

Transforming the University

Preliminary Report of the Clinical Sciences Enterprise Task Force

Submitted on behalf of the task force by:

Bobbi Daniels, M.D., Professor, Department of Medicine and Chief Medical Officer,
University of Minnesota Physicians

Deborah E. Powell, M.D., Dean of the Medical School, Assistant Vice President for
Clinical Sciences, and McKnight Presidential Leadership Chair

Task force co-chairs

March 27, 2006

I. Executive Summary

Task force mission: Articulate the elements of the clinical sciences enterprise; assess its current state; and identify strategies for strengthening the key components of the enterprise and strategies for making the entire enterprise system effective and supportive of outstanding research, education and patient care.

Committee members:

Bobbi Daniels, co-chair, University of Minnesota Physicians, Medical School

Deborah Powell, co-chair, Medical School

Jasjit Ahluwalia, AHC Office of Clinical Research, Medical School

Melissa Avery, School of Nursing

Brian Isetts, College of Pharmacy

Robert Madoff, Medical School

Bryan Michalowicz, School of Dentistry

Jeff Miller, Medical School

Jim Neaton, School of Public Health

Robert Washabau, College of Veterinary Medicine

Kim Zemke, School of Nursing

Jennifer Cieslak, Academic Health Center, staff

Mary Koppel, AHC Office of Communications, staff

Stewart McMullan, Academic Health Center, staff

Summary: The clinical sciences are the cornerstone of the educational and research missions of The Academic Health Center. The ability of the Academic Health Center to educate the next generation of health professionals will require an environment that attracts the most outstanding, imaginative and progressive students, a faculty that collectively can demonstrate innovation and leadership of aspects of the clinical science, and facilities that are designed to support the mission of the AHC and an evolving health care delivery system.

Critical elements for success will be:

- Support for a culture of demonstrated excellence in innovative clinical care delivery, including patient-centered care with an emphasis on interprofessional teams, application of evidence based decision-making, and outcomes measurement and reporting.
- Educational programs that prepare students for a career of innovative health care delivery, and are grounded in an environment that embraces the development and application of knowledge, interprofessional teamwork, and patient centered care.
- Vibrant clinical research that advances knowledge and its application in all parts of the clinical science continuum from bench to the bedside.
- Access to integrated information systems that connect all areas of the clinical sciences to facilitate clinical research, education and care delivery where outcomes are always measured.

- Facilities that support state of the art care delivery, research, and education, including interprofessional teams and access to cutting-edge technology.
- The development of a unifying model of faculty tracks across the Academic Health Center that equally values the three components of clinical sciences.

II. Introduction

The Academic Health Center is a proud contributor to the tri-partite mission of the University – research, teaching and public outreach. The clinical sciences provide the knowledge and expertise on which all parts of the Academic Health Center’s mission is based.

The Academic Health Center aspires to

1. Educate and prepare the new health professionals for Minnesota
2. Enhance the vitality and excellence of Minnesota’s health research
3. Expedite the dissemination and application of new knowledge into the promotion of health and delivery of health care in Minnesota
4. Develop and provide new models of health promotion and care for Minnesota.

Health care is viewed by many as being at a turning point and the Academic Health Center can be instrumental in developing the models, knowledge, and professionals that can assure the state of Minnesota and its citizens outstanding health care in what will be a changing health care environment. Currently, new discoveries are broadly integrated into clinical care only after about 16 years, leaving many opportunities for improvement in limbo for too long. In the Twin Cities, fewer than 15% of patients who seek care with diabetes receive the care that has been known to be effective at reducing complications. Many patients, for a variety of reasons, do not even seek care. An aging population will further stretch the abilities of the current system with an increase in many other chronic diseases like hypertension, heart failure, chronic kidney disease and create an impossible task for the current model to be able to meet societal needs. The epidemic of obesity further highlights the importance of public policy, a better understanding of basic pathophysiology, development of new treatments, and the ability to better develop strategies for prevention. Underlying these needs are significant opportunities for the University and the Academic Health Center to provide leadership to the state and the nation for a new model of education, enhanced clinical research, and a re-emphasis of the centrality of clinical care delivery as core to the clinical sciences.

The work of this task force builds upon significant prior work across the Academic Health Center, including the development of the Academic Health Center’s 2000 Strategic Plan; the work of the Clinical Research task force in 2002-03; preparation of the CTSA (Clinical and Translational Science Awards) grant application to the NIH for submission on March 27, 2006; the 2005 Clinical Campus Planning effort, which developed plans for a new ambulatory care clinic; and an analysis by the AHC Assistant Vice President of Research on the progress necessary to become the #3 U.S. Academic Health Center, as measured by NIH awards.

In this report, we will define clinical science; delineate the role of clinical science in the strategic positioning of the University; inventory and assess the current status of clinical science in the AHC; propose goals for the development of the clinical sciences; identify areas and principles for investment; and sketch a plan for implementing these recommendations.

To address this work, the task force first met as a whole to define clinical science. The group then split into three subcommittees-- Care Delivery, Education, and Research-- to assess the current state of clinical science, to generate goals for the development of clinical sciences, and to identify areas and principles for investment. Additionally, the Education subcommittee established and met with a student advisory committee comprised of students from all of the health professions schools. The subcommittee structure is retained in portions of this report.

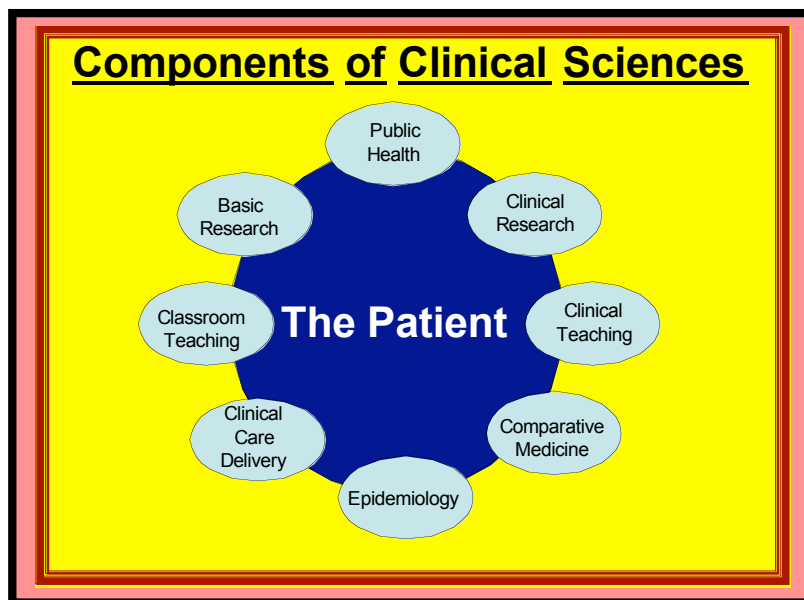
III. Response to Deliverables

Deliverable 1: Develop an operational definition of clinical science that incorporates scholarship, research, education and clinical practice, including new models of care delivery.

Clinical Sciences Enterprise in an Academic Health Center

Definition: Clinical Sciences comprise the contributions of scientific disciplines to health promotion and the prevention, diagnosis, and treatment of disease through the development (research), communication (teaching), and application (clinical care delivery) of new knowledge.

Components: The context for this definition is the movement of knowledge bi-directionally between laboratory bench and patient bedside, between teacher and clinician, between individual patients and human populations, and between animal models of human disease and human health care delivery. Clinical sciences seamlessly encompass the discovery and application of new knowledge, classroom teaching, clinical teaching, clinical care delivery, and public health in an environment imbued with the highest ethical standards.



Community: The Clinical Sciences Enterprise in an Academic Health Center embraces a community of scholars committed to improving the health for individuals and society by understanding health and disease. These scholars are active in all six schools and colleges: School of Dentistry, Medical School, School of Nursing, College of Pharmacy, School of Public Health, and College of Veterinary Medicine. We also have partners across the University. Contributing scientists include clinicians, teachers, biostatisticians and bioinformatics personnel, residents and fellows, and professional and graduate students. These individuals collaborate across disciplines, work in teams, and take advantage of the latest technologies in research, health care, learning, and knowledge management.

