

Preeminent Medical Discovery, Education, and Workforce for a Healthy Minnesota



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Governor's Blue Ribbon
Commission on the
University of Minnesota
Medical School

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Executive Summary

The Medical School plays a vital role in meeting the health research and workforce needs of the state. Over 70 percent of the state's physician workforce is educated or trained at the Medical School, and in collaboration with its partners, representatives from the Medical School see over 1,000,000 patients annually, impacting Minnesotans from every county across the state. Medical School faculty have made discoveries and developed innovative medical practices that have transformed the lives of citizens, revolutionized the practice of medicine, and generated significant economic returns for the state. Additionally, the Medical School is nationally and internationally recognized for its Rural Physician Associate Program and the Duluth's rural-focused curriculum. Moving forward, the Medical School faces numerous challenges to ensuring its national preeminence in healthcare research and its ability to educate students and residents to meet Minnesota's future physician workforce needs.

Given these challenges, the committee was charged with advising "the Governor and the legislature on future strategies, investments, and actions to strengthen the position of the Medical School" across four broad and diverse priorities:

1. Ensure the Medical School's national preeminence by attracting and retaining world-class faculty, staff, students, and residents.
2. Sustain the University's national leadership in health care research, innovation, and service delivery, capitalizing on the State's investments in biomedical research and technology
3. Expand the University's clinical services to strengthen its ability to serve as a statewide health care resource for providers and patients, as a training site for health professional students and residents, and as a site for cutting-edge clinical research.
4. Address the state's health workforce needs to serve Minnesota's broad continuum of health care needs, including primary care, a growing aged population, and increased chronic needs.

Research

For a significant period of the 20th century, the medical school was a vanguard in conducting transformational research that impacted the lives of the state's citizens and changed the practice of medicine. As a result, throughout the late 1970s and early 1980s the Medical School consistently ranked in the top 15 in National Institute of Health (NIH) funding, a marker for national research excellence. Currently, the medical school ranks 30th in NIH funding (12th among public medical schools). While numerous factors likely contributed to the Medical School's decline in NIH funding, the loss of almost 90 tenured and tenure track faculty (17 percent) from 1995-2001 was likely a major contributor. There is a strong relationship between

the size of the Medical School's tenured and tenure-track faculty and the Medical School's NIH ranking.

In response to the Academic Health Center external review, the Medical School began a faculty led strategic planning process that culminated in the Medical School's strategic plan, "Strategic Vision 2025" (University of Minnesota Medical School, 2013b). The plan outlines a vision to return the Medical School to national prominence. To achieve the plan's objective, the faculty note that "a culture of excellence" will need to be developed. A majority of the strategic plan's recommendations can be implemented with little to no additional state investment. Yet, implementing these recommendations could have a significant impact on the Medical School's ability to secure external funding. The university has already taken several steps to meet the plan objectives, including hiring Dr. Jackson as Dean of the Medical School and Vice President of Health Sciences. The medical school's ability to reach the objectives outlined in the strategic plan is largely tied to three factors: the size and productivity of the tenured and tenure-track faculty, the organizational culture, and the strength of its clinical practice.

Education for the Workforce

The Medical School plays a vital role in supplying the physician workforce for the state. In order to meet future workforce needs, interprofessional and team-based practices should be integrated into the Medical School's curriculum. Its students will need to be exposed to clinical training sites, including ambulatory care settings, earlier in their education. The Medical School is dependent on its relationships with hospitals and clinics across the state to provide the required training experiences necessary for its students, residents, and fellows. Increased competition in the marketplace, and the costs to partner hospital and clinics associated with decreased productivity, have made it difficult for the Medical School to secure a sufficient number of training sites for both their students and residents; however, the incentives associated with training Medical School students and residents are not equivalent. Additionally, the racial and ethnic composition of Minnesota's health professional workforce does not reflect the state's demographics (Minnesota Department of Health Office of Rural Health & Primary Care, 2013, September). To address these disparities, financial incentives could be expanded to retain the prospective students from rural and underserved urban communities. In addition to providing additional financial incentives, considering a prospective student's propensity to serve in a high need area during the admissions process may yield effective and efficient results.

Finally, there are over 200 foreign trained physicians in Minnesota that are unable to practice due to licensing and structural barriers. Overcoming these barriers could allow these physicians to contribute to meeting Minnesota's healthcare needs. Physicians, however, are just one part of state's health professional workforce. As the healthcare delivery model continues to become more interprofessional and team-based, the services provided by other health professionals are crucial to meeting the state's health workforce needs. Physician assistants, advanced practice nurses, and other health professionals will play an expanded role in addressing primary care needs. Technical innovations, such as Tele-medicine, also offer potential in providing quality health services for all Minnesotans, especially in rural and underserved areas.

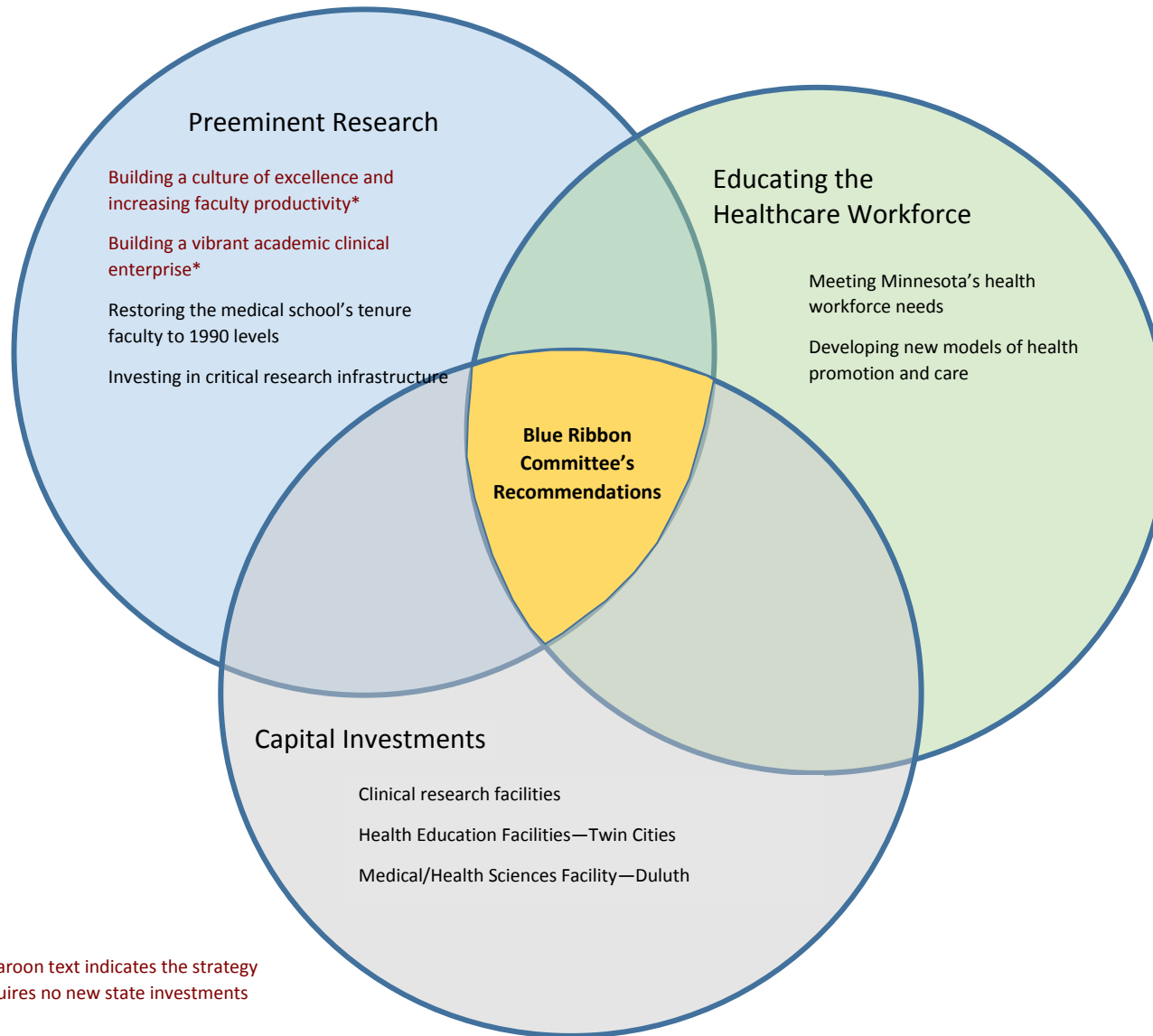
Strategies and Investments

To provide for the continued success of the Medical School and meet the Governor's charge requires a comprehensive, long-term, and sustained approach and set of strategies. To this end, the committee identified seven strategies that address two key priorities (Figure ES1 & Table ES1): improving the Medical School's capacity to conduct healthcare research that addresses state health priorities, and thereby increasing the Medical School's national preeminence, and strengthening and expanding the Medical School's educational programs and curriculum to ensure their students and residents are prepared to meet Minnesota's future physician workforce needs. The seven strategies include:

- Building a culture of excellence and increasing faculty productivity
- Building a vibrant academic clinical enterprise
- Investing in Medical Discovery Teams to restore the medical school's tenured faculty to 1990 levels
- Investing in critical clinical research infrastructure
- Investing in innovative, ground-breaking programs to meet Minnesota's health workforce needs
- Developing and disseminating new models of health promotion and care
- Investing in vitally important new education and research facilities

While investing in strategies in either priority in isolation will likely benefit the state and the Medical School, the returns on the state's investment may be compounded by strategically investing in both priorities, because they are congruent and reinforce one another. Certainly, not all of these strategies can receive funding immediately. The policy framework and strategies delineated are intended to offer policy makers a long-term investment strategy.

Figure ES1: Strategies and Investments



*Maroon text indicates the strategy requires no new state investments

Table ES1: Strategies and Investments and Component of the Executive Order Impacted

Strategy	Strategic Investments	Component of Executive Order Impacted:			
		Ensure the Medical School's national preeminence	Sustain the University's national leadership in health care research, innovation, and service delivery	Expand clinical services to serve as a statewide health care resource, as a training site for students and residents, and as a site for cutting-edge clinical research.	Address the state's health workforce needs
		Preeminent Research			
Building a culture of excellence and increasing faculty productivity*	Increased Faculty Productivity	X	X	X	X
Building a vibrant academic clinical enterprise*	Improved Integration with Fairview	X	X	X	X
Restoring the medical school's tenured faculty to 1990 levels	Medical Discovery Teams	X	X	X	X
Investing in critical research infrastructure	On-going investments in critical clinical research infrastructure	X	X	X	
		Educating the Health Workforce			
Meeting Minnesota's health workforce needs	Curriculum/Clinical Training Program Redesign	X	X		X
	Primary Care Training Sites			X	X
	RPAP/Metro RPAP Expansion	X		X	X
	Duluth Clinical Faculty			X	X
	Duluth Rural Scholars Program	X		X	X
	Scholarship/Loan Forgiveness Programs				X
	Pipeline Program Investments				X
	Expand MD/Ph.D. Program	X	X	X	X
	Psychiatry and Mental Health Training Programs		X	X	X
Geriatric and Care of the Elderly		X	X	X	
Developing new models of health promotion and care:	New Models of Care	X	X	X	X
	Minnesota Electronic Health Library		X	X	X
	Develop a M.D./Dr. P.H. Program		X		
		Capital Investments			
Investing in critical core facilities:	Clinical Research Facilities	X	X	X	
	Health Education Facilities Twin Cities	X	X	X	X
	Medical/Health Sciences Facility Duluth	X	X	X	X
* Red text indicates the strategy requires no new state investments					
Legend: Health Care Research Strategies & Investments Education for Minnesota's Workforce Strategies & Investments Impacts both priorities					

Introduction

The University of Minnesota Medical School plays a vital role in meeting the health research and workforce needs of the state. Medical School faculty have made discoveries and created innovative medical practices that have transformed the lives of citizens, revolutionized the practice of medicine, and generated significant economic returns through external research funding and technology transfer. Medical School faculty, students, residents, and fellows provide care to over 1,000,000 patients every year impacting the citizens of every county across the state (University of Minnesota, 2013, March 8). The direct and indirect impact of the Medical School on Minnesota's economy is vast, with a 2010 report estimating the Medical School and its partners accounted for over \$2.5 billion to the state's economy (TrippUmbach, 2011, June).¹

Given the importance of the Medical School to meeting the state's healthcare research and workforce needs, the committee was charged with advising "the Governor and the legislature on future strategies, investments, and actions to strengthen the position of the Medical School" across four broad and diverse priorities:²

5. Ensure the Medical School's national preeminence by attracting and retaining world-class faculty, staff, students, and residents.
6. Sustain the University's national leadership in health care research, innovation, and service delivery, capitalizing on the State's investments in biomedical research and technology.
7. Expand the University's clinical services to strengthen its ability to serve as a statewide health care resource for providers and patients, as a training site for health professional students and residents, and as a site for cutting-edge clinical research.
8. Address the state's health workforce needs to serve Minnesota's broad continuum of health care needs, including primary care, a growing aged population, and increased chronic needs.

