surprised to learn that the state pays less than one fourth of the AHC's expenses. Before the advent of managed care in Minnesota, patient care revenues provided \$25 million to \$40 million a year to support education and research. That support is now seriously threatened. While the AHC's new affiliation with Fairview Health System will provide the patients we need for education and research, it will not fully replace lost patient care revenues—funds needed to rebuild and support the AHC. At the same time, academic health centers nationwide are threatened with the loss of federal funding for education and research. Federal officials are calling for deep cuts in medical education, and competition for federal research dollars is increasing rapidly.

and we need your help...

The AHC is responding aggressively to these fiscal realities. We are streamlining our operations, building partnerships with private businesses and the state's health care systems, and making strategic investments in areas that are essential to Minnesota's welfare and that will pay off in new sources of revenue. With the rapid changes occurring in health care, the AHC must make these new investments to create the programs and sustain the excellence that Minnesota rightly expects from it. State funding for these investments is critical.

to keep Minnesotans healthy...

The 10 programs presented here were developed by integrating efforts of the AHC's health professions schools and shifting our orientation towards Minnesota's needs. They are also strategic investments in centers of excellence that build on our strengths. Three will provide technology to help all AHC researchers create new ways to prevent and treat disease. Two address common, life-threatening diseases. Four address specific public health issues of special needs populations. And one will work with large health care delivery systems, such as managed care, to ensure that they serve the best interests of Minnesotans.

and support Minnesota's health industry.

As we sharpen our focus on Minnesota's health care needs, we ask you to take a fresh look at the unique value the Academic Health Center offers Minnesota. There is no other public or private institution in the state that does what we do. And there are few public universities in the nation that can match our achievements.

UNIVERSITY OF MINNESOTA

Academic Health Center

1998-99 Legislative request

**Improving the health of Minnesotans
and the health of Minnesota's economy**

Center for Health Care Systems
\$3,133,000.

Center for Health in Aging
\$3,370,000.

Rural Health School
\$6,133,000.

Adolescent Health Institute
\$2,049,000.

Primary Care: Quality and Access
\$6,861,000.

Center for the Brain
\$5,184,000.

Cancer Sciences
\$3,309,000.

Advanced Therapies Institute
\$2,424,000.

Biomedical Engineering Initiative
\$3,285,000.

Genetics/Immunology Center
\$4,304,000.

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Produced by the AHC Public Relations Office

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1998-1999 Legislative Request

Improving the health of Minnesotans and the health of Minnesota's economy

Research, education, and outreach programs

■ CENTER FOR HEALTH CARE SYSTEMS

To take a close look at how well managed health care, which now covers 90 percent of Minnesotans, is meeting health care needs. We'll work with the Department of Health, the state's major managed care organizations, and others to assess and model ways to improve health services for Minnesotans enrolled in managed care programs, reduce related costs, train health care students to work in managed care settings, and provide health care policy makers with reliable planning information. \$3,133,000.

■ CENTER FOR HEALTH IN AGING

To improve health care for Minnesota's growing senior population by expanding geriatrics education and interdisciplinary training, working with HMOs to provide more clinical training

opportunities, creating a database of geriatric treatments and outcomes, designing cost-effective new ways to treat chronic illnesses, and creating a consortium of health care providers to test those models. \$3,370,000.

■ ADOLESCENT HEALTH INSTITUTE

To reduce alcohol abuse, smoking, violence, and pregnancy among Minnesota youth by identifying the most effective interventions and working with communities to implement those strategies. "Best practice" intervention models will be shared with Minnesota health care practitioners, health policy makers, youth program planners, educators, and parents. \$2,049,000.



■ RURAL HEALTH SCHOOL

To provide more and better health care services to rural Minnesotans by integrating and building upon statewide efforts to recruit and retain rural practitioners. This involves training teams of health professions students in rural settings, using rural clinicians as teachers, establishing interactive electronic communications networks, developing community health programs, and helping rural communities adapt to managed care. (Continues a pilot program established by a 1996 Legislative appropriation.) \$6,133,000.



■ PRIMARY CARE: QUALITY AND ACCESS

To create education and training programs to prepare primary care professionals for their expanded roles in new health care delivery systems, to enhance quality and access to primary care, and to develop new models for providing primary care, particularly to special needs groups that may fall outside of a system that focuses on needs of average citizens. \$6,861,000.

■ CENTER FOR THE BRAIN

To apply advances in AHC neuroscience research to develop and teach innovative and effective new treatments for acute and chronic pain, Parkinson's disease and other movement disorders,

Alzheimer's disease, and epilepsy. Minnesotans who suffer from these common conditions will be the first to



benefit as new therapies move from the laboratory, to the clinic, to the marketplace. \$5,184,000.