Deliverable 2: Delineate the role of clinical science in the strategic repositioning of the University and the Academic Health Center.

In FY2005 the Academic Health Center (AHC) with its six schools generated 51% of the total research expenditures of the University. The Medical School and School of Public Health together accounted for 42% of the University's total research expenditures that year. Therefore, to increase the research profile of the University and move it toward the top three public research universities it is imperative that the schools of the AHC play a major role. Clinical and translational research is critical to moving the AHC and the University of Minnesota ahead in sponsored research. The new Institute for Clinical and Translational Research is essential for this effort. The resources required to support clinical and translational research are quite different than those in place for more basic "bench" research. Without substantial investments in infrastructure, including space, information systems, equipment and faculty, the University and AHC cannot meet its research goals, nor will the University's ability to impact the health of Minnesota be fulfilled.

However, research represents only one dimension of the scholarship necessary for the success of strategic repositioning in the University and the Academic Health Center. Great public research universities are also recognized for the quality and innovation of their educational programs, and the attendant impact on the state, as well as for the high quality and innovative clinical care.

Integral to success in clinical research and education is the recognition that the highest quality of clinical care is essential to the overall success of the strategic positioning of the University and must be an inherent part of the mission. Clinical care cannot be regarded only as a source of revenue to support educational and research enterprises. While collaboration with organizations throughout the state will be necessary for the Academic Health Center to fulfill its mission, outstanding programs in clinical research and health professional education cannot be based solely on "outsourced" clinical care. Our students desire to see faculty providing clinical care, demonstrating how to work in new systems, and establishing teamwork and patient centered care. Clinical care must be valued by the institution and systems must be designed to reward faculty who provide outstanding highest quality innovative clinical care in a manner similar to other faculty. Likewise, the setting in which clinical care is accomplished must be conducive to consistent improvement of quality and clinical care at the highest standards. This will involve reinvestigating clinical care partnerships with hospitals and clinics to assure that partnerships are aligned with recognizing the value of clinical care quality and best practices. Faculty who

practice the highest standards of clinical care must be recognized as contributing to the mission and must be acknowledged as productive and valued faculty citizens of the University.

Clinical care, clinical education, and clinical research in the ensuing decades will be increasingly team centric. Therefore, our recognition processes for faculty must include mechanisms for valuing team as well as individual effort. The educational paradigms for tomorrow's health care professional students will increasingly emphasize team-based approaches. Clinical research is also dependent on teams of individuals fulfilling different roles and the AHC will need to develop methods for acknowledging team, rather than individual, contributions.

While recognizing the individual accreditation standards of our schools, we must strive to find better ways to differentiate ourselves in the education of health professionals by emphasizing and systematically developing educational initiatives based on team-based care. To do this, both practice facilities and instructional facilities, such as simulation and clinical skills centers, must be a high priority. Educating the next generation of health professionals in a different paradigm will differentiate the University of Minnesota and help to move us forward as a university to the top three of public research universities.

Deliverable 3: Inventory and assess the current status of clinical science in the Academic Health Center, including the presence of clinical scholars, mentoring and development programs, recognition and reward systems for clinical scholars, and infrastructure platforms that support clinical science.

The diversity of professional disciplines within the AHC and the possibilities for collaboration is a significant asset, for it creates rich educational, research and professional opportunities.

Clinical science infrastructure: The Academic Health Center has begun to build centralized infrastructure to support clinical education (for example, the IERC); this is generally perceived to be a successful model for providing clinical skills training on campus. Many AHC students, however, also pursue significant parts of their training at hundreds of sites across the Twin Cities and the state of Minnesota and beyond. These training sites are a great asset, but they also make it difficult to assure consistency of the educational experience.

In contrast, the clinical research infrastructure is quite dispersed, it appears at all levels within the organization (within departments, centers, colleges/schools, and the AHC), and in some instances is not organized strategically. An inventory of infrastructure platforms is contained in Appendix D.

Care Delivery:

There is a prevailing lack of consensus and confusion at the University about the importance of the role of clinical care delivery in carrying out the academic mission of the University. Clinical care is viewed by some as important because of the revenue it generates to support the other missions of the schools, rather than clinical care being of importance for its own merit as the framework for educating students in the health professions and pursuing “new knowledge.” Within the AHC, each school has a different model for classifying the faculty member's

academic position, and for delivery of clinical care by faculty. There is inconsistent support for base salaries and infrastructure support across AHC, leading to varying need for clinical activity to support traditional academic programs.

Clinical scholars, faculty who perform a higher percentage of clinical care delivery in conjunction with either research or education, do not have the same recognition within the University as other faculty members. They are not eligible for a tenure track position, and do not receive many of the benefits of those who are tenure track, such as the ability to vote as member of faculty consultative and governance groups, and eligibility for faculty recognition programs and sabbatical leaves.

The lack of interconnectivity of information systems at various clinic sites is a tremendous impediment to productive clinical care, and the Student Advisory Council convened by the Education subcommittee affirmed this as a key barrier to their learning experience. An emphasis needs to be placed on each school using existing resources and sites for new care delivery models over the short term with plans developed to develop a single “model site” where all schools can interact. Despite the focus of quality of work in other areas (grants, papers, teaching etc), the academic culture has been slow to embrace externally imposed clinical quality measures.

Last, the University needs to overcome the external perception that we are more focused on research than clinical work, in contrast to Mayo where clinical care is highly valued and promoted.

Education:

The education of health professionals is experiencing an increasing emphasis on “show and tell” instruction rather than in-depth, case study analysis and discussion. There is also an increasing emphasis on outpatient and critical care instruction away from the hospital setting, and less emphasis on recurring/preventive instruction. This leaves schools with the need to do a better job of exposing students to continuity of care and new care models.

There is a clear need for more opportunities and experience for students in team dynamics and team building. Members of the Student Advisory Committee, from all AHC schools, spoke highly of the opportunities provided by the Phillips Neighborhood Clinic, a program which provides low-cost care to the homeless and where students work in interprofessional teams. Students strongly desire an increase in the availability of similar opportunities.

It is difficult to set and measure competencies needed for clinical experiences, and difficult to measure the volume and progress in interprofessional education.

There continues to be tremendous demand and very limited supply of space conducive to interactive teaching (e.g., Simulation Center). Conversely, there is an excess quantity of lecture classroom space (though not of small classrooms space).

Research:

Clinical research in the AHC is entering a new phase of development. The creation of the AHC Office for Clinical Research in summer 2005 is addressing past deficiencies, including the absence of a historical home and advocate for clinical research; the treatment of clinical research as a “cottage industry,” with uneven support across the AHC; the absence of an inventory of clinical research efforts; and the lack of measurable data regarding the current state of clinical research. The AHC Office of Clinical Research is also leading the development of a large-scale grant application to the NIH for a Clinical and Translational Science Award.

Still, significant challenges remain. The dominant University culture, promotional criteria, and financial incentives do not reward clinical research. There are inadequate financial resources for recruitment and start-up for clinical and translational scientists.

The Medical School is developing a formal mentoring program for faculty, and the current AHC Clinical Research Scholars Program, created at the recommendation of the 2003 Clinical Research task force, is a step in the right direction. Overall, mentoring is not organized coherently or strategically across the University, and there is an absence of formalized standards and expectations for mentors.

The regulatory compliance infrastructure for clinical research is inefficient, ineffective, and often redundant. For example, we lack a comprehensive, strategic clinical database of patient data for use in clinical research.

The quantity of space for clinical research is inadequate. And, because existing clinical research space is spread across the campus, the quality of the space is also lacking in two obvious ways: clinical researchers miss out on the synergies that come from occupying contiguous office space and they do not have proximity to inpatient and outpatient clinical facilities where patients are seen.