Committee Membership

The committee members appointed by the Governor represented diverse stakeholders and perspectives. A complete list of the committee membership, and their affiliation, is provided in table 1. The committee met every month from August of 2014 to January 2015 examining all three aspects of the Medical School's mission: research, education, and clinical care, as well as

¹ The authors report that the overall economic impact of the University of Minnesota is \$8.6 billion, with the University of Minnesota Medical Center, Fairview, and University of Minnesota Physicians accounting for approximately 30%.

² A copy of the Governor's Executive Order can be found in Appendix A.

the Medical School's significant contribution to meeting the health workforce needs of the state.

Table 1: Blue Ribbon Committee Membership and Organizational Affiliation

Committee Member	Organization
David Abelson, M.D.	Health Partners & Park Nicollett Methodist Hospital
Claire Bender, M.D.	Mayo Clinic
James Boulger, Ph.D.	University of Minnesota Medical School, Duluth Campus
Kathleen Brooks, Co-chair, M.D., M.B.A., M.P.A	University of Minnesota, Medical School Rural Physician Associate Program
J. Brooks Jackson, M.D., M.B.A.	University of Minnesota Medical School, Vice President for Health Sciences
Renee Crichlow, M.D.	Minnesota Association of Family Physicians & University of Minnesota Physicians Broadway Clinic
Ed Ehlinger, M.D.	Minnesota Department of Health
Cindy Firkins Smith, M.D.	Minnesota Medical Association
Thomas Huntley	State Representative
Tara Mack	State Representative
Mary Maertens, RN, MHA, FACHE	Avera Health- Marshall, Minnesota Hospital Association
Richard Migliori, M.D.	United Health Group
Jeremy Miller	State Senator
Larry Pogemiller, Co-chair	Office of Higher Education State of Minnesota
Jon Pryor, M.D., M.B.A.	Hennepin County Medical Center
Patrick Rock, M.D.	Minneapolis Indian Health Board
Rulon Stacey, Ph.D., FACHE	Fairview Health Services
Elizabeth Seaquist, M.D.	University of Minnesota Medical School
Leroy Stumpf	State Senator

State-level Health Policy Efforts

Concurrent with the Blue Ribbon Committee, several other state-level health workforce policy and planning efforts have been meeting and are scheduled to release their reports by the end of January, 2015 (Table 1). Many of the strategies and investments discussed by the Blue Ribbon Committee are also being addressed by these taskforces/committees. The work and recommendations of these concurrent committees should be considered in the context of this report.

Table 2: Current state-level health workforce policy and planning efforts

	Origin	Charge/Goals	Timeframe
Foreign-trained Physician Task Force	2014 Minnesota Department of Human Services (DHS) Licensing bill Led by Minnesota Department of Health (MDH)	Develop strategies to integrate refugee and asylee physicians into the Minnesota health care delivery system.	Recommendations to legislature by 12/31/2014
Legislative Health Care Workforce Commission	2014 Omnibus appropriations bill, HHS article	Study and make recommendations to the legislature on how to achieve the goal of strengthening the workforce in health care. Includes charge to identify causes and solutions to barriers related to the primary care workforce.	Preliminary report making recommendations to the legislature by 12/31/2014
Mental Health Workforce Summit	2013 Higher Ed bill Led by the Minnesota State Colleges and Universities (MNSCU)	Develop a comprehensive plan to increase the number of qualified people working at all levels of our mental health system, ensure appropriate coursework and training and create a more culturally diverse mental health workforce.	Recommendations due to legislature 1/15/2015
PIPELINE Project	2014 Omnibus appropriations bill, workforce development article Led by Dept. of Labor and Industry	Develop competency standards and apprenticeships for occupations in high demand industries, including health care.	Report to legislature on progress by 1/15/2015
National Governors' Association Health Workforce Policy Academy	Governor's Office submitted successful proposal to NGA Led by interagency and stakeholder core team, coordinated by MDH	Establish infrastructure for coordinated health workforce data, planning, and development and develop strategies for immediate action to address health workforce challenges, such as primary care, dental, and mental health shortages.	18 month planning and implementation period ending October 2015

Source: Minnesota Department of Health

Context

The health of Minnesota families and the economic vitality of the state depend on access to well-trained health providers, innovative health discoveries, quality health care and accessible public health programs. In addition health care and the health care marketplace are undergoing fundamental change, affecting both health care providers as well as academic institutions. Today, as Minnesotans live longer and demand for care of an aging population increases and disparities persist in access and in the state's healthcare workforce, health care requires an interdisciplinary approach to care delivery along a full continuum of primary to specialized care. It calls for a full integration of health education/training, research, and clinical care. Competition for health research funding continues to intensify, putting at risk the state's health research enterprise, an important foundation of the state's health care and biomedical industries. (University of Minnesota, 2013).

Research

The University of Minnesota Medical School has a storied history of innovations and discoveries that changed the practice of medicine, cured diseases, revolutionized medical education, and secured its place among the top public medical schools in the country. Physicians from the Medical School developed the Wagensteen Suction Tube (1931), the double-blind research method (1934), Cortisone (1948), a vaccine for Lyme disease (1986), conducted the first open-heart surgery (1952) and the first successful bone marrow transplant to treat Lymphoma (1975) (University of Minnesota, 2014a). These historical contributions and innovations transformed the lives of Minnesotans and established the Medical School as a national leader. The transformational research being conducted was likely reflected in the Medical School's ability to secure a significant portion of National Institute of Health (NIH) funding, which is viewed as a marker for excellence in research, relative to its peers. Moving forward, the Medical School's ability to generate new NIH funding is largely tied to three factors: the size and productivity of the tenured and tenure-track faculty, the organizational culture, and the strength of its clinical practice, including its partnership with Fairview.

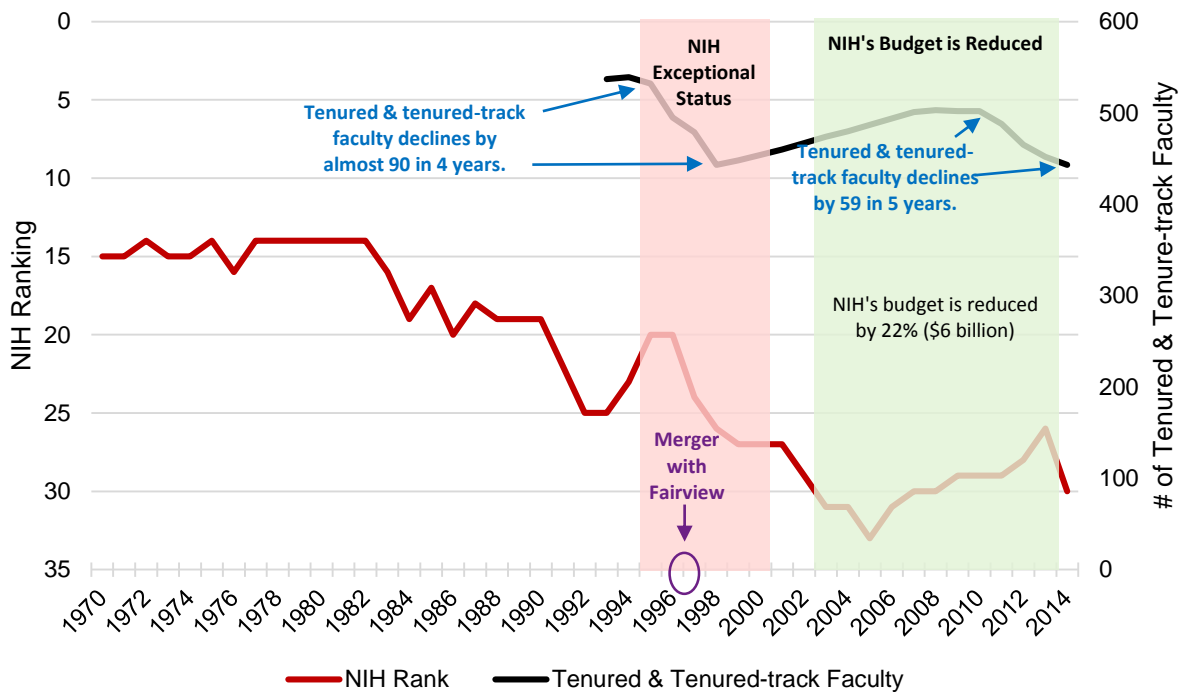
Tenured and Tenure-track Research Faculty

Figure 1 shows the Medical School's NIH ranking from 1970 to 2014.³ Additionally, the figure overlays the number of tenured and tenure-track faculty relative to the Medical School's NIH ranking from 1993 to 2014 (the only years detailed faculty data were available). The figure suggests that there is a strong relationship between the size of the Medical School's tenured and tenure-track faculty and its NIH ranking. For example, increases in the number of tenured and tenure-track faculty are typically followed by increases in the school's NIH ranking. Conversely, decreases in the number of tenured and tenure-track faculty are typically followed by decreases in the school's NIH ranking.

³ In addition to NIH funding, in 2013, the Medical School received \$39.3 million in other sponsored funds.

Throughout the late 1970s and early 1980s the Medical School consistently ranked in the top 15 in NIH funding. From 1982 to 2005, however, the Medical School’s ranking fell from 14 to 33.⁴ Numerous factors likely contributed to the decline, including receiving the NIH’s “exceptional status” designation in October of 1995 due to the mismanagement of federal grants and the consolidation of the health market place in Minnesota and the resulting financial stress at the University of Minnesota Hospital and Clinics.