■ CANCER SCIENCES

To provide Minnesotans with access to the newest and best ways to prevent and treat cancer by extending resources of the University's new Cancer Center. We'll accomplish this by educating citizens and health care professionals about cancer risks and new treatments, and by providing screening and counseling to diagnose and treat cancer as early as possible. Additionally, this initiative will



strengthen Cancer Center research efforts to prevent and treat lung and breast cancers, the most common cancers among Minnesotans. \$3,309,000.

Core enabling technologies

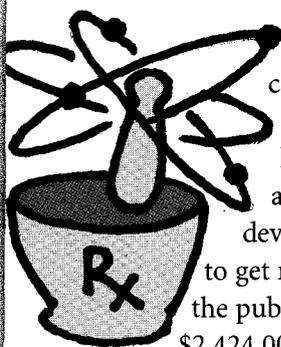
These three initiatives will provide core technology that will enable the development of laboratory and clinical innovations throughout the Academic Health Center.

■ ADVANCED THERAPIES INSTITUTE

To develop new and better pharmaceuticals that act selectively against disease-causing cells and enzymes without harming healthy tissue. Targeted drugs are not only more effective, but have fewer side effects, which makes them

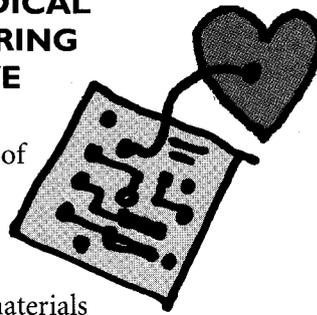
particularly promising for cancer therapy.

The Institute will link University and corporate drug development efforts to get new therapies to the public more quickly. \$2,424,000.



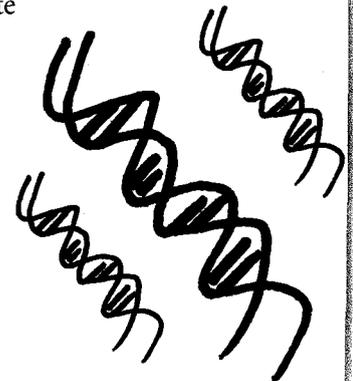
■ BIOMEDICAL ENGINEERING INITIATIVE

To support development of electronic biomedical devices, bio-compatible materials (such as artificial blood vessels and bio-engineered protein pharmaceuticals) and cost-effective microtechnology (such as diagnostic tests on microchips and micro-scale surgical devices). This initiative would provide funds for the Biomedical Engineering Center and the Microtechnology Laboratory, which support Minnesota's biomedical industry. \$3,285,000.



■ GENETICS/IMMUNOLOGY CENTER

To support core technology in genetics and immunology that would enable AHC researchers to develop DNA-based diagnostic tests, vaccines, and biological therapies for human and animal diseases. This initiative will also support Minnesota's biotechnology industry, train Minnesotans for jobs in the growing biotechnology field, and attract millions of dollars in federal and corporate funding. \$4,304,000.



What the Academic Health Center contributes to the state of Minnesota

Education and training for health professionals

■ Approximately 60 to 80 percent of the Minnesota's health care professionals are trained at the AHC. This year some 5,000 students are enrolled in professional and graduate programs that will prepare them for careers as biomedical engineers, scientists, dental hygienists, dentists, health care administrators, medical technologists, morticians, nurses, occupational therapists, pharmacists, physical therapists, physicians, public health practitioners, and veterinarians.

Support for the health care community and biomedical industry

■ The Academic Health Center supports Minnesota's health care industry—the leading industry in the state, surpassing agriculture, the food industry, and computer technology. Employing 217,000 Minnesotans and generating billions of dollars a year, these businesses range from health care providers and insurers to medical product manufacturers. Since a partnership between surgeon Walton Lillihei and engineering graduate Earl Bakken in the 1950s that produced the first wearable pacemaker and launched Medtronic, more than 400 biomedical companies and health care organizations have sprung up along Medical Alley, an industrial corridor that extends from Rochester in the south through the Twin Cities to Duluth in the north.

National leadership in research, education, and service

■ AHC faculty bring in \$120 million a year in federal research funds, more than all but eight of U.S. research universities.

■ AHC schools were rated among the top 25 nationwide in the *U.S. News and World Report's* 1996 college rankings. The School of Medicine at Duluth ranks second for rural medicine and 11th for primary care. The College of Pharmacy ranks third among its peers in the United States. The School of Public Health masters degree programs in health services administration and public health rank fifth and sixth. The School of Dentistry is seventh in the nation. The College of Veterinary Medicine ranks eighth. And the College of Nursing ranks 22nd in a very large field of competitors.