<p>Deliverable 4: Propose goals for the development of the clinical sciences, including principles for investment, areas for investment, linkages with basic and translational research, linkages with clinical service lines, volume and kinds of clinical research, effective mentorship of clinical scholars, and models of care delivery and new therapeutics.</p>

Goals for development of clinical sciences:

<p style="text-align: center;">Clinical Care Delivery</p>	<ul style="list-style-type: none"> • <i>Embrace clinical care as central to the mission of the AHC:</i> All aspects of the mission of the AHC are dependent on clinical care and clinical care delivery should be an integral part of the faculty, student, and trainee activity. Faculty who perform clinical care delivery that is integral to the mission of the AHC should be valued and rewarded in a manner consistent with faculty who perform research. • <i>Become a leader in clinical care delivery by demonstrating excellence in preventive and chronic care delivery, models for team-based care, and clinical outcomes that are measured, reported and integral to evaluation of performance.</i> • <i>Demonstrate strategic, consistent interdisciplinary care and education models in the Academic Health Center:</i> Each school (and department where appropriate) should have a conscious plan to demonstrate interdisciplinary care. Currently, many examples of interdisciplinary practice exist in the AHC, and should be strategically linked to education and research activities. Facilities at all levels of education need to allow for teams to interact, learn, and deliver care • <i>Increase efficiency of research and education in the Academic Health Center:</i> The ability of the clinical mission to subsidize research and education will be increasingly challenged as the reimbursement for clinical care delivery changes and compensation for skilled clinicians will need to be comparable to those providing similar care in the community. The current method for supporting research and education across the AHC is variable and more consistency will be important in the future.
<p style="text-align: center;">Education</p>	<ul style="list-style-type: none"> • <i>Change the faculty reward structure to recognize the role and importance of teams and teamwork.</i> We cannot just recognize individual effort any longer. • <i>Establish interprofessional, team-based education throughout the curricula of the AHC schools.</i> • <i>Create environments for outstanding clinical education.</i> • <i>Foster outstanding clinical teaching, including teaching of interprofessional teams.</i> • <i>Further develop the infrastructure that supports community-based training and education for our students.</i>
<p style="text-align: center;">Research</p>	<ul style="list-style-type: none"> • <i>Invest in resources for clinical research:</i> <ul style="list-style-type: none"> ○ Bring in additional financial resources for clinical research and make limited reallocation to clinical research ○ Create a significant amount of contiguous clinical research space ○ Create a philanthropic initiative targeted for clinical/translational research • <i>Strategically organize dispersed support infrastructure including information systems, to support high quality clinical research.</i> • <i>Integrate basic sciences, clinical sciences and translational research.</i> • <i>Reward, support and encourage clinical and translational researchers.</i> • <i>Create new partnerships</i> with private care providers and industry that meet mutual goals and enhance the capacity and opportunities of the clinical research enterprise. • <i>Develop measurement tools:</i> Develop tools that enable us to track and monitor investments in clinical research.

Principles for investment:

Investments should align with the critical elements for success outlined on pages 2-3 of this report.

Areas for investment:

Recommendations of the Care Delivery Subcommittee:

Recommendation #1: With our clinical partners, invest in information technology systems that connect all areas of the clinical sciences allowing us to understand clinical and educational outcomes, to monitor and improve quality of care, and to maximize research opportunities.

Recommendation #2: Invest in facilities that support a patient-driven care model and team-based care, and that facilitate the introduction of learners into functioning care teams.

Recommendation #3: Develop faculty development (not just recruitment) programs that address care delivery and collaborative skills.

Recommendations of the Education Subcommittee:

Recommendation #4: Create exemplary learning sites: Exemplary learning sites for health professional students working in partnership with clinical health care systems are essential for optimal training. Resources should be allocated to provide space for clinical settings which combine clinical care and education, across the health professional schools. These may vary from outpatient clinics where clinical education is incorporated as part of the patient care experience (medicine, nursing and pharmacy) to in-patient and outpatient clinical settings for veterinary medicine and clinical settings for dentistry.

Recommendation #5: Early clinical experiences, whether within a discipline or interprofessional, should have well-defined goals and outcomes for experience at various clinical sites, including sites such as the Phillips Neighborhood Clinic. These could include:

- Students will understand team-based care and will have completed web-based courses in team development and team functioning.
- Students will experience health professional teams and action.
- Students will demonstrate an understanding of complex health care systems.
- Students will understand the roles of different health professionals and the particular characteristics that they bring to the health care team from their various perspectives
- Students will understand how to identify high quality care in practice and the processes for measuring and improving quality of care.

Recommendation #6: Consider early clinical experiences by school that will fit with overall goal of increasing interdisciplinary and team-based approaches to education of health professions students.

- Shadowing prior to admission or matriculation

- Each school to reconsider timing and order of specific clinical experiences to prepare students for overall goals
- Re-consider types and duration of clinical experiences related to realities of health care in 21st century and “it’s always been done this way” and goal of opportunities in team based and interprofessional education
- Specialty experiences available earlier or in different pattern than is currently available in the schools

Recommendation #7: Explore, identify and develop new sites throughout the community for interprofessional team-based education. CUHCC (Community-University Health Care Clinic) is an attractive possibility to explore. Resources should be invested in the development of these sites.

Recommendation #8: Develop new academic programming to build interprofessional, team-based education. These initiatives should build upon and leverage prior work on behalf of interprofessional education in the AHC. Suggested developments include:

- Web-based course on team development, team functioning and team-based care that would ideally be required of all AHC students.
- Team-based OSCE and simulation learning opportunities in the IERC that will bring students of various schools together for specific targeted experiences.
- Programming that brings groups of AHC students together at specific times for face-to-face interactions, case/problem solving activities, and team building. These should be credit bearing, required for programs and replace some other learning time so as not to continue to expand curricula without deleting other content.

Recommendation #9: Develop a unifying system for faculty tracks across the AHC colleges that recognizes and supports the elements of the clinical sciences—clinical research, clinical education and clinical practice. This system should value and recognize excellence in those three areas. The task force has had preliminary discussions on this topic. Going forward, we recommend initiating a process for developing this system that engages faculty governance, promotion and tenure committees, and associate deans for faculty, among others.

Recommendation #10: Develop and implement strategies throughout the health professional schools of the AHC for introducing students to research (basic, translational and clinical); for promoting student research opportunities; and particularly, for supporting clinical and translational research opportunities for students, including providing resources to faculty to engage more students in their clinical research.

Recommendations of the Research Subcommittee:

Recommendation #11: Recruit 20 experienced, productive Clinical Research faculty per year for ten years. Additional details and rationale are included in Appendix F.

- A total investment over ten years of \$300 million.
 - \$17 million per year for start up packages, and \$9 million per year for new space costs.
- Ten senior faculty per year, at average \$1.0m start up over three years

- They often bring less senior faculty with them
- Five mid level faculty per year, at average \$750k start-up over three years
- Five junior level faculty per year, at average \$600k start-up over three years
- Expectation is 80% commitment to clinical research

Recommendation #12: Significant investment and reorganization is needed of the University’s research infrastructure to grow and align with the required growth in research capacity. We need to build the infrastructure in order to recruit new clinical/translational scientists. Our current research infrastructure does not compare favorably with the infrastructure present at our competitors. An investment in research infrastructure will pay for itself over and over again (in our ability to recruit new researchers, in our ability to support large-scale, important clinical research projects, in projected clinical research revenue).

Deliverable 5: Develop a plan for achieving the goals for the development of the clinical sciences, including faculty needs, education and trainings needs, staff needs and facility needs.

The task force recommends a review of hiring, promotion, tenure and reward mechanisms within the Academic health Center, with the goal of an equitable method of compensation, continuing education and recognition for all faculty that is aligned with the needs outlined in this document. Specifically, if clinical care and education are central to the mission of the Academic Health Center, and therefore the University, faculty performing those roles should be equally valued and recognized in the University system. We suggest the creation of a working group to discuss and propose a system of uniform faculty tracks across the Academic Health Center.