Figure 1: Medical School’s NIH ranking from 1970 to 2014, and number of tenure and tenured-track faculty from 1993 to 2014



Source: Adapted from data provided by the University of Minnesota

Being placed on exceptional status limited researchers’ autonomy, slowed down their research, and affected the university’s ability to attract and retain faculty (Wittman, 1997, March 4). In the immediate four years following the designation (1995-2001), the Medical School’s tenure and tenured-track faculty declined by almost 90, or 17 percent of its base.⁵ The decline in the Medical School’s tenured and tenure-track faculty preceded one of the Medical School’s steepest declines in the NIH ranking, from 24 in 1997 to 33 in 2005. Even after the exceptional

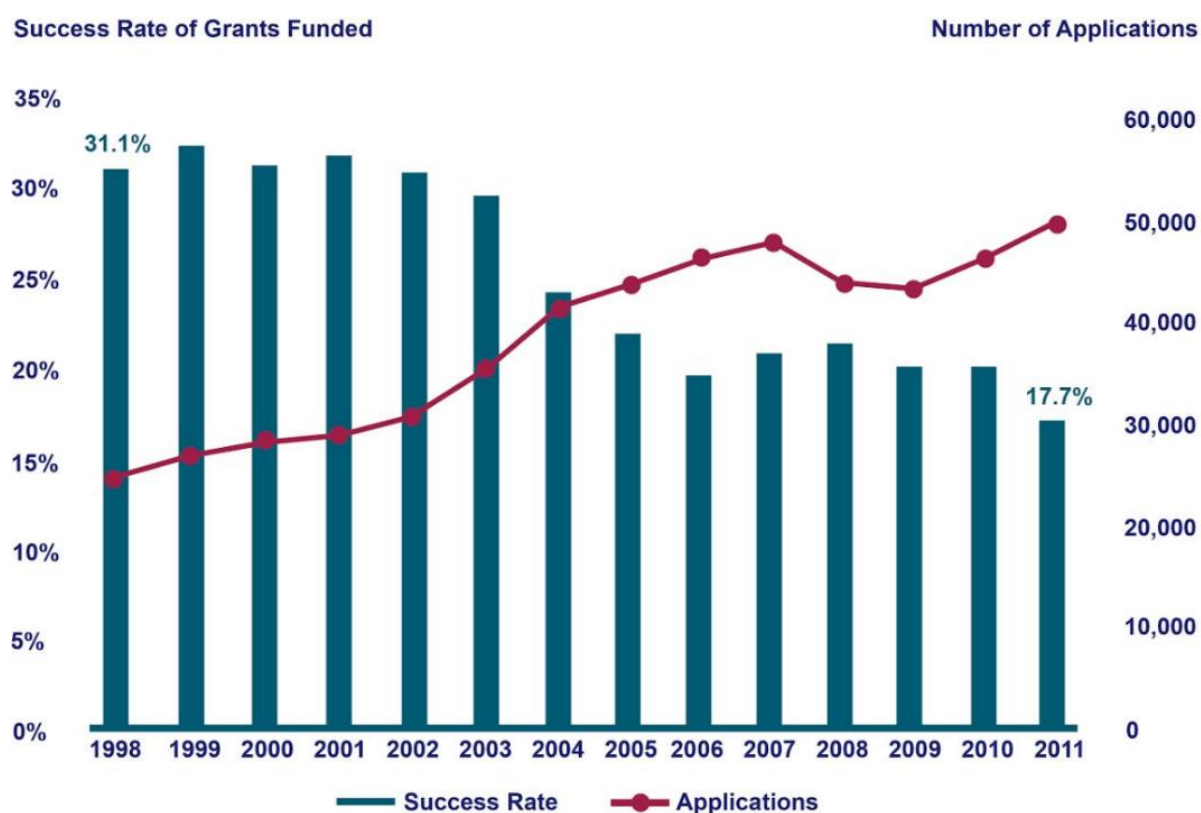
⁴ While the value of rankings and their ability to accurately measure quality is questionable, in his seminal work, Perrow (1961) notes that customers and the market place often rely on the images created by external referents (rankings) as a measure of a product’s or service’s quality in markets where it difficult to assess the intrinsic quality of a product or service.

⁵ Figure 1, and the subsequent discussion, does not account for declines in the tenured and tenure-track faculty at the Duluth campus over this time period. According to one committee member, the number of tenured and tenure-track faculty at the Duluth campus has declined by approximately 40 percent over the last 15 years.

status designation was removed in 2001, there were likely residual effects that affected the Medical School’s ability to attract and retain world-class faculty.

Following increases in the Medical School’s tenure and tenure-track faculty from 1999 to 2008, the Medical School’s NIH ranking steadily improved. These improvements occurred during a period of increased competition for a smaller amount of NIH funding (figure 2). Between 2003 and 2013, the NIH’s budget was reduced by \$6 billion (22 percent) net of inflation, while the number of applications increased by 25 percent (University of Minnesota, 2014, August 19). As a result, the overall success rate in obtaining funding dropped from approximately 31 percent to 17.7 percent.

Figure 2: Number of NIH research applications and funding success rates, 1998 to 2011



Source: University of Minnesota

The Medical School currently ranks 30th among all Medical Schools in NIH funding, and 12th among public Medical Schools, (Table 3) (Blue Ridge Institute for Medical Research, 2014).⁶ The size of the Medical School’s tenured and tenure-track faculty (443) is equivalent to the tenured and tenure-track faculty levels in 1998, when the Medical School ranked 26. The Medical School’s NIH funding trails Medical Schools at Mayo ($\Delta = \$61M$), the University of Wisconsin ($\Delta = \$12M$), and the University of Michigan ($\Delta = \$137M$). The U.S. News & World Report research rankings paint a similar picture of the Medical School’s relative position (U.S. News & World

⁶ Individual departmental rankings are provided in table 9 in Appendix A.

Report, 2014).⁷

Table 3: Medical School rankings

		Medical School Rankings (<i>Public School Ranking</i>)				
		University of Minnesota	Mayo	University of Wisconsin	University of Iowa	University of Michigan
NIH (2014) ¹	Total Awards	30(12)	19	27(10)	41(19)	12(4)
		\$145,010,321	\$205,971,291	\$156,180,036	\$101,398,351	\$282,271,278
US News & World Report (2015) ²	Research	34(13)	25	28 (10)	29(11)	12(3)
	Primary Care	6(6)		9(9)	16(13)	8(8)

Sources:

¹Blue Ridge Institute for Medical Research (2014)

²US News & World Report (2015)

Without increases to the NIH’s budget, the Medical School’s ability to secure additional NIH funding will be difficult; institutions are competing in a zero-sum game. In the current funding environment, the most effective strategy for increasing the school’s NIH funding may be to hire faculty with an existing NIH award in areas of research that are congruent with the Medical School’s strengths.

Organizational Culture

The Academic Health Center (AHC) external review highlighted the culture as a barrier to achieving national excellence (Kaushansky, Aschenbrener, & Goldman, 2012).⁸ Specifically, the report cited a “malaise” among the faculty, noting that the culture was “affecting the quality of the work and the environment in the AHC” (p. 3). The report also noted that the AHC was missing a “north star” to provide guidance or unity. In response to the external review, in 2013, the Medical School began a strategic planning process led by the faculty that culminated in the Medical School’s strategic plan, “Strategic Vision 2025” (University of Minnesota Medical School, 2013b).⁹

The plan outlines a vision to return the Medical School to national prominence. To achieve this objective, the faculty note that “a culture of excellence is *the* essential requirement for the Medical School to regain its position of excellence by 2025” [italics added] (p. 2). The plan documents the need to establish clear expectations and transparency, provide support for new faculty, develop performance measures, and institute accountability at all levels.

⁷ NIH funding counts for 30 percent of the weight in the U.S. News & World Report medical school research rankings (U.S. News & World Report, 2014).

⁸ A copy of the external review can be found in Appendix D.

⁹ A copy of the strategic Plan can be found in Appendix E.

A majority of the strategic plan's recommendations can be implemented with little to no additional state investment. For example, the report recommends:

- a renewed emphasis on scholarship
- an increased commitment by researchers to apply for external funding
- aligning incentives at all levels
- relationships be improved/established with external partners

All are strategies that can be implemented with no or limited additional financial resources. Yet, implementing these recommendations could have a significant impact on the Medical School's ability to secure external funding.

The university has already taken several steps to meet plan objectives, including recruiting Dean Brooks Jackson, M.D., a nationally renowned pathologist, to serve as Dean of the Medical School and Vice President of Health Sciences. Additionally, clear performance measures and expectations for the Medical School leadership and faculty have been established, which the Medical School's leadership projects will lead to a 10 percent annual increase in NIH awards by 2023. The report also identifies several investments needed for the Medical School to regain its position of excellence by 2025, including: investing in early career faculty that have demonstrated success obtaining external funding through cluster hires (Medical Discovery Teams) and investing in strategic technological infrastructure projects that facilitate faculty success.

Fairview Partnership

In the early to mid-1990s, healthcare entered a period of consolidation. In order to secure its financial health and ensure its market competitiveness, the University of Minnesota Medical Center merged with Fairview Health Systems in 1997. Over a decade later, the Academic Health Center external reviewers suggested that the partnership had yet to reach its full potential (Kaushansky, Aschenbrener, & Goldman, 2012). Specifically, the report noted several limiting factors, including a lack of integrated structure and mission, differences in values and missions, limited access to clinical training sites, and inadequate financial support being provided for the Medical School.

Work between the university, the University of Minnesota Physicians (UMP), and Fairview to more closely align the three organizations has been ongoing, including prior to the external review, with an important milestone being reached with the development and announcement of a new integrated structure agreement in 2013 (University of Minnesota, 2013, May 10). The agreement, which was rebranded as "University of Minnesota Health," established a new shared governance structure, a single management team, a shared strategic plan, and represents a renewed commitment between the parties to provide seamless patient-centered care by improving integration and coordination (Olson, 2014, February 14). The agreement will also provide an additional \$90 million dollars over the next ten years to support the Medical

School's research and education missions.¹⁰ Successful integration should result in improved patient outcomes, increased efficiencies, and increased support (both financial and structural) for medical education and research, including clinical trials, across the Fairview system.

Given the importance of the Medical School in addressing the state's health priorities through basic and clinical research and educating and training its workforce, the state has a vested interest in ensuring the partnership excels and achieves its objectives. University of Minnesota Health appears to be a significant first step in addressing many of the external review's concerns; however, opportunities still exist for improved integration and support, both financial and structural (access across the Fairview system), for the Medical School.

Leveraging Strategic Resources & Community Partnerships

As part of one of the most comprehensive Academic Health Centers, the Medical School has access to diverse faculty, researchers, and facilities, including the Biomedical Discovery District, to facilitate and support its interdisciplinary research priorities. Externally, the large medical device manufacturing and pharmaceutical presence in the state provides the Medical School with opportunities to develop mutually beneficial partnerships with business and industry leaders. Providing an economic environment that supports business development in a manner that incentivizes public-private partnerships would encourage further growth of these relationships and the development of new collaborations. Opportunities for further strategic, long-term partnership with Mayo may not only contribute to the Medical School's and Mayo's ability to capture new NIH funding, but also to improving the health of Minnesotans.

Biomedical Discovery District

As part of its goal to become a top three public research institution in the world under President Bruininks, the University of Minnesota requested additional research facilities in order to attract and retain world-class faculty (University of Minnesota, 2010, January). The intent was to organize researchers around targeted disease areas across disciplines, instead of by school, college, or department. In 2008, the state established the Biomedical Science Research Funding program to cover up to 75 percent of the design and building costs to develop the five buildings that now comprise the Biomedical Discovery District.

The total investment for the project was \$434 million, which included \$314 million in state funding.¹¹ Upon completion, the project was anticipated to generate an additional \$100 million in new annual research funding (University of Minnesota, 2014b). The final facility, the Microbiology Research Facility, is scheduled to open in January, 2016. In their report, the external reviewers noted that the Biomedical Discovery District represents "a golden opportunity" for the university to improve its research funding and rankings; however, they expressed concern that the district was being underutilized (Kaushansky, K., Goldman, L., &

¹⁰ The \$90 million in academic support breaks out into \$7 million in the first two years (up from \$2 million in FY14), \$8 million in the third and fourth, and \$10 million for the remaining six years.

¹¹ The \$314 million also included state funding for some projects that began prior to the 2008 Biomedical Science Research Funding program being created.

Aschenbrener, C., 2012, p. 7).¹² The reviewers recommended that the university strategically plan and focus on ways to capitalize on the investment.

Partnerships with the Business Community

Per capita, Minnesota has the second most fortune 500 companies (19) in the nation, and also has a significant presence of medical device companies (DEED, 2014a). In 2012, Minnesota had four times the concentration of employment in the medical device manufacturing sector compared to the national average, and in 2014 ranked second in the number of medical patents filed (DEED, 2014b).¹³ The Academic Health Center already has many existing partnerships with pharmaceutical, medical device, and other biotechnology companies. Over a five-year period business and industry partners contributed \$125 million to various projects and labs in the Academic Health Center (Academic Health Center Staff, personal communication). Identifying and leveraging new opportunities for collaboration outside of the Medical School's existing relationships could enhance the Medical School's research agenda and expand the impact of their community partners. Strengthening relationships with business and industry is one of the Medical School's strategic priorities (University of Minnesota, 2014, May 8).

University of Minnesota & Mayo Partnerships

Minnesota is fortunate to be home to two of the nation's top medical schools. Further strategic collaborations between the University of Minnesota Medical School and the Mayo Clinic could expedite medical discoveries resulting in better health outcomes for the state's citizens at a lower cost. To this end, over the past two decades, the legislature has funded several research collaborations between the two schools (Table 8). Since its inception in 2003, the state has provided over \$90 million in state support for the Minnesota Partnership for Biotechnology and Medical Genomics. Now in its eleventh year, the Partnership has produced 94 peer-reviewed papers and more than \$100 million in NIH grants (University of Minnesota, 2014, September 17).

Additionally, the Decade of Discovery, an ambitious research, education, and public health project that sought to cure diabetes by 2020, which was anticipated to receive \$250 million in state support over the decade, was scaled back and incorporated into the Minnesota Partnership in 2013 after the recession inhibited the state's ability to provide the anticipated levels of funding needed. Identifying and initiating additional strategic long-term partnerships between the Medical School and Mayo would improve the health of Minnesotans, and likely increase both medical schools ability to capture new NIH funding.

Finally, the Governor and legislature recently made a significant investment (\$443 million over 20 years) to secure Minnesota's status as the premiere global medical destination through Destination Medical Center, a partnership between the state, the City of Rochester, and the Mayo Clinic (Smith & Brede, 2015, January 2). In addition to the economic impact on the state, Destination Medical Center will likely facilitate additional medical and health research and

¹² The report was not referring to space utilization (Kaushansky, personal communication).

¹³ Measured by location quotients

innovation. While the investment did not directly identify or fund partnerships between the two medical schools, opportunities to capitalize on this investment should be explored to maximize the state's investment and its impact of the state's citizens.

Moving Forward - Research

For a significant period of the 20th century, the Medical School was a vanguard in conducting transformational research that impacted the lives of the state's citizens and changed the practice of medicine. Moving forward, the Medical School's ability to generate transformative research that improves the lives of Minnesotans and increases the Medical School's NIH funding will likely depend on several factors, including:

- Whether the ideals and priorities documented in the strategic plan permeate the culture of the faculty, leading to increased productivity.
- The ability of the Medical School to attract and maintain world-class faculty with a proven track record of obtaining NIH funding in areas that correspond to the Medical School's areas of strength.
- Developing the necessary research infrastructure (clinical, support staff, and technological) to support a nationally preeminent research enterprise.
- The Medical School's ability to strategically leverage its assets to conduct interprofessional and interdisciplinary research and develop effective research relationships with community partners.

Clinical Care

As the state's land grant institution, the University of Minnesota believes it has the responsibility to prepare the future health professional workforce to ensure the health of the citizens of the state of Minnesota. Currently, the Academic Health Center prepares 70% of Minnesota's health professionals (University of Minnesota, 2013, December 12). An *Annals of Internal Medicine* article recently ranked medical schools based on how they met their social mission (Mullan, Chen, Petterson, Kolsky, & Spagnola, 2010). While most top ranked research medical schools scored poorly, the University of Minnesota Medical School and the University of Washington's Medical School were both exceptions, ranking in the top quartile.

The Medical School faces several challenges moving forward. Increased competition, federal policy changes, and healthcare disparities are forcing healthcare systems and providers to reexamine how healthcare is being delivered. To remain competitive, hospitals and clinics need to improve patient care, enhance patient experiences, and reduce costs. Interprofessional and team-based care are seen as models that will facilitate the "triple aim" - improving patient outcomes by providing the highest quality of care at the lowest possible cost.

For the Medical School and its partners (UMP and Fairview), the "University of Minnesota Health" integration represents a strategic decision to prioritize patient care and outcomes by streamlining the patient experience through increased coordination. Because the Medical School increasingly relies on its clinical revenue to subsidize its research and education missions, there is a direct incentive for University of Minnesota Health to provide exceptional patient-centered care.¹⁴

From a cost perspective, it is important not to take a short-run view when considering the "triple aim's" cost component. While the costs associated with the Medical School's clinical care enterprise might be higher compared to its hospital and clinical competitors, due to its research and education missions, it is hard to monetize the cost savings over time to the state and the health system as a result of developing cortisone or pioneering open-heart surgery. While the Medical School is already strong in basic science research, increased focus and investments in its clinical research would enable the Medical School to meet more fully the state's health needs and to secure additional NIH funding.

Perceived Patient Experience

How patients' perceived their hospital experience can significantly impact a hospital's long-term competitiveness and success. Patients, referring physicians, and payors, who have positive

¹⁴ Since 2002, the Medical School's total revenue has more than doubled, with increases in the clinical revenue (UMP) driving most of the growth. Additionally, a larger portion of UMP's revenues come from contracts, which are more stable and are preferred to revenue from billing (University of Minnesota, 2014, October 13). In 2014, UMP's revenue was \$483,213 (48.7 percent of the medical school's total revenue), an increase of over 350 percent since 2002. The increases coincide with increases in the number of clinical faculty at the Medical School. In 2002 there were 199 clinical faculty, by 2014, the number had increased to 415. Clinical faculty typically spend a majority of their time seeing patients and doing clinical education and training rather than conducting research.

experiences are more likely to refer additional patients; conversely, a high volume of bad patient experiences over an extended period of time could affect a hospital's patient volume. Table 4 presents ratings of several metro area hospitals based on patient experiences.

The first two ratings, presented in the first two columns (Minnesota HealthScores and MN Hospital Quality Report), rate each hospital based on the percentage of patients surveyed that gave the hospital a rating of at least a 9 or a 10 on a 10–point scale, with 10 being the highest positive rating. The Health Insight Rankings rate hospitals nationally based on a combination of patient outcomes and patient experiences. Across all of the ratings, the University of Minnesota Medical Center, Fairview, does not perform as well as its competitors and is below the state average. However, teaching hospitals, such as the University of Minnesota Medical Center, Fairview, typically take on more complex cases that are likely to have additional complications, which may affect a hospital's outcomes and perceived patient experiences (Rapple, 2014, December 22). Evidence of University of Minnesota Health's success in prioritizing patient care may be evidenced by increases in patient experience ratings over time. University of Minnesota Health will need to improve patient-experiences and health outcomes in order to remain competitive long term as a clinical care provider as well as support its education and research missions.

The ratings presented utilized varying methodologies and data sources. Additionally, it is unclear if probability sampling, which is necessary for inference and generalizations, was utilized when sampling was conducted. While the validity of any ranking is debatable, the stability of the relative position of hospitals across the rankings may provide some evidence of reliability.

Clinical Research

Conducting clinical research, and specifically clinical trials, requires large patient populations. For the Medical School to increase its clinical trials, it will need access to a large and diverse network of clinics and hospitals. University of Minnesota Health's renewed emphasis on patient-centered care, which should produce better patient outcomes and experiences, may help facilitate support for clinical trials from potential partners. Expanding the Medical School's clinical research will allow faculty to conduct research that addresses state health priorities and pursue additional NIH support.

Moving Forward – Clinical Care

The Medical School provides care to over 1,000,000 patients annually. If successful, University of Minnesota Health's commitment to provide patient-centered care should result in improved patient outcomes, better patient experiences, and additional revenue to support the Medical School's education and research missions. Additionally, a successful partnership will provide expanded opportunities for the Medical School to increase its clinical research, addressing state health priorities. Achieving these outcomes is dependent on several variables, including:

- The success of University of Minnesota Health in streamlining and integrating patient care.
- The ability of the Medical School to gain access to a network of care providers large enough to conduct clinical trials.
- Increasing clinical revenue to subsidize the research and education missions of the Medical School.

Table 4: Minnesota Hospital Ratings, select metro hospitals

Hospital	Minnesota HealthScores ¹	MN Hospital Quality Report ²	HealthInsight 2014 Rankings ³
	% of Patients that gave the hospital a rating of 9 or 10 on a 10 point scale.	% of Patients that gave hospital a rating of 9 or 10 on a 10 point scale	Patient Ranking (Percentile)
Mayo Clinic - Methodist Hospital	84	81	91
St. Joseph Hospital	75	72	63
Regions Hospital	70	74	44
Abbott Northwestern Hospital	74	74	43
United Hospital	68	69	26
University of Minnesota Medical Center, Fairview	66	60	17
Park Nicollet Methodist Hospital	65	67	
Hennepin County Medical Center	61	60	5
State Average	73	72	

Notes:

¹ MN Community Measurement administered the Agency for Healthcare Research and Quality's (AHRQ) Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey to obtain patient experience ratings. The ratings are based on patients seen between January 1 and December 31, 2012.

² Data collection dates: April 2011-March 2012

³ Rankings are calculated based on publicly reported data from the Centers for Medicare & Medicaid Services. All rankings are based on national comparisons.

Medical School Education and Graduate Medical Education (GME):

In addition to the Medical School's storied history of medical discoveries and clinical innovations, the Medical School is nationally and internationally recognized for its educational programs. The Rural Physician Associate Program and rural focused curricular design of the Duluth campus are both widely cited as exemplars that are imitated across the globe. Additionally, the Medical School ranks 6th nationally in their preparation of primary care physicians (U.S. News & World Report, 2015).

As the practice of medicine shifts to an interprofessional and team-based care model to improve patient outcomes and control costs, it is critical that these practices are integrated into medical education and clinical training to ensure that students and residents are prepared to meet future workforce needs. The education and training experience of medical students and residents must shift from "one in which health professional students are educated in silos to one that fosters collaboration, communication and a team approach to providing care" (American Interprofessional Education Collaborative, 2011, p. 7). In order to incorporate interprofessional and team-based care into medical education, the Medical School is interested in redesigning its education and training curriculum. These changes will necessitate a larger portion of clinical training experiences occur in ambulatory care settings, in rural and underserved communities, and that Medical School students gain more exposure to the clinical environment earlier in their educational experience.

New Models of Education

In 2012, the University of Minnesota's Academic Health Center was awarded funding from the Health Resources and Services Administration (HRSA) to establish The National Center for Interprofessional Practice and Education.¹⁵ As the only center of its kind in the nation, its focus is on integrating these new models of professional practice with medical education and training. Being awarded this center strategically positions the Academic Health Center and the Medical School to become the national model for interprofessional and team-based medical education. To ensure success, interprofessional education and team-based care must permeate the Medical School's culture including, changing the way faculty practice and teach and modeling the practice for students and residents. In addition to the cultural changes, facilitating these changes may require redesigning the Medical School's curriculum and repurposing and/or building new facilities.

Clinical Training Challenges

In order to meet future workforce needs, the Medical School believes that its students will need to be exposed to clinical training sites earlier in their education and both residents and students will need to be trained in ambulatory care settings rather than hospitals. Optimally, training needs to occur at sites that incorporate interprofessional practice and team-based medicine.

¹⁵ The Center for Interprofessional Practice and Education is led by Dr. Barbara Brandt.

The Medical School is dependent on its relationships with hospitals and clinics across the state to provide the required training experiences necessary for its students, residents, and fellows. Increased competition in the marketplace, and the costs to partner hospital and clinics associated with decreased productivity, have made it difficult for the Medical School to secure a sufficient number of training sites for both their students and residents.