Deliverable 6: Propose, at a high level, the financial resources needed to achieve the goals for the clinical sciences program.

A transforming increase in the investment in clinical sciences, on the order of hundreds of millions of dollars over the next 5-10 years, is essential if the AHC is to become a national leader in clinical research, education, and care delivery. Investments in the clinical sciences will also help the University of Minnesota achieve its goals. This investment would include major investments in new buildings for clinical sciences. Additional investments are necessary for faculty recruitment, research and education infrastructure, patient databases, electronic health records, mentoring, and interdisciplinary initiatives.

How do our deliverables and recommendations address the five strategic action areas?

The five action areas are:

- 1.) Recruit, educate, challenge, and graduate outstanding students.
- 2.) Recruit, mentor, reward, and retain outstanding faculty and staff.
- 3.) Promote an effective organizational culture that is committed to excellence and responsive to change.
- 4.) Enhance and effectively utilize our resources and infrastructure.
- 5.) Communicate clearly and credibly with all our constituencies and practice public engagement responsive to the public good.

The task force's deliverables and recommendations address areas 1, 2, 3 and 4 directly. Vibrant clinical sciences rely upon enhancements in how we recruit, mentor, reward and retain many of our faculty. Stronger clinical sciences will also enhance the education and training of our students in powerful ways. Support and recognition for the team ethic inherent in the clinical sciences will advance a more effective organizational culture. Ideas related to the conduct of clinical research will likely improve the organization of our research infrastructure and lead to more effective use.

IV. Recommendations for prioritizing deliverables

V. Appendices

Appendix A – Charge letter

Appendix B – Methods followed

Appendix C – Consultations

Appendix D – Infrastructure platforms that support clinical sciences

Appendix E – Metrics for Clinical Sciences

Appendix F – Proposal for Additional Clinical Research Faculty

Appendix G – Meeting Summary, February 10 Student Advisory Committee Meeting

Appendix A – Charge Letter

REVISED September 21, 2005

MEMO TO: Deborah Powell, Dean, Medical School, Asst. VP for Clinical Sciences
Bobbi Daniels, Chief Ambulatory Medical Director, UMPhysicians
Jasjit Ahluwalia, Executive Director, Office of Clinical Research
Robert Washabau, Professor, Veterinary Clinical Sciences
Robert Madoff, Professor, Colon/Rectal Surgery
Brian Isetts, Associate Professor, College of Pharmacy
Melissa Avery, Associate Professor, School of Nursing
Robert Hirsch, Associate Dean, School of Dentistry
Jim Neaton, Professor, School of Public Health
Kim Zemke, Director, School of Nursing
Jeff Miller, Professor, Cancer Center
Jennifer Cieslak, Special Assistant to the SVP for Health Sciences
Stewart McMullan, Associate to the CFO, Academic Health Center
Mary Koppel, Assistant VP, AHC Public Relations

FROM: Frank B. Cerra, Senior Vice President for Health Sciences

RE: AHC Strategic Positioning Task Force on Clinical Sciences Enterprise

Thank you for your willingness to serve on the AHC Strategic Positioning Task Force on the Clinical Sciences Enterprise. The University's Strategic Positioning process presents a remarkable opportunity for the University and the Academic Health Center to take steps to transform itself into a top three public research institution. The four AHC task forces, of which the Clinical Sciences Enterprise is one, build upon the AHC strategic plan and represent the next key steps for us to take. As you pursue your charge, I ask that you engage in bold and visionary thinking and identify strategies that will propel us forward.

President Bruininks has asked that each strategic positioning task force consider the following strategic action areas that were identified in the University's strategic positioning recommendations, *Transforming the University of Minnesota*, endorsed by the Board of Regents on June 10, 2005.

- Recruit, nurture, challenge, and educate outstanding students who are bright, curious and highly motivated.
- Recruit, mentor, reward and retain world-class faculty and staff who are innovative, energetic, and dedicated to the highest standards of excellence.
- Promote an effective organizational culture that is committed to excellence and responsive to change.
- Exercise responsible stewardship by setting priorities and enhancing and effectively utilizing resources and infrastructure.

- Communicate clearly and credibly with all of our constituencies and practice public engagement responsive to the public good.

During the development of the University's strategic positioning plan, certain common themes have been identified that informed the goal to become one of the top three public research institutions in the world. These themes are important to keep in mind as we begin our work. The themes are:

- Strong academic programs and leadership.
- Improved access to success for students demonstrating that a better education leads directly to better results.
- Excellence in research.
- Lowered economic costs through improved services and strengthened core investments.
- Greater alignment across all programs and services.

As you pursue your work, please also keep in mind the following questions:

- What are the strategic directions that will move us toward being a top 3 public research institution?
- What are the areas of excellence and/or comparative advantage?
- What are the actions recommended to achieve these directions, including opportunities for reallocation of resources?
- What are the measures of progress and expected impact?
- What are the incentives necessary to achieve success?
- What are the barriers to success? What strategies exist to overcome the barriers?

The Task Force Charge:

The essence of health professional schools is to educate and train the next generation of health professionals in a highly innovative environment that brings new knowledge to the prevention and treatment of disease. This necessitates vibrant and energetic clinical sciences that encompass all health professionals at the University of Minnesota and their scholarship and clinical practice.

Specifically, the task force should:

- 1.) Develop an operational definition of clinical science that incorporates scholarship, research, education and clinical practice, including new models of care delivery.
- 2.) Delineate the role of clinical science in the strategic repositioning of the University and the Academic Health Center.
- 3.) Inventory and assess the current status of clinical science in the Academic Health Center, including the presence of clinical scholars, mentoring and development programs, recognition and reward systems for clinical scholars, and infrastructure platforms that support clinical science.

4.) Propose goals for the development of the clinical sciences, including principles of investment, areas for investment, linkages with basic and translational research, linkages with clinical service lines, volume and kinds of clinical research, effective mentorship of clinical scholars, and models of care delivery and new therapeutics.

5.) Develop a plan for achieving the goals for the development of the clinical sciences, including faculty needs, education and training needs, staff needs and facility needs.

6.) Propose, at a high level, the financial resources needed to achieve the goals for the clinical sciences program.

Task Force Retreat:

I encourage you to attend the strategic positioning task force retreat and work session on Friday, September 16, 2005 at the North Star Ballroom in the St. Paul Student Center. This program is hosted by the Office of the President and is intended for all strategic positioning task forces. Task force co-chairs are asked to attend from 8:30 am – 5:00 pm. Task force members are asked to attend from 1:00 – 5:00 pm.

Deliverables:

The task force's final report is due by **May 1, 2006**. I would ask that you develop a detailed work plan for the task force, which I can review with you by **late October**. The plan should include a plan for receiving ideas and feedback from members of the AHC community and other constituencies and a plan for consultation.

I would like to receive regular reports on the work of the task forces. We also may want to consider an interim report for purposes of soliciting feedback. We will decide this as we go forward.

Resources:

There are a number of resources available to you as you pursue your charge. These include the Resource Alignment Team, a toolkit of documents and templates, and the professional staff of University Relations appointed to facilitate internal and external communication of progress through the strategic positioning process. The Resource Alignment Team is a consulting group charged with providing support to all task forces in the areas of cross-functional alignment, change management, and subject matter expertise as needed. Support is also available from the Academic Health Center Steering Committee.

Jennifer Cieslak has been appointed Special Assistant to the Senior Vice President and will manage and coordinate the strategic positioning process for me. Jennifer will work closely with task force staff and will be able to help task force co chairs access needed support and assistance. Jennifer may be reached at 612-624-4134 or jcieslak@umn.edu.

Thank you for your willingness to assume this important role on behalf of the University community. Your participation and commitment to this work is vital to the successful implementation of the strategic positioning recommendations and to achieving the goal of becoming one of the top three public research universities in the world.

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C: Robert H. Bruininks, President
Robert J. Jones, Senior Vice President, System Administration
E. Thomas Sullivan, Senior Vice President and Provost
Kathryn Brown, Vice President and Chief of Staff
AHC Deans

Appendix B - Methods Followed

The task force first addressed deliverable #1 (develop an operational definition of the clinical sciences) as a whole group. Then the task force split into three subcommittees – Care Delivery, Education and Research – to address deliverable #3 (inventory and assess the current status of clinical science in the Academic Health Center) and deliverable #4 (propose goals for the development of the clinical sciences...) The whole task force convened monthly to report on subcommittee progress, to discuss overarching themes and recommendations, to synthesize the work of the group, and to identify next steps.

Other key steps:

- The task force co-chairs reviewed the draft definition of clinical sciences with the AHC Deans Council on January 9, 2006.
- Kathryn Anderson, Office of the Senior Vice President for Health Sciences, conducted the inventory of infrastructure platforms that support clinical sciences, with assistance provided by task force members and AHC deans' offices.

Information on the subcommittee membership and process (if applicable) follows:

Care Delivery Subcommittee:

Membership: Bobbi Daniels (chair), Brian Isetts, Bryan Michalowicz, Kim Zemke

Education Subcommittee:

Membership: Deborah Powell (chair), Melissa Avery, Robert Washabau,

The subcommittee invited these additional people to join the group: Karyn Baum (Medical School); Donna Bliss (School of Nursing); Jane Miller (Director of Interprofessional Education and Resource Center – IERC); Cynthia Peden-McAlpine (School of Nursing); Mary Rowan (School of Nursing).

The Education subcommittee created and convened a student advisory committee, comprised of students from all AHC schools and at different stages in their education and training. Students were identified by task force members in consultation with their schools and by CHIP (AHC's Center for Health Interprofessional Programs).

The group met with members of the subcommittee and the broader task force on February 10, 2006. Jane Miller facilitated the discussion. The students' names and schools and a record of the group's meeting are attached in Appendix G.

Research Subcommittee:

Membership: Jasjit Ahluwalia (chair), Robert Madoff, Jeff Miller, Jim Neaton,

Additionally, the subcommittee invited Tim Tracy (College of Pharmacy) to join them.

To develop its proposal for hiring new faculty, the subcommittee reviewed an analysis prepared by Mark Paller, M.D., AHC Assistant Vice President for Research, of what it would take to become one of the top three ranked AHCs in NIH funding.

Appendix C - Consultative Process

The task force co-chairs, Deborah Powell and Bobbi Daniels, met with the AHC Deans Council on January 11, 2006 to review and discuss a draft of the clinical sciences definition developed by the task force. The co-chairs invited the deans to share the draft definition with faculty leadership groups in their schools/colleges and to provide feedback to the task force. Bobbi Daniels and task force member Robert Washabau met with members of the AHC Finance and Planning Committee on January 26, 2006 to review and discuss the draft definition and to provide an update on the work of the task force.

The task force created and convened a student advisory committee, comprised of students from all AHC colleges at various stages of their education and training. Sixteen students attended the February 10, 2006 meeting with members of the Education subcommittee and engaged in discussion on the topics of the nature of their clinical experiences, exposure to clinical research, facilities for clinical education, and interprofessional and team-based experiences.

During April 2006, the task force welcomes feedback to its preliminary report via e-mail. Additionally, the task force will invite feedback from leaders in the health care community and plans to reconvene the student advisory committee to discuss the preliminary report.

Appendix D
Clinical Sciences Enterprise Task Force
INFRASTRUCTURE PLATFORMS

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Biomedical Library	Academic Health Center	Enhance the teaching, research, and service activities by facilitating timely access to information needed by library clients. Chat room student consultation pilot to be started in School of Nursing. http://www.biomed.lib.umn.edu/
Biostatistics, Cancer Center	Academic Health Center	Support in the planning, monitoring, and analysis phases of a study. http://www.cancer.umn.edu/page/cores/biostats.html#service
NMR Facility, Center for Drug Design	Academic Health Center	Drug discovery and scientific research to advance health; designing and developing new medicines to benefit people worldwide. http://www1.umn.edu/nmr/
Center for Magnetic Resonance Research (CMRR)	Academic Health Center	Research conducted in CMRR is to obtain non-invasively obtain functional, physiological, and biochemical information in intact biological systems, and use this capability to probe biological processes in health and disease. Houses a freestanding ~34,000 square foot facility, and currently equipped with six high field magnets with magnetic field strength of 4 Tesla and greater, with the most notable being a 9.4 Tesla/65cm. http://www.cmrr.umn.edu/
Clinical Research, Office of	Academic Health Center	Contributing to, supporting, and building a robust clinical research enterprise within schools, colleges, centers, and institutes; directly or indirectly involves patients, whether through measures to improve health care or by analyzing patient data. http://www.ahc.umn.edu/research/clinical/OCR/home.html

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
General Clinical Research Center	Academic Health Center	Center facilities include inpatient beds, a nursing staff specifically trained in clinical research, four outpatient beds, a metabolic kitchen for research diets, a networked computer system for clinical research, and four Core Laboratories. The Core Laboratories are the Molecular Genetics Core, the Gas Chromatography/Mass Spectroscopy Core, the Magnetic Resonance Core and the Developmental Cell Therapy Core. http://www.gcrc.med.umn.edu/
Health Careers Center	Academic Health Center	Specialized career center that helps University undergraduate students, high school students, and adult learners explore health career options, build effective skills and tools for career development, and successfully prepare for admission into health professional programs. The Health Careers Center represents a <u>partnership</u> between the University of Minnesota's undergraduate colleges and the programs within the University's Academic Health Center. http://www.healthcareers.umn.edu/
IERC-Interprofessional Education and Resource Center	Academic Health Center	Simulated clinical skills facility; 18 exam rooms, clinical simulators such as SimMan and CathSim; 2003 http://www.ierc.umn.edu/
IND/IDE Assistance Program	Academic Health Center	Complimentary education and assistance resource for faculty researchers who are involved in human subject research; clarify the complex obligations and responsibilities the FDA has set forth for individuals involved in the filling of an IND/IDE; regulatory assistance to the sponsor-investigator of the clinical investigation; http://www.ahc.umn.edu/research/indide/home.html
Learning Commons	Academic Health Center	Provides support to health professions faculty and students to learn about, experience, and practice contemporary forms of teaching and learning that support clinical decision-making and problem-based learning, and evidence-based practice; support by information and educational technologies. http://www.learningcommons.umn.edu/

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Minnesota Area Health Education Center (AHEC)	Academic Health Center	Helps students explore health careers, gain experiential training in rural communities, and support health professionals practicing in greater Minnesota. http://www.mnahec.umn.edu/
Molecular and Cellular Therapeutics	Academic Health Center	State-of-the-art GMP/GTP compliant facility designed to translate biotherapeutic research ideas and innovations into clinical products for human clinical trials; develop and produce cellular-, gene-, and tissue-based products for use in Phase I and II human clinical trials. http://www.ahc.umn.edu/mct/
Obesity Prevention Center	Academic Health Center	The mission of the University of Minnesota Obesity Prevention Center is to foster and improve multidisciplinary research into the causes of obesity and to develop effective strategies to address the problem; be an educational resource center in the field of obesity prevention, both in our community and nationally; serve as an advocate for public policies that address the obesity epidemic. http://www.obesityprevention.umn.edu/obp/center.html
Research Services Organization	Academic Health Center	Provide researchers convenient and effective support for the preparation of research proposals, performance of clinical trials, management of research projects, and development of innovative technology. The RSO provides the private sector single-source access to AHC researchers and technology. http://www.ahc.umn.edu/research/rso/
Woodlands Wisdom	Academic Health Center	A collaboration between Tribal Colleges and the University of Minnesota. The goal is to integrate traditional Native knowledge with Western methodologies to create, promote, and support sustained healing processes of American Indian communities. http://www.che.umn.edu/outreach/Woodlands_Wisdom.html