The incentives for these community partners to participate in the training of Medical School students and residents, which is referred to as Graduate Medical Education (GME), are not equivalent. For participating training sites, the reduction in physician productivity is greater for training Medical School students than their resident counterparts (Academic Health Center Staff, personal communication). On average, the Association of American Medical Colleges (AAMC) estimates that the cost to hospitals of training a resident is \$152,000 or more (AAMC, 2014).¹⁶ In an attempt to address these concerns and incentivize participation, GME training is subsidized by four primary sources: Medicare, Minnesota's Medical Education and Research Costs (MERC) program, state special appropriations, and participant hospital revenues.

Medicare Funding for GME (Residents)

Medicare provides funding intended to offset both the direct and indirect costs for GME (medical residents). The direct costs include resident stipends and benefits, supervisory physician salaries, and administrative overhead. In addition to funding the direct costs of operating GME programs,¹⁷ Medicare provides teaching hospitals with additional revenue intended to reimburse the hospitals for the indirect costs they incur based on a hospital's number of residents per bed (Medicare Payment Advisory Commission, 2014, October).

The Medicare Payment Advisory Commission (2010, June), notes that in 2009, Medicare provided \$9.5 billion to support GME nationally, or an average of \$100,000 per resident. Of the \$9.5 billion, approximately \$3 billion went to support direct costs (DME) of GME, and \$6.5 billion to support the indirect costs (IDE). In 2010, Minnesota hospitals and clinical training sites received \$158,732,726 in Medicare GME funding (\$40,913,843 in DME) to offset the training of 1,332 FTEs for an average resident payment of \$119,185 (Robert Graham Center, 2013).¹⁸

Medical Education and Research Costs (MERC)

In addition to Medicare funding for GME, Minnesota, utilizing state funds and match from the federal Medicare program, invests \$88.7 million to offset the costs of GME (Table 4). Of the \$88.7 million, \$57.7 million is distributed to eligible training sites based on their relative Medicaid volume for a variety of clinical education programs, including approximately \$30.4M (52.7 percent) that goes to fund 1,929 resident training positions, or an average of \$15,759 (Minnesota Department of Health, 2014).¹⁹ An additional \$19.5 million is returned to the

¹⁶ The actual costs are variable based on a variety of factors, including, the size of the residency program, the specialty area, and malpractice insurance costs (Wynn, B.O., Smalley, R., & Cordasco, K.M., 2013, September).

¹⁷ Medicare also funds the direct costs associated with dental and podiatric programs.

¹⁸ 526 or the 1,332 full-time equivalents (FTEs) were for primary care residents.

¹⁹ Over time the proportion of MERC dollars supporting physician residency positions has declined as other health professionals were added to the eligibility list.

University of Minnesota to offset the costs associated with medical education (\$17.4M) and primary care training initiatives (\$2.157M). Hennepin County Medical Center also receives \$1 million in directed appropriations for clinical medical education through MERC. Finally, almost \$9 million is returned to the general fund.

Table 5: MERC sources and uses, FY14 (*in thousands*)

Sources		Uses	
Medicaid Managed Care (includes Federal match of \$24.8M)	\$ 49,552	MERC Formula	\$ 57,127
Cigarette Tax	\$ 3,937	MDH Administrative Costs	\$ 150
Match on Cigarette Tax	\$ 3,788		
<i>Subtotal</i>	\$ 57,277	<i>Subtotal</i>	\$ 57,277
HCAF	\$ 1,000	HCAF	\$ 1,000
Transfers:		Transfers:	
Transfers from U of M	\$ 19,557	Returned to the U of M (\$2.157M for primary care initiatives, \$17.4 for medical education)	\$ 19,557
Match on U of M Transfers	\$ 10,857	HCMC Clinical Medical Education	\$ 1,035
		Dental Innovation Grants	\$ 1,122
		Transfer to the General Fund	\$ 8,700
<i>Subtotal</i>	\$ 31,414	<i>Subtotal</i>	\$ 31,414
Total	\$ 88,691	Total	\$ 88,691

Source: Minnesota Department of Health

Other State Funding for GME

In addition to the funding allocated MERC, the state appropriates additional recurring funding on a designated basis to hospitals to offset the costs associated with graduate medical education. In fiscal year 2015, the state will allocate \$351,000 to United Hospital's Family Residency program, \$645,000 to Hennepin County Medical Center for GME, and \$346,000 for St. Cloud Hospital's residency training programs. Participating hospitals and clinical training sites also receive additional support through Medicaid. In 2012, these payments were estimated to be \$8.6 million (Minnesota Department of Human Services staff, personal communication).

Participant Hospitals and Clinics

Although difficult to estimate, when unfunded costs associated with GME occur, they are absorbed by the participating hospitals and clinics. Participant hospitals and clinics chose to cover these costs for several reasons, including: the ability to recruit physicians (specifically, physicians trained in their systems and cultures), the benefit to their physicians of being associated with the Medical School and staying abreast of current medical developments, and because of their commitment to the public good, i.e., providing Minnesota with trained physicians to meet the state's health needs.

Medical School Student Clinical Training Barriers

While the financial incentives for hospitals and clinics to participate in GME can be significant, the financial incentives for hospitals and clinics to allow greater access to Medical School students are nominal. MERC does provide limited financial resources for the training of medical students. In 2014, less than 20 percent (approximately \$11.4M) of MERC funds went to participating hospitals and clinics for the training of medical students. The University of Minnesota serves only as a pass-through agency and has no oversight over the money.²⁰

Moving Forward – Medical School Education and GME

The Medical School's ability to prepare students and residents for new models of healthcare delivery, including interprofessional and team-based care, is affected by several factors, including:

- Implementation and holistic integration of interprofessional and team-based practices into the Medical School's curriculum and clinical training.
- Securing clinical training sites for both Medical School students and residents, including ambulatory care sites.
- Identifying the multiple GME funding sources, and their beneficiaries, to develop a clear understanding of their interactions and evaluate whether the cumulative financial incentive is effective, efficient, and aligned with state priorities to meet the needs of educating the state's medical workforce.

²⁰ Medical students represented 523 (16.2 percent) of the eligible FTEs (Mayo – 85, UMN – 438).

Health Workforce Needs

The racial and ethnic composition of Minnesota’s health professional workforce does not reflect the state’s demographics (Minnesota Department of Health Office of Rural Health & Primary Care, 2013, September). Additionally, geographic disparities exist, with rural and impoverished urban communities having less access to health services. The Medical School plays a vital role in supplying the physician workforce for the state. To address these disparities, financial incentives need to be expanded to retain the prospective students from rural and underserved urban communities. In addition to providing additional financial incentives, considering a prospective student’s propensity to serve in a high need area during the admissions process may yield the most effective and efficient results. Finally, there are over 200 foreign trained physicians in Minnesota that are unable to practice due to licensing and structural barriers. Overcoming these barriers would allow these physicians to contribute to meeting Minnesota’s healthcare needs.

Physicians, however, are just one part of state’s health professional workforce. As the healthcare delivery model continues to become more interprofessional and team-based, the services provided by other health professionals are crucial to meeting the state’s health workforce needs. Physician assistants, advanced practice nurses, and other health professionals will play an expanded role in addressing primary care needs. Technical innovations, such as Tele-medicine, also offer potential in providing quality health services for all Minnesotans.

Is There a Physician Shortage?

A recent Institute of Medicine report (Eden, Berwick, & Wilensky, 2014) notes, “the sufficiency of the physician supply—and the public’s future role in financing the production of a larger physician supply—are among today’s most contentious health workforce issues” (p. 2-2). The lack of consensus highlights the difficulty of projecting future supply and demand within a dynamic economic sector. Typically, forecast models that project physician shortages incorporate projected demographic changes, but assume historical health delivery models. These projections often do not account for technological innovations (e.g., telemedicine), changes to the current healthcare delivery model such as health professionals practicing to the top their license (e.g., expanded roles of physician assistants and advanced practice registered nurses), or the impact of changes to federal and state policy (such as the Affordable Care Act).^{21,22}

²¹ Nor do they account for the 200+ foreign trained and licensed physicians that currently live in Minnesota but are unable to practice due to licensing and structural barriers (Mettner, 2012, May). The Foreign-trained Physician Taskforce is concurrently meeting to develop strategies to integrate these physicians into Minnesota’s workforce. Their report is due to the legislature by the end of December, 2014.

²² MDH’s definition of primary care includes physicians, nurse practitioners, and physician assistants; however, they note that there is no agreement at the state or national level on the professional practices that compose primary care (Minnesota Department of Health Office of Rural Health and Primary Care, 2013, September). In 2011-12 physicians accounted for 56 percent of Minnesota’s primary care workforce, with physician assistants (17 percent) and nurse practitioners (27 percent) making up the difference. Health Professional Shortage Areas (HPSA) also does not include the services provided by advanced practice nurses and physician assistants in the formula

These tensions are not new. Previously, physician shortage predictions in the 1970s resulted in increased funding for the expansion of medical schools through Title VII of the Public Health Service Act. From 1970 to 1984 the number of medical school students grew by 66 percent and residents by 25 percent (Phillips and Turner, 2012; Cooper, 2003). A decade later, several publications were projecting an oversupply of physicians (Fink, Phillips, Fryer, & Koehn, 2003; Pew Health Professions Commission, 1995).

Over the past five years, several published reports have projected physician shortages in Minnesota by 2020 and beyond (American Association of Medical Colleges, 2010; Schoenbaum & Van Cleave, 2013, February; Minnesota Hospital Association, 2014, July; University of Minnesota, 2013, October 23). A majority of these reports focused only on primary care physician shortages, and not all of the reports provide Minnesota specific data. Of the reports that provide Minnesota specific projections, all forecast some level of shortage for primary care physicians (and specialty physicians). While there are projected to be primary care physician shortages, the magnitude of these projected shortages and how the changing healthcare delivery model may affect these projections need to be taken into consideration.

Table 6 presents each of the reports' projected physician shortage after aligning their projections by year for both primary care and non-primary care physicians (when applicable) to facilitate comparisons. Three of the reports project primary care physician shortages by 2020 ranging from 115 to 608.²³ While the University of Minnesota projects a primary care shortage (115), it projects a shortage of non-primary care physicians (715) six times as large (University of Minnesota, 2013, October 23). The Minnesota Department of Health's projections, which were tied to 2025, project a deficit of between 1,000 and 3,000 primary care physicians. Several other reports that are commonly cited by external audiences (Georgetown and the Institute of Medicine) do not provide physician shortage estimates at the national or state level. The American Association of Medical Colleges provides only national estimates. Finally, with the exception of UNC SHEPS Center for Health Services Research projections, all of the estimates assume historical delivery care models.

In addition to modeling physician surplus/supply projections under the current environmental context (henceforth referred to as the baseline scenario), the SHEPS Center's forecasting tool is unique in that it allows users to model several other variables including the number of physicians projected to retire early, changes in the delivery of care, and increases in medical professionals practicing at the top of their license (UNC Cecil G. SHEPS Center for Health

used to designate primary care HPSAs (U.S. Department of Health and Human Services Health Resources and Services Administration, 2014).

²³ There is a lack of consensus on which physicians should be classified as primary care physicians. For example, HRSA and MDH do not include the services provided by Ob/GYN physicians; however, the Medical School and others include them in their primary care.

Table 6: Projected Primary Care Physician Shortage by Year and Source

Source ²⁴	Year of Projection				
	2020			2025	2030
	Primary Care Shortage	Non-primary Care Shortage	Total Shortage	Primary Care Shortage	Primary Care Shortage
Georgetown Center for Education and the Workforce ²⁵	Not Applicable				
Minnesota Department of Health ²⁶				1,000-3,000	
Robert Graham Center ²⁷	608				1,183
Minnesota Hospital Association	approx. 500				
University of Minnesota ²⁸	115	715	830		
Institute of Medicine ²⁹	Not Applicable				
Association of American Medical Colleges ³⁰	National Projections Only				
UNC SHEPS Center for Health Services Research ³¹	Lesser Demand				

Services Research, 2014). Unfortunately, while the tool provides flexibility to model these key variables in isolation, it does not allow users to model their interaction. The results of the model produce a ratio estimate of a state’s relative physician capacity (visit supply/visit demand). The authors categorize the ratios according to the following scale with "In Balance" representing a measure of equilibrium:

- 0.00 - 0.49 - Greater Demand
- 0.50 - 0.84 - Lesser Demand
- 0.85 - 1.14 - In Balance**
- 1.15 - 1.24 - Lesser Surplus
- 1.25 - 1.49 – Surplus
- 1.50 - 3.25 - Greater Surplus

²⁴ References are listed in the reference section.