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Minnesota Oral Health Clinical Research Center	Dentistry, School of	Advancing sophisticated clinical studies that will improve the nation's oral health; biostatistics, experimental design, data management and analysis, analytical services, training and development in the use of new measurement technologies; state-of-the-art technologies in molecular biology, immunology, microbiology, cellular biology and biochemistry; eight fully equipped dental operatories arranged in an open environment and two adjacent closed and secured operatories. http://www1.umn.edu/dental/research/mohrc.html
Patient Simulation Clinic (proposed)	Dentistry, School of	Simulation equipment allows students to learn in clinical environment on mannequins with lifelike movement in the upper torso, shoulders and head, with a realistic oral cavity. http://www.dentistry.umn.edu/
Teledentistry Project	Dentistry, School of	Creates a telecommunication network linking UofM specialists with dentists and dental students in sites in remote rural areas where access to care is problematic; December of 2004; patients see a specialist through a direct video-conference; dental specialist performs a live consultation for the patient's condition, and performs the actual treatment with the patient's dentist. http://www.dentistry.umn.edu/about_the_school/our_clinics.html
Ambulatory Research Center	Medical School, Psychiatry	A 5,000-square-foot research center for diagnostic evaluation of patients in brain imaging and genetic studies, initial assessment and ratings over time for patients in clinical studies, and special assessments such as neuropsychological testing; a resource in the research training of physicians and other allied health professionals. http://www.psychiatry.umn.edu/psychiatry/research/arc/home.html
Center for Minimally Invasive Surgery	Medical School; Surgery	Education and training tools for surgical residents; surgical robotics, multiple surgical training simulators and real-time wired access to operating rooms; 2003 http://www.mis.umn.edu/

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Clinical Neuroscience Research Unit	Medical School; Neurology	Treatment of neurological illnesses is performed in a 4,000-square-foot unit in the Phillips-Wangensteen Building. Unit includes assessment/treatment rooms, coordinator offices, record storage, and a conference room. More than 30 current NIH and industry protocols are being performed by neurology and other neuroscience faculty.
Cystic Fibrosis Center	Medical School; Pediatrics	Center care team has broad-based clinical and scientific expertise, meeting the challenge of successfully diagnosing, treating, teaching, and performing research to understand and control all of the potential complications of CF. http://www.med.umn.edu/peds/pacc/cfcenter/home.html
Deborah E. Powell Center for Women's Health, a designated center of excellence	Medical School	A multi-disciplinary approach; services from preventive screening, health and wellness education to menopause, gynecologic cancer and chronic disease management. Women and their families are involved in developing an individualized plan of care. http://www.ahc.umn.edu/wmhth/
Geriatric Research, Education and Clinical Center	Medical School, Neurology	Identify, define, and disseminate the best ways to evaluate and manage dementia; clinical service, clinical research, and train other health care professionals. http://www.neurology.umn.edu/neurology/home.html ; http://james.psych.umn.edu/~grecc/
Lillehei Heart Institute	Medical School; Surgery	The clinical science programs involve Nursing, Public Health and the Medical School; coordination with the clinical practice; Cardiac Magnetic Resonance Diagnostics and Imaging Services http://www.med.umn.edu/lhi/
Clinical Skills Lab	Nursing, School of	
Surgical Laboratory	Nursing, School of	Midwifery students practice cutting and sewing episiotomies
Research Resource Center	Nursing, School of	People, place, and resources with the mission of supporting and facilitating nursing research and scholarship. http://www.nursing.umn.edu/Research/RRC/home.html

INFRASTRUCTURE PLATFORM	SCHOOL/COLLEGE	DESCRIPTION
Center for Excellence in Critical Care	Pharmacy, College of	Alliance between healthcare practitioners and researchers at the University of Minnesota, the University of Minnesota Medical Center, VA Medical Center and Regions Hospital committed to the advancement of research, training and practice in critical care. http://www.pharmacy.umn.edu/centers/cecc/
Clinical Pharmacology Center	Pharmacy, College of	Houses the Center for Forecasting Drug Response, the Experimental and Clinical Pharmacology Core Analytical Laboratory and the Pharmacogenomics Research Group. These units are staffed by individuals with expertise in pharmacometrics, pharmacokinetics, pharmacodynamics and pharmacogenomics, and state-of-the-art analytical methods from the College of Pharmacy. Included are facilities and infrastructure supporting subject genotyping and phenotyping, measurement of drug concentrations in various tissues and fluids, analysis of pharmacokinetic and pharmacodynamic data, and clinical trial design.
Experimental and Clinical Pharmacology	Pharmacy, College of	Discover, disseminate and apply new knowledge related to safe, effective and economical medication use in patients; educate students of pharmacy, post-graduate trainees for careers in pharmacy; teaching and conduct of experimental and clinical pharmacology and patient outcomes research to identify and promote use of best therapies. http://www.pharmacy.umn.edu/ecptrack/
Peters Institute of Pharmaceutical Care	Pharmacy, College of	To develop educational programs to disseminate pharmaceutical care practice to students and practitioners, and to conduct research to evaluate the impact of this practice on patients and society. http://www.pharmacy.umn.edu/centers/peters/home.html

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Institute for the Study of Geriatric Pharmacotherapy	Pharmacy, College of	Clinical practice goals are to provide clinical pharmacotherapeutics consultation to assist interdisciplinary care of older persons in hospital, long-term care and ambulatory care settings as appropriate; and advise and assist health care professionals, organizations and consumers in the development of model geriatric pharmacy services. http://www.pharmacy.umn.edu/centers/isgp/
PRIME Institute	Pharmacy, College of	An independent and global research, education and consulting organization whose mission is the study of policy and economics issues to help improve access to pharmaceutical care services and pharmaceuticals. http://www.pharmacy.umn.edu/centers/prime/
Pharmaceutical Care & Health Systems	Pharmacy, College of	To advance the practice of pharmaceutical care and its role in the health care system for the benefit of patients and society through education, research, and service. Focuses on practice-based research in which science can be translated to practice, practice needs can be communicated to guide scientific inquiry, and findings can be used for advancing the practice of pharmaceutical care and its role in the health care system. http://www.pharmacy.umn.edu/pchs/home.html
Pharmacy Practice & Pharmaceutical Sciences (Duluth campus)	Pharmacy, College of	Emphasis on rural health care issues and provision of pharmaceutical care in rural areas. Committed to delivering outstanding education, excellence in research, and service to the public and other health professions. Faculty and students involved in collaborative efforts with their medical school and nursing school colleagues. http://www.pharmacy.umn.edu/duluth/home.html
Office of Educational Development	Pharmacy, College of	Designs, develops, delivers and evaluates educational programs and initiatives for a variety of audiences. Organized into three teams: external education, pharmacist education, and pharmacy student education. http://www5.pharmacy.umn.edu/oed/

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Pharmacy Rural Education, Practice, and Policy Institute	Pharmacy, College of	Collaboration between collegiate faculty and rural communities in Minnesota to develop networks across communities and organizations focused on the delivery of pharmacy services in rural communities. Goals include, increase awareness of pharmacy issues in rural Minnesota, community-based assessment to identify specific challenges to pharmacy services delivery, and planning for the purpose of strengthening pharmacy service delivery in the region. http://www.pharmacy.umn.edu/news/hrsa/home.html
Epidemiology Clinical Research Center	Public Health, School of Division of Epidemiology	Established in 2000 to bring together scattered clinical studies in a facility designed for participant flow and convenience. It currently occupies 17,758 square feet on campus with 55 staff. It is a shared space with 25 investigator projects from the Medical School and the School of Public Health. In addition to the many participant examination and interview rooms, ECRC space is utilized to perform a number of measurements and diet and exercise intervention evaluation. The ECRC has a single laboratory. http://www.epi.umn.edu/about/ecrc.shtm
Biostatistics Consulting Laboratory	Public Health, School of Division of Biostatistics	A facility which provides statistical consulting for a variety of projects based primarily in the Academic Health Center. The BCL staff consult and participate on a variety of studies, providing consulting, design of forms, data management, statistical analysis, arrangements for coding, and data entry. http://www.biostat.umn.edu/bcl/
Center for Aging Services Management	Public Health, School of	Offers a nontraditional program for people who want to get licensed as a nursing home administrator or are seeking a career as a long term care manager. http://www.hsr.umn.edu/mha/lcal/
Center for Infectious Disease Research and Policy	Public Health, School of	To prevent illness and death from infectious diseases through epidemiologic research and the rapid translation of scientific information into real-world practical applications and solutions. http://www.cidrap.umn.edu/cidrap/center/mission/index.html