²⁵ Georgetown’s Center for Education and the Workforce has not conducted physician shortage analyses at the national or the state level. Their publication, Healthcare, only examines growth in physician employment from 2010 and 2020 (personal communication, A. Gulish, November 13, 2014).

²⁶ The report limits its projections to primary care physicians.

²⁷ The report limits its projections to primary care physicians.

²⁸ The University of Minnesota projects greater shortages for specialty physicians (715) compared to primary care physicians (115) - a ratio of 6:1. It is also worth noting that the University of Minnesota’s Medical School Capacity report’s supply projection corresponds to the projected physician supply in 2020 by the Georgetown Center for Education and the Workforce.

²⁹ The Institute of Medicine report does provide projected physician shortages nationally or by state.

³⁰ The Association of American Medical Colleges only provides physician shortage projections nationally.

Specifically, by 2020 they project a national shortage of primary care physicians of 45,400 and a shortage of 46,100 for non-primary care physicians.

³¹ UNC SHEPS Center’s FutureDocs Forecasting Tool does not provide shortage projections by physician specialty (e.g., primary care vs. specialties); therefore, all projected shortages include all physicians. Additionally, the forecasting tool examines relative capacity (visit supply/visit demand) and provides a ratio estimate.

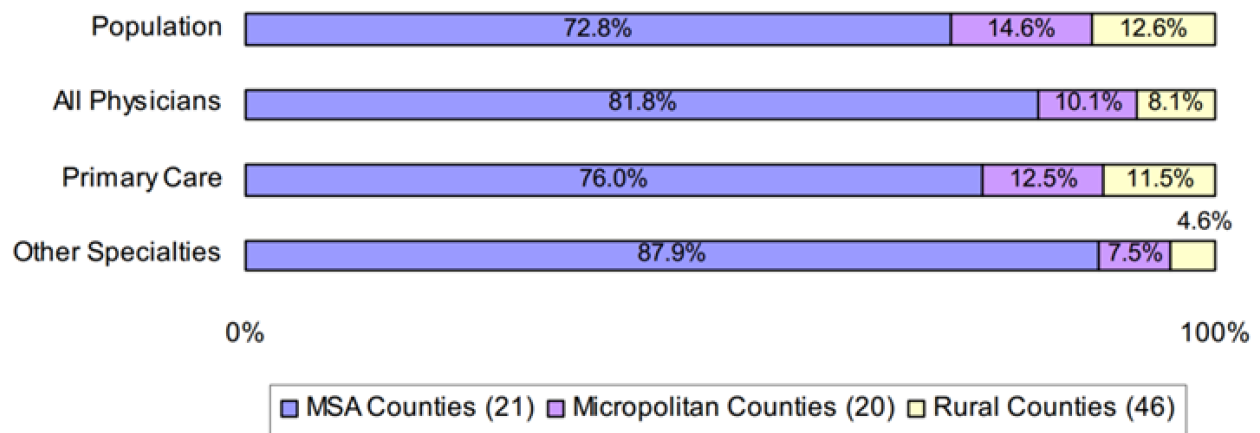
In 2011, the baseline scenario model classifies Minnesota in the “lesser demand” category (.59) for all clinical service areas and across all types of provider settings. Assuming the same baseline assumptions hold in 2020, Minnesota's ratio improves to .64 (Lesser Demand); meaning under the status quo, the SHEPS Center’s forecasting tool projects a smaller physician shortage in Minnesota in 2020 than in 2011. To provide additional context, two additional scenarios are provided: In the first scenario, all of the variables are the same as the 2020 baseline projection, except a high physician retirement rate is assumed. Under this scenario, Minnesota's ratio is .61 (Lesser Demand) in 2020, which is an improvement from the 2011 baseline, but below the 2020 baseline projection. The second scenario assumes a six percent increase in the use of Nurse Practitioners and Physician Assistants with all other variables being held constant (expected physician retirement rate). Under these assumptions the projection for Minnesota is .72 (Lesser Demand), which is an improvement over both the baseline projections in 2011 and 2020. When the same assumptions are modeled until 2030, the SHEPS Center’s forecasting tool projects that Minnesota will be “in balance” (0.9), or at a point of equilibrium. The scenario’s presented using the SHEPS Center’s forecasting tool, including the baseline model, suggest that any existing physician shortage is decreasing over time.

Forecasting physician shortages is an inherently imprecise activity (Eden, Berwick, & Wilensky, 2014). The forecasts discussed suggest that Minnesota will have a shortage of between 115 and 608 primary care physicians in 2020; however, most of the models fail to take into account the services of other primary care providers, such as physician assistants and advanced practice registered nurses. The SHEPS Center’s forecasting tool takes these non-physician health professionals into account and does not project a physician shortage in Minnesota in 2030. Additionally, Minnesota currently has over 200 foreign trained physicians that currently live in Minnesota but are unable to practice due to licensing and structural barriers. Developing pathways for these physicians to integrate into the state’s physician workforce may contribute to meeting Minnesota’s primary care needs.

Is There a Physician Maldistribution?

At a macro level, data provided by the Minnesota Department of Health suggests that the geographic distribution of primary care physicians in Minnesota closely resembles Minnesota’s population distribution. There is a difference, however, between the state’s population distribution and the distribution of specialty physicians (Figure 3). While examining macro level data is useful, it can mask regional, gender, and racial/ethnic distributional differences that may exist.

Figure 3: Geographic Distribution of Physicians in Minnesota by Metropolitan, Micropolitan, and Rural Counties



Source: Schoenbaum, M. (2014, October). Minnesota healthcare workforce overview. Powerpoint presented at the October University of Minnesota Blue Ribbon Committee Meeting, Minneapolis, MN.

Table 7 presents the geographic distribution of primary care physicians compared to the state’s population distribution by the Rural-Urban Commuting Area (RUCA) categories and by geographic regions.³² The RUCA categories combine the Bureau of Census Urbanized Area and Urban Cluster definitions with commuting information when defining locations as rural and urban (Hart, Larsen, & Lishner, 2005). By incorporating commuting information, the taxonomy distinguishes small towns where residents primarily commute to similar small towns with small towns where a majority of the population commutes to a larger city.

The RUCA geographic categories in Table 7 show that there is a 6 percentage point difference between the percentage of primary care physicians located in isolated rural areas and the percentage of the state’s population living in these communities; however, there do not appear to be major distributional discrepancies across other RUCA categories. When examined by region of the state, the table shows that the northwest and southwest are the primary areas affected by a maldistribution of the state’s primary care physicians. In addition to the regional barriers in the northwest and southwest regions, there are likely communities within all of these geographic areas whose access to a primary care physician is inadequate.

In summary, there is consensus that Minnesota faces a shortage of physicians; however, there is a lack of consensus on the magnitude of the shortage, and the degree to which primary care versus specialty physicians are affected. But there is unanimity that there is a maldistribution of physicians, which may limit underserved rural and poor urban communities’ ability to access healthcare. Additionally, stakeholders have different perspectives on how to best address these

³² Due to data limitations, the distribution of non-primary care physicians was not examined.

complex problems. Solving them, however, will likely require a variety of health professionals, interventions, and economic incentives.

Table 7: Geographic distribution of primary care physicians in Minnesota by Rural-Urban Commuting Area (RUCA) categories and region

Geographic Location		Primary Care Physicians	Population
RUCA Category	Urban	77%	70%
	Large Rural	12%	13%
	Small Rural	7%	7%
	Isolated Rural	4%	10%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
Region	Central	10%	13%
	Northeast	7%	6%
	Northwest	7%	10%
	Southeast	15%	9%
	Southwest	5%	8%
	Twin Cities	56%	54%
	<i>Total</i>	<i>100%</i>	<i>100%</i>

Source: Minnesota Department of Health (2013, September)

Broadly, there are three strategies, which can be combined to address the state’s maldistribution of *primary care* physicians. The first attempts to financially incentivize students who are considering practicing in primary care, but are undecided, to choose primary care and practice in rural and poor urban communities. The second exposes Medical School students and residents to practicing medicine in rural or poor urban underserved areas. The third attempts to admit medical students who have a greater propensity to practice primary care in rural or poor urban communities through the admissions process.

Regarding the first strategy, there is a growing economic disincentive for Medical School students to choose primary care as their field of expertise. In 2014, the Medical School’s tuition was the 18th highest nationally among public Medical Schools. Additionally, the average debt for a Minnesota Medical School graduate was \$186,000, which may affect students’ decisions on whether or not to specialize (University of Minnesota, 2014c).³³ On average, specialty physicians in the Midwest annually earn almost 80 percent more than their primary care counterparts (Medical Group Management Association, 2014). Even if a sufficient subsidy were offered to offset the wage differential and incentivize Medical School students to choose

³³ Despite the high tuition, the Medical School received 3,716 applications to fill 170 spots in 2014, suggesting that demand is relatively inelastic to increases in tuition. Some subpopulations, however, may be more sensitive to price.

primary care, additional incentives may be needed to entice students to practice in isolated rural locations.

The Medical School developed the Rural Physician Associate program (RPAP) in 1971 to expose students to the benefits of practicing medicine in rural underserved areas.³⁴ The RPAP program provides third-year medical students the opportunity to live and train in rural communities for nine months. Participation in rural residency rotations is positively associated with a resident's likelihood of practicing in a rural area and the length of time they stay there following graduation (Pathman, Steiner, Jones, & Konrad, 1999, July; Rabinowitz, Diamond, Markham, & Wortman, 2008, March). Since RPAP's inception, 1,429 medical students have completed the program (of whom 1,113 are still practicing). 54 percent of students that began their medical education at the Duluth campus and participated in RPAP chose to practice in rural communities following their graduation, compared to 28 percent that began at Duluth but did not participate in RPAP (Zink, Center, Finstad, Boulger, Repesh, Westra, & Brooks, 2010). Similarly, students who began their education at the Twin Cities campus and completed RPAP were 3 times more likely to ultimately practice in a rural community (31%) compared to their counterparts that did not participate in RPAP (9%).

The admissions model for the Medical School's Duluth (UMD) campus, which has had success over an extended period of time, utilizes the third strategy. As a part of Duluth's admissions process, students' commitment to serving in rural areas, as evidenced by extended volunteering, is a key consideration when making admissions decisions.^{35,36} A larger share of UMD students choose primary care and rural practice, suggesting that this strategy combined with a robust rural oriented curriculum has successfully nurtured substantial rural primary care physician workforce for Minnesota. For example, Medical School students that begin at the Duluth campus are more likely to choose family medicine, which is one type of primary care physician, compared to Medical School students beginning in the Twin Cities (Boulger, 2014). Similarly, 39 percent of Medical School graduates that began at the Duluth campus practiced in communities with populations smaller than 20,000 compared to 5 percent of Medical School graduates nationally. Additionally, the effects of attending the Duluth campus and participating in RPAP on a student's likelihood of participating in a rural community appear to be additive (Zink, Center, Finstad, Boulger, Repesh, Westra, & Brooks, 2010)

Disparities also exist between the state population's race/ethnicity composition and the composition of both primary care and non-primary care physicians (Minnesota Department of Health Office of Rural Health & Primary Care, 2014, September). A maldistribution could have implications for patient care and outcomes, as some research has shown that patients have better outcomes if they are treated by health professionals from their community (U.S. Department of Health and Human Services Health Resources and Services Administration

³⁴ The RPAP program was the forerunner of the rural and urban underserved clinical training sites.