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Center for Violence Prevention and Control	Public Health, School of Division of Environmental and Occupational Health	To generate knowledge through research in violence prevention and control, to disseminate this knowledge to use as the basis for development of prevention and control efforts, and to provide a comprehensive violence prevention and control graduate education curriculum. http://www1.umn.edu/cvpc/
Clinical Outcomes Research Center	Public Health, School of Division of Health Services Research and Policy	Established in 1996 as a joint center by the medical and public health schools, and located in the Division of Health Services Research and Policy. It is designed to improve the quality of health care through: 1) outcomes research; 2) collaboration with AHC clinical faculty; 3) teaching methods in outcomes research to graduate students; and; 4) providing skilled study staff to perform research studies. http://www.hsr.umn.edu/corc/
Coordinating Centers for Biometric Research	Public Health, School of, Division of Biostatistics	Serves as the statistical and data management hub of several large NIH-sponsored trials and two major HIV treatment networks. This 30,000-square-foot center houses 75 biostatisticians, data-management professionals, and support staff who design studies and collect and analyze data in collaboration with investigators around the world. http://www.biostat.umn.edu/facility.html
Epidemiology Clinical Research Center	Public Health, School of, Division of Epidemiology	Provides research results; study participant examination and interview rooms; measurements such as electrocardiogram's, blood pressure, cognitive testing, carotid ultrasounds, echocardiograms, bone densitometry, etc.; single laboratory; 2000 http://www.epi.umn.edu/about/ecrc.shtm

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Rural Health Research Center	Public Health, School of Division of Health Services Research and Policy	Conduct policy-relevant research... to help shape the delivery and financing of rural health services; research in quality of care in rural areas including quality measurement, quality improvement and patient safety issues; rural health care systems and access to care, including critical access and other rural hospitals, rural health networks, and health care workforce issues; and rural health care financing: rural issues related to Medicare, Medicaid, and private insurance.
Advanced Genetic Analysis Center	Veterinary Medicine, College of	Automated DNA sequencing of single- and double-stranded DNA templates (including PCR fragments) with standard and non-standard oligonucleotide primers, sequence data management and analysis, and GeneScan automated DNA fragment analysis for genotyping and pedigree; http://www.agac.umn.edu/facilityframe.htm
Animal Biotechnology Center	Veterinary Medicine, College of	Developing a Bioinformatics program focused on Comparative and Functional Genomics; facilitate the analysis and integration of genotypic and phenotypic data from diverse species under investigation by members of the AB Center; facilitate the interaction and cooperation between AB Center researchers and other laboratories working with human, zebrafish, mouse, livestock and companion animals.
Animal Cancer Center	Veterinary Medicine, College of	Produces relevant cutting edge research that improves the quality of life of our animals while contributing discoveries that impact the lives of pets and humans; surgery, radiation therapy, and chemotherapy, individually or in combination. http://www.cvm.umn.edu/acc/home.html
Ben Pomeroy Student-Alumni Learning Center (in process)	Veterinary Medicine, College of	State-of-the-art classrooms, seminar rooms; computer lab with digital; http://www.cvm.umn.edu/about/facilitieslibrarymuseum/home.html
Center for Animal Health and Food Safety	Veterinary Medicine, College of	Contribute to the safety and security of the global food system and significantly strengthen our ability to anticipate and respond to emerging issues and imminent threats from animal and food borne illnesses. http://www.cvm.umn.edu/cahfs/about/home.html

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
Clinical Investigation Center	Veterinary Medicine, College of	Network of veterinary clinical investigators and state-of-the-art facilities; coordinate research studies and technology development/transfer for sponsors, contract customers, and regulatory agencies; and foster the welfare of people by contributing to human and animal healthcare. http://www.cvm.umn.edu/cic/home.html
Minnesota Urolith Center	Veterinary Medicine, College of	Quantitative urolith analysis utilizing Polarizing Light Microscopy, Infrared Spectroscopy, EDAX (Energy Dispersive X-ray Spectroscopy); Database of over 280,000 veterinary samples; Epidemiologic data identifying risk factors for urolithiasis; Recommendations on urolith dissolution and prevention; Consultation services; Clinical Studies; Lectures and seminars around the world to disseminate knowledge about management of urolithiasis; Information tailored to the veterinary community we are exclusively dedicated to veterinary patients; 1981 http://www.cvm.umn.edu/depts/minnesotaurolithcenter/home.html
Neuromuscular Diagnostic Lab	Veterinary Medicine, College of	Diagnosis and advancement of understanding of muscle disorders in large animals; perform histochemical and tinctorial stains; DNA and tissue sampling. http://academic-server.cvm.umn.edu/neuromuscularlab/Home.htm
The Raptor Center	Veterinary Medicine, College of	Medical care, rehabilitation, conservation, and study of eagles, hawks, owls, and falcons; treats more than 800 birds a year; provide training in raptor medicine and surgery for veterinarians from around the world; public education programs and events; identify emerging issues related to raptor health and populations; strengthen the bond between humans and birds; improve the quality of life for both; contribute to the preservation of the natural world. http://www.raptor.cvm.umn.edu/raptor/about/home.html
Swine Disease Eradication Center	Veterinary Medicine, College of	Understand the pathogenesis and epidemiology of the target diseases and from there develop and validate strategies and techniques for their successful eradication under field conditions. http://academic-server.cvm.umn.edu/swine/

INFRASTRUCTURE PLATFORM	SCHOOL/ COLLEGE	DESCRIPTION
University of Minnesota Equine Center	Veterinary Medicine, College of	Advancing the health, well being, and performance of the horse; quality education in equine specialties; internationally recognized equine research program; integrated, comprehensive program that serves as a single source provider to meet the needs of veterinarians, equine professionals, and horse owners; highest level of service to horse owners and their horses, practicing veterinarians, and students; http://www.cvm.umn.edu/umec/home.html
Veterinary Diagnostic Laboratory	Veterinary Medicine, College of	Provides rapid diagnosis of animal diseases, identifying emerging diseases, developing new diagnostic methods, and training diagnosticians and veterinarians; official laboratory of the <u>Minnesota Board of Animal Health</u> ; full range of diagnostic services including necropsy, histopathology, immunohistochemistry, bacteriology, toxicology, virology, cytogenetics, molecular diagnostics, endocrinology and serology. http://www.vdl.umn.edu/
Veterinary Medical Center	Veterinary Medicine, College of	Full-service referral care center for large and small animals in Minnesota.; Emergency services and patient care available 24-hours a day, seven days a week; Advanced technologies, such as a spiral CT scanner and color flow Doppler echocardiography system.; State-of-the-art intensive care unit; Services of a licensed social worker to assist clients with treatment decisions, end-of-life issues, and support during diagnosis, planning and treatment; Access to the latest advances in veterinary medicine by the people who are developing those advances. http://www.cvm.umn.edu/vmc/

Other sources:

<http://www.ahc.umn.edu/error.html>

<http://www.cancer.umn.edu/page/cores/index.html>

<http://www.med.umn.edu/peds/research/facilities.html>

Appendix E - Metrics for Clinical Sciences

From Care Delivery:

- Performance to local and national benchmarks regarding quality of care, safety, outcomes
- Number of students being trained in cutting edge models
- Pace of translation from findings to application to care

From Education:

- Better prepared students to function in clinical settings
- Less post-training “training” time

From Research:

- Trial enrollment
- Number of grants
- \$ for grants
- Clinical research grant dollars
- Publications
- Differentiate between basic and translational research
- Retention of clinical scholars
- Recruitment of clinical scholars
- Training grant awards (all sources)
- Overall research funding
- Increased grant productivity per capita
- Career satisfaction

Appendix F – Proposal for Additional Clinical Research Faculty

Recommendation

CSE Research Subcommittee

February, 2006

- CSE Research Recommendation
 - Recruitment of 20 experienced, productive Clinical Research faculty per year for ten years
 - A total investment over ten years of \$300 million.
 - \$17 million per year for start up packages, and \$9 million per year for new space costs.
 - Ten senior faculty per year, at average \$1.0m start up over three years
 - They often bring less senior faculty with them
 - Five mid level faculty per year, at average \$750k start-up over three years
 - Five junior level faculty per year, at average \$600k start-up over three years
 - Expectation is 80% commitment to clinical research
- A transformative investment in faculty and space for Clinical Sciences Research is essential if the University is to become a top three public research university in the world in the next ten years
 - University NIH awards increased 75% during period of NIH awards doubling (1996-2004)
 - Minnesota dropped from 16th to 21st ranked domestic recipient of NIH funding over same period
 - Peer universities are making this investment, so incremental increases move us back
 - Wisconsin announced a \$750 million initiative, with \$570 million for new facilities, to advance biomedical research at the University of Wisconsin
 - USC will break ground this fall on the 215,000 square foot Broad Institute for Integrative Biology and Stem Cell Institute
 - New York has committed to \$1.4 billion to create the nation's leading nanotechnology research program
 - Arizona has extended \$440 million of debt service authorization to enable universities in the state to build new research facilities
 - Virginia has announced a \$554 million plan to build new research facilities at universities in Virginia to enhance competitiveness in biomedical sciences
 - New Jersey committed \$380 million to construct a new Stem Cell Institute to provide a competitive edge in this emerging area of bioscience
 - Improving the productivity and efficiency of faculty and resources will not bridge the gap
 - Assuming an ambitious increase in research productivity of the faculty and increase in the use of existing does not materially close the gap

- The NIH awards gap five years from now will be between \$150 and \$250 million per year
- An 8-9% increase in the number of faculty holding at least one NIH grant would reduce the gap approximately \$9 million
 - Would return AHC faculty to productivity level achieved in 2000
 - 401 AHC faculty currently have one NIH award
- An increase in the mean NIH award from \$250 thousand to \$300 thousand would reduce gap \$9 million
- An internal analysis determines that an additional investment of 473 to 1003 additional research faculty are needed over five years to move the University to the top three in NIH awards
- As part of this initiative, investment in **clinical** research faculty would be highly productive
 - Consistent with NIH Roadmap
 - This part of NIH budget more likely to grow
 - University positioned to gain market share in clinical research
 - Space requirements for clinical researchers slightly less and less expensive than basic scientists
 - Clinical Research RO1 grants are bigger in size with regard to direct costs
 - In 2005, clinical research projects were approximately 20% of the AHC sponsored awards but approximately 29% of the AHC sponsored- funding
 - Clinical Research grants generate more indirect dollars per square foot of required lab space

Appendix G - Meeting Summary, February 10 Student Advisory Committee Meeting

Clinical Science Task Force Student Advisory Committee
February 10, 2006
Moos 1-450A

Students present: Tom Fillman and Victoria Losinski (Pharmacy), Christine Hoang and Alison Newman (Veterinary Medicine), Jodi Manke and Matt Larson (Dentistry), Heather Nelson, Travis Olives, Aimee Alexander, John Mrachek, Anne Hudson Blaes, and Amy Larsen (Medical School), Elizabeth Pui, Meena Padha, and Elizabeth Lando (Nursing)

Clinical Sciences Enterprise Task Force members present: Dean Powell, Bobbi Daniels, Melissa Avery, Jane Miller, Karyn Baum, Donna Bliss, and Mary Rowan

Staff present: Jennifer Cieslak, Stewart McMullan

Overall themes, conclusions:

1. Earlier exposure in programs to subspecialties would be beneficial
2. Shadowing opportunities in chosen profession before starting program very illuminating should be encouraged.
3. Patient data, computer systems tremendous liability within Fairview.
4. Opportunities in community settings, particularly Phillips Clinic, have provided tremendous interdisciplinary education for all disciplines.
5. Understanding and opportunities in clinical research vary greatly across colleges
6. Tuition/fee free M.S. in Clinical Research would be highly valued by students in all disciplines

Dean Powell welcomed the group, described the work of the task force to this point, and the agenda for the meeting. Jane Miller then facilitated the discussion.

What kinds of clinical experience have you had?

Medical School: 1st year is shadowing opportunity. Suggestion that students should be encouraged or be required to shadow before entering Med School, as it is very helpful in choosing which health career profession to enter. Shadowing sometimes changes mind on profession, from doctor to nursing, or doctor to public health, etc. Not enough exposure, early enough in the program, to some of the sub-specialties such as pediatrics.

Dental: First two years no clinical experience. Do 30 hours shadowing before dental school. Third year much more clinical experience, most often a positive experience. Other dental student exposed to clinical setting in second year. Exposed too late to apply for subspecialties.

Nursing: Go to very diverse settings for clinical training, such as hospitals, clinics, elementary schools. Somewhat repetitive. Perceptions varied as to whether there was enough or too much clinical exposure.

Pharmacy: Received exposure early in program, satisfied they were exposed to specialties early enough. Spoke highly of EFFECT Program, where 1st and 2nd year students work in the community.

Have you had exposure to clinical research?

Vet Med: Yes, but student had to work very hard to find it.

Pharmacy: College does excellent job at promoting and facilitating this. Faculty seek out students, and web pages very specific about opportunities, subject matter, and funding.

Medical School: One student had aggressively sought out opportunities, but was frustrated by lack of accessibility and interest. (Follow up email) Descriptive web page of each resident including specialty, perceptions of the specialty, work/life balance, research opportunities, etc. would be valuable.

Nursing: In Rochester programs, very accessible, students sought out aggressively by faculty.

Dentistry: Flexibility to do research afternoons (Stewart note: not sure where in the program this option is made available) instead of taking class for academic credit.

Extremely favorable response from all disciplines to prospect of free tuition/fees for masters in clinical research.

What has your experience of the facilities been like in your clinical education?

Veterinary Medicine: Very impressed by hospital and facilities. In local veterinary community, they are perceived as “phenomenal”

Dentistry: Clinics widely disparaged by local practicing community as out-dated, insufficient. One digital radiography machine with limited accessibility

Pharmacy: Outstanding access to computers and computer support. Journals, books in libraries not current or accessible. Palm pilot given to first year students improves access to information.

Nursing: Rochester space very well perceived in Rochester.

Medical School: Limited quantity of workspace. Fairview, UMP computer systems, medical records universally do not crosswalk. Much better at Ramsey, VA. Biomedical library very accessible has current information.

Nursing: Perception is simulator doesn't work, efficient, isn't accessible. Computer system at Rochester extremely slow, unreliable.

What kinds of interprofessional experiences have you had in your clinical education?

Dentistry: Very little, if any, and only in a classroom environment (hygiene) with clear separation between medicine and dentistry.

Medical School: Some productive combinations, such as surgery and anesthesiology. Phillips Clinic provides tremendous opportunity for medicine, pharmacy, nursing, public health, but can only take 25 students when 75 apply. Resistance between medical school and public health perceived to be missed opportunity. (Follow up email) First year papers on clinical scenarios helpful, but hands on opportunity would be more valuable.

Veterinary Medicine: (offline follow-up): Few opportunities currently, but potential for more interaction with mental health and public health professionals.

Nursing: Rochester facilities impede interdisciplinary education.

Work on teams of students?

Yes, it would be excellent opportunity in clinical setting. Affirmed by nursing, medicine, and pharmacy. BMT and ICU are good examples of positive examples.