³⁵ Duluth's admission's process weighs heavily demonstrated involvement in rural communities, which has played an important role in their success (Duluth Medical School faculty member, Personal Communication)

³⁶ 27 percent of entering Medical School students begin their medical education at the Duluth campus.

Bureau of Health Professions, 2006, October).

To address these challenges, the Medical School developed several pipeline programs that focus on development of Medical School applicants from populations underrepresented in the healthcare workforce both nationally and within Minnesota, including: the Ladder, the American Indian and Minority Health Center, and Future Doctors. These programs have led to increases in the number of underrepresented students applying to the Medical School; however, the university often loses program participants to Medical Schools in other states that offer full financial aid (Academic Health Center Staff, personal communication). Currently, the Medical School only has two full scholarships for the first year class of 230 students, limiting its ability to mitigate financial barriers for qualified underrepresented students interested in attending Medical School.

Moving Forward – Health Workforce Needs

The Medical School's ability to address Minnesota's geographic and racial/ethnic disparities will be influenced by the Medical School's ability to:

- Secure additional financial resources for scholarships and/or loan forgiveness programs to retain the best and brightest students from underserved populations and to incentivize Medical School students and residents to practice in rural and urban underserved communities.
- Expand rural clinical programs (such as RPAP and MetroPAP) and training sites to expose more Medical School students to practicing in rural and urban underserved areas.
- Create tele-medicine pilot programs, evaluate their effectiveness and efficiency, and disseminate the results to inform practice.
- Develop and expand the Duluth campuses' best practices

Other areas the state could impact include:

- Encouraging the expanded use of primary care nurse practitioners and physician assistants.³⁷
- Removing barriers to implementing tele-medicine and create incentives for health systems to adopt and implement programs.
- Creating alternative pathways for the 200+ foreign trained physicians to join Minnesota's physician workforce.

³⁷ MDH reports shows that nurse practitioners and physician assistants have similar geographic maldistribution patterns as primary care physicians, suggesting policymakers will face similar challenges trying to incentivize these health professionals to practice and remain in rural and poor urban underserved areas (Minnesota Department of Health Office of Rural Health & Primary Care, 2011, April; Minnesota Department of Health Office of Rural Health & Primary Care, 2013, April).

Future Strategies, Investments, and Actions

The committee considered numerous ideas to meet the Governor's charge to recommend future strategies, investments and actions that would:

- Ensure the Medical School's national prominence;
- Sustain the University's national leadership in health care research, innovation, and service delivery;
- Expand clinical services to serve as a statewide health care resource, as a training site for students and residents, and as a site for cutting-edge clinical research; and
- Address the state's health workforce needs.

To provide for the continued success of the Medical School and meet the Governor's charge requires a comprehensive, long-term, and sustained approach and set of strategies. To this end, the committee identified seven strategies that address two key priorities: improving the Medical School's capacity to conduct healthcare research that addresses state health priorities, and thereby increasing the Medical School's national preeminence, and strengthening and expanding the Medical School's educational programs and curriculum to ensure their students and residents are prepared to meet Minnesota's future physician workforce needs. While investing in strategies in either priority in isolation will likely benefit the state and the Medical School, the returns on the state's investment may be compounded by strategically investing in both priorities, because they are congruent and reinforce one another.

For example, improving the health of Minnesota's population depends on the creation and utilization of an evidence-based approach to disease prevention and management. Such an evidence base can only be produced by scientists and clinicians who are trained to address complex problems by testing hypotheses relevant to the care of a patient and the community in which he/she lives. Researchers at the University of Minnesota Medical School simultaneously design studies to advance knowledge about disease and teach the next generation of scientists and clinicians how to ask the important questions necessary to improve health. The rich intellectual environment of the Medical School supports the education of curious and inquisitive scientists and clinicians that will ultimately improve the health of all Minnesota.

Table 8 shows each of the strategies, recommended strategic investments, how they meet the Governor's charge, and the priority they address. Following the table, a more detailed discussion of each strategy/investment is presented, including an overview, the potential impact, the cost, and other considerations. The strategies/investments are not presented in a priority order.

Table 8: Potential Strategies and Investments and the Component(s) of the Executive Order Impacted

Strategy	Strategic Investments	Component of Executive Order Impacted:			
		Ensure the Medical School's national preeminence	Sustain the University's national leadership in health care research, innovation, and service delivery	Expand clinical services to serve as a statewide health care resource, as a training site for students and residents, and as a site for cutting-edge clinical research.	Address the state's health workforce needs
Building a culture of excellence and increasing faculty productivity*	Increased Faculty Productivity	X	X	X	X
Building a vibrant academic clinical enterprise*	Improved Integration with Fairview	X	X	X	X
Restoring the medical school's tenured faculty to 1990 levels	Medical Discovery Teams	X	X	X	X
Investing in critical research infrastructure	On-going investments in critical clinical research infrastructure	X	X	X	
Meeting Minnesota's health workforce needs	Curriculum/Clinical Training Program Redesign	X	X		X
	Primary Care Training Sites			X	X
	RPAP/Metro RPAP Expansion	X		X	X
	Duluth Clinical Faculty			X	X
	Duluth Rural Scholars Program	X		X	X
	Scholarship/Loan Forgiveness Programs				X
	Pipeline Program Investments				X
	Expand MD/Ph.D. Program	X	X	X	X
	Psychiatry and Mental Health Training Programs		X	X	X
Geriatric and Care of the Elderly		X	X	X	
Developing new models of health promotion and care:	New Models of Care	X	X	X	X
	Minnesota Electronic Health Library		X	X	X
	Develop a M.D./Dr. P.H. Program		X		
Investing in critical core facilities:	Clinical Research Facilities	X	X	X	
	Health Education Facilities Twin Cities	X	X	X	X
	Medical/Health Sciences Facility Duluth	X	X	X	X

* Red text indicates the strategy requires no new state investments

Legend: Health Care Research Strategies & Investments Education for Minnesota's Workforce Strategies & Investments Impacts both priorities

Strategy 1: Building a culture of excellence and increasing faculty productivity

Overview: In drafting the Medical School strategic plan, the faculty noted that “a culture of excellence is *the* essential requirement for the Medical School to regain its position of excellence by 2025” [italics added] (University of Minnesota Medical School, 2013, p. 2). The plan provides a road map to reestablishing a culture of excellence through measurable goals in research, education, and clinical care. The Medical School, under Dean/Vice President Jackson, is moving ahead to aggressively implement the plan.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: The University estimates that, with implementation of the strategic plan, existing faculty research productivity will increase by 10 percent, generating an additional \$14.7M annually (\$65.5M cumulative) in NIH funding by FY2024.

Cost: No new state investment.

Important Considerations: The adoption of the ideals and priorities documented in the strategic plan, and the degree to which they permeate the culture of the faculty, staff, and students, are essential foundational elements for the success of the Medical School in all of its missions: research, education, and clinical care. They are not only important for the existing faculty, they will also contribute to the Medical School’s ability to retain and attract world-class faculty, staff, and students.

Strategy 2: Building a vibrant academic clinical enterprise (including, improved integration with Fairview)

Overview: A vibrant academic clinical enterprise driven by the Medical School's faculty physicians is critical to the future of the Medical School. The success of UM Health that integrates the UMPhysicians outpatient clinics and University of Minnesota Medical Center inpatient services and extends the reach of academic medicine throughout the Fairview system is essential. So are the strong relationships that UMPhysicians (the Medical School faculty practice organization) has with all of the state's health care providers. 80% of UMPhysicians patients come from outside the Fairview system, serving as a statewide resource for all Minnesotans and the basis for closer collaboration with all the state's health care systems on clinical research and the translation of the latest University research discoveries into patient care across the state. A more integrated and expanded clinical enterprise will enhance access, quality, and patient experience, and will reduce costs. It will leverage the clinical enterprise and its partnerships with all of the state's health care providers to support the Medical School's research and education missions and provide essential financial support for the Medical School and its academic mission.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: A vibrant academic clinical enterprise is essential to the Medical School's ability to achieve the goal set in its 2025 Strategic Plan of developing into and sustaining a world class Medical School and academic health system that ranks in the top ten percent nationally. Clinical care is critical to the Medical School: as a statewide clinical resource for all Minnesotans; for the education and training of health professional students and residents (who constitute 70% of the state's health professional workforce); for clinical research and translating research discoveries into practice; and for recruiting and retaining top faculty, staff, and students.

It is also critical for financing of Medical School and its academic mission (over half of the Medical School's financing comes from patient care). Without a vibrant academic clinical practice, the University's Medical School simply is not financially sustainable. That is true for all Medical Schools nationally. All Medical Schools depend on clinical revenues to support themselves.

Cost: No new state investment required.

Important Considerations: University of Minnesota Health appears to be a significant first step in addressing many of the external review's concerns regarding the partnership between the Medical School, University of Minnesota Physicians, and the Fairview Health System; however, opportunities still exist for improved integration and support, both financial and structural. Given the importance of the Medical School in addressing the state's health priorities through

basic and clinical research and educating and training its workforce, the state has a vested interest in ensuring the partnership excels and achieves its objectives.

Strategy 3: Medical Discovery Teams: Restoring the Medical School's tenured faculty to 1990 levels

Overview: The steep decline of the Medical School's national research ranking in the decade between 1994 and 2004 followed the loss of almost 90 tenured and tenure track faculty or 17 percent of its base. The tenured and tenure track faculty are the research engine of the Medical School. To restore the Medical School's national prominence in research requires restoring the school's tenured faculty to 1990 levels. It likewise will enhance the Medical School's national prominence in education and clinical care.

A state investment would be used to recruit 10 Medical Discovery Teams (10 faculty per team) in areas that address state health concerns, are strategically aligned with the Medical School's strengths, and are congruent with the NIH's funding priorities. Two teams (20 faculty) will be hired per year for the first five fiscal years (FY16-FY20). The proposal also includes money for start-up costs (\$2M per faculty) and support staff (4 for every faculty member). A national panel of external experts could be enlisted to provide guidance on the research agenda each team should be hired to address. Each team would be led by a national leader with a team of mid-level and early career faculty who have demonstrated the ability to obtain NIH funding.³⁸ The investment would restore the Medical School's tenured research faculty to 1990 levels when the Medical School ranked in the top 20 (University of Minnesota, 2014, December 2).

Executive Order Components Addressed: 1, 2, 3, 4

Impact: The University estimates that the Medical Discovery Teams will generate an additional \$440 million in NIH funding over the eight years, and that by 2024 the Medical Discovery Teams will result in an additional \$97 million annually.³⁹ The combined impact of the Medical Discovery Team hires and increased productivity of the existing faculty is projected to move the Medical School into the top 20 of the NIH rankings within five years, and in the top decile (top 14) by 2024. It would move the Academic Health Center up from 20th in NIH funding to 13th.

Cost: FY16 = \$25M, FY17 = \$50M (\$50M recurring until FY23).

Investments will come from three sources: the state, the university, and federal research grants. The total state investment will be \$375 million over the eight year period (FY2016 – FY2023).⁴⁰ For FY16 the state investment is \$25 million. For FY17 – FY23 the state investment increases to \$50 million. In addition to the state's investment, the university will be contributing \$185 million through a combination of reallocation, philanthropy, and other investments (including the Dean's fund). The investment is also projected to generate more

³⁸ Specifically, the university would target mid-career faculty that currently had one R01 NIH grant.

³⁹ The projections assume that faculty will obtain two new R01 grants, and the cluster will be awarded a "P" (NIH program grant, for a total of ten "P" grants by the end of year 8.

⁴⁰ The average clinical faculty salary is projected to be \$181.5k, basic science faculty is projected to be \$120k. \$2M is budgeted per faculty for start-up costs. Faculty to staff ratio is assumed to 1:4, with 4 staff for every faculty member. Clinical revenues and costs associated with new faculty hires are not included in the estimates.

than \$440 million in federal research awards. A more detailed breakdown of the revenue and expenditures is provided in table 10 in Appendix B.

Important Considerations: While the faculty are projected to be self-sufficient within 5 years through grants, philanthropy, clinical revenues, and other sources, the decline in NIH funding and increased competition for grants pose a potential risk that needs to be continually assessed and managed. As noted earlier in the report, NIH grant success rates declined from 30 percent to 18 percent since 1998. If a sufficient number of the new hires are not able to obtain sufficient external funding to become self-sustaining, the Medical School will need to develop and implement contingency plans to handle these unanticipated costs.

Strategy 4: Investing in critical research infrastructure

Overview: Competition for clinical research funding from government and private organizations is extremely intense and requires significant upfront investments by medical schools in clinical research infrastructure. Without these investments, faculty are unable to compete effectively for grants and to conduct their research. Research grants do not cover the full cost of conducting research. Estimates are that medical schools and other organizations must cover at least 25% to 30% of the cost of research from other funds, including state funds, clinical revenues, and philanthropy. The University is one of 61 institutions that has received a National Institutes of Health grant to support clinical and translational research costs. It is recognition of the high quality clinical research done at the University of Minnesota. The grant, while helpful, does not begin to cover the cost of clinical research infrastructure and requires local investments as a condition of the grant. Furthermore, the University is in the last year of the five year grant and expects to potentially sustain a 40% reduction because of NIH funding restrictions if and when the grant is renewed.

The University, as part of its biennial budget request, has identified the most pressing infrastructure investments needed to support increased clinical research productivity of its current faculty. The University has requested funding to:

- a. Support **early stage data collection and analysis** by clinical investigators
- b. Support clinical investigator's use of **core biomedical research services**
- c. Build a **comprehensive repository for collection and storage of essential bio-specimens** needed for chronic disease research
- d. Expand development of a **comprehensive clinical data repository** to link electronic medical records, bio-specimen data, genomics data, and other data sources to support clinical research
- e. Support research grants for the **study of chronic diseases in underserved rural and urban communities**
- f. Develop and sustain a **tele-research platform and mobile research unit.**

Executive Order Components Addressed: 1, 2, 3

Impact: These investments are required for the Medical School to meet its goal (set in its strategic plan) of a 10% increase in research funding by current faculty (See Strategy 1 above).

Cost: The total cost of these investments is \$4 million in FY16 and \$5 million in FY17 and in future years. The more detailed cost estimates are:

	FY16	FY17
Early Stage Data Collection	\$750,000	\$1,000,000
Biomedical Research Support Services	\$750,000	\$1,000,000
Bio-Specimen Depository	\$500,000	\$500,000

Clinical Data Repository	\$1,000,000	\$1,000,000
Chronic Disease Research Grants	\$500,000	\$1,000,000
Tele-research/mobile research unit	\$500,000	\$500,000

Important Considerations: This proposal is part of the University’s biennial budget request. With respect to tele-medicine, in addition to money for research, the state may want to explore barriers to its adoption and investments that incentivize its implementation and expansion. One barrier identified by committee members was the current payment model. Currently, physicians are not reimbursed for patients who are not physically present during a visit. Innovative solutions are needed. Fairview, for example, currently has an emergency department that utilizes tele-medicine for rural hospitals. The hospitals pay a managerial fee to Fairview in lieu of payment for services. This arrangement allows the rural hospitals to serve their patients locally and Fairview to cover the cost of their services.

Strategy 5: Investing in Innovative, Ground-breaking Programs to Meet Minnesota's Health Workforce Needs

Overview: The University of Minnesota educates and trains 70% of the state's physicians and other health professionals. A key priority of the University and Medical School is to ensure that the state will have the health professional work force to meet its needs: that the workforce is well prepared for the future and trained in the latest models of health promotion and care; that there are adequate providers throughout the state to address the aging of the state's population and the exponentially increasing demand for health and long-term care; and that the serious issue of health disparities in Minnesota is addressed by creating a health workforce that reflects the diversity of the state's changing population.

Increasing demand for health care comes at a time when the current health professional work force itself is aging and will be retiring. Current shortages in the state's underserved rural and urban communities will become even more acute. This is especially true for primary care, mental health, and care for the elderly. Educating and training students and current practitioners in new models of care – to work in health care teams in which each of the members is operating at the top of his/her professional skills and knowledge – is essential in meeting the state's health care needs. It leverages the State's current and future health workforce and enables the Medical School to respond quicker to the demand for health professionals in Minnesota. Minnesota's health professional workforce also does not reflect the growing ethnic, tribal, and immigrant make-up of the state. New efforts to recruit and prepare students from rural and urban underserved communities are needed as are increased efforts to recruit graduates to practice in these communities.

1. Revamp the Medical School's curriculum and clinical training programs to incorporate new models of health promotion and care and tie medical education/training more closely to patient outcomes.

- **Revamp Curriculum/Training Programs**

Overview: The Medical School's curriculum and clinical training programs will be revamped to incorporate new models of health promotion and care, including greater emphasis on interprofessional education and training; team care; prevention and wellness; population health; and business and informatics expertise. The curriculum and training programs will make greater use of active learning and simulation to improve instruction and learning. The Medical School will regularly assess the skills of its graduates against health care outcomes to provide on-going feedback to improve the curriculum and training programs. The school will examine how to reduce the overall time needed for education and training of its students and residents. The Medical School will also expand its continuing education programs to prepare current practitioners in new models of care and health promotion.

Executive Order Components Addressed: 1, 2, 4

Impact: The goal is to better prepare medical students and residents for practice. A frequent criticism of health care systems is that medical students and residents, while technically proficient, lack the team work and other soft skills needed to perform effectively. The revision of the Medical School's curriculum and training programs will be done collaboratively with the state's health care systems to close that gap.

Cost: FY16 - \$1.9M, FY17 - \$2.9M, (\$2.9M recurring)

Important Considerations: This proposal builds on the University's original biennial budget request for revamping of the curriculum, expanding the scope of the work, including even greater use of simulation, active learning, and collection of performance metrics of its graduates. The University's National Center for Interprofessional Practice and Education will serve as an important resource for these efforts.

2. Meet critical needs in underserved rural and urban communities

- **Primary Care Training Sites in Underserved Communities**

Overview: There is a shortage of primary care training sites for medical and other health professional students and residents in Minnesota. Because of restrictions on the use of federal funds for clinical training, most training sites are in hospitals rather than ambulatory clinics where most health care is delivered. To better prepare our students requires primary care settings that incorporate the latest health care and promotion models. This requires a new innovative, ground-breaking approach.

In partnership with local communities and health providers, the Medical School envisions creating a network of six primary care teaching clinics in underserved rural and urban communities across the state. The clinics would train teams of students and residents (from medicine, dentistry, nursing, pharmacy, public health, and allied health) in the latest models of interprofessional and team-based primary care.

Executive Order Components Addressed: 3, 4

Impact: These training sites would serve multiple purposes: education and training of medical and other health professional students in primary care; the provision of valuable health services in underserved communities across the state; and an important tool for local communities to recruit future health providers. In addition to providing additional medical services to underserved communities, the sites will expose current Medical School students to rural medicine as a potential occupation choice.

Cost: FY16 - \$2M, FY17 - \$6M, (Recurring \$6M).

Important Considerations: This proposal is part of the University's biennial budget request. The clinics may be eligible to become Federally Quality Health Care Clinics that could receive enhanced Medicaid payments to help cover the cost of patient care. The funds in the University's biennial request are to cover the education/training costs of the clinics as well as other operating costs that may not be covered by patient revenues. The goal would be to utilize existing local facilities to reduce the need for capital costs. If there are not sufficient facilities in the communities in which they are placed, there could be additional capital costs.

- **Expand RPAP and MetroRPAP Program & Increase Stipend**

Overview: The RPAP program is a Medical School-rural healthcare community partnership to educate third year medical students in rural communities. It has for the last 43 years been successful in educating over 1,400 students, approximately 67% of who practice family medicine and approximately 45% practice in rural settings. This program, along with the UMD Medical School curriculum for years one and two of Medical School, is internationally known for successfully addressing rural primary care workforce shortages. Students currently receive a \$10,000 stipend (\$4000 of which is contributed by the community). The stipend amount has remained unchanged for over 10 years as tuition for students has increased substantially, making it less enticing and less helpful in offsetting additional costs involved for students. MetroPAP is a parallel program to RPAP, providing training for third year medical students in urban underserved communities.

Executive Order Components Addressed: 1, 3, 4

Impact: RPAP and MetroPAP programs are highly successful in enticing and preparing medical students to practice family medicine in underserved rural and urban communities. Targeted investments in these programs will further strengthen them and help address the need for physicians in rural and underserved communities.

Cost: Option 1 (Expand program and increase stipend to \$25k), FY16 = \$1.3M, FY17 = \$1.3M, (recurring \$1.3M)
Option 2 (Expand program and increase stipend to full 1-year tuition), FY16 = \$2M, FY17 = \$2M, (recurring \$2M)

Important Considerations: The proposal will not increase the overall Medical School enrollment, but may interest and prepare more medical students to practice in rural and underserved communities where the physician needs are greatest.

- **Sustaining the Duluth Family Medicine Clinical Faculty**

Overview: Appropriations would be used to support Family Medicine faculty in Duluth that are currently funded by HRSA (Health Resources and Services Administration).

HRSA funding will no longer be available via Title VII Family Medicine and Primary Care Training grants. These funds will not add faculty to the campus in Duluth but will support the existing faculty.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: The Duluth campus of the Medical School has been successful at recruiting and educating students in their first 2 years of Medical School, many of whom ultimately practice family medicine in rural and Native American communities. The workforce outcomes from the Duluth campus substantially contribute to the University of Minnesota's international reputation as an exemplar Medical School whose curriculum successfully addresses rural workforce needs. A key support has been HRSA funding, which pays for salaries of the family medicine faculty who teach clinical skills to the 120 students in years one and two of Medical School at the Duluth campus. Unfortunately, HRSA funding will no longer be available after this year. These faculty positions are crucial to providing clinical education on this campus. Additional state funding for these faculty positions would help sustain and support the Duluth campus.

Cost: FY16 = \$600K, FY17 - \$600K, (recurring \$600K).

Important Considerations: The Duluth campus of the Medical School is internationally recognized for its success in educating future rural family physicians and Native American physicians in their first two years of Medical School and providing a pipeline into the RPAP program and ultimately into family medicine residencies and future rural workforce. The Duluth campus also produces more Family Physicians than any other Medical School campus or school in the US.

- **Duluth Rural Scholars Program**

Overview: Given the success of the Medical School's Duluth campus in educating rural family physicians and Native American physicians, expanding the Duluth Rural Scholars program by 10 students annually would likely help mitigate primary care shortages. Planning money is needed to work through the operational and logistical challenges of expanding the program.

Executive Order Components Addressed: 1, 4

Impact: Funding would assist the Medical School in increasing the number of Native American physicians and the number of family medicine physicians practicing in rural Minnesota.

Cost: FY16 = \$225K (for planning), FY17 = \$225K (for planning), FY18 = \$500k, (recurring = \$500K)

Important Considerations: This would not result in an additional ten students being admitted into the Medical School or to the Duluth campus, but may result in more enrolled students selecting practice sites in underserved areas. The two planning years are needed to work through the operational and logistical challenges of expanding the program, including securing adequate training sites, which may be difficult.

- **Scholarships/Loan Forgiveness for Service in Rural/Urban Underserved Areas**

Overview: Scholarship and loan forgiveness programs may help incentivize physicians and other health care providers to practice in health care shortage communities. State funds would be utilized to provide scholarships or forgivable loans to Medical School student/residents that are willing to serve for a specified period of time in a rural/urban underserved area.

Executive Order Components Addressed: 4

Impact: The goal is to provide a financial incentive for medical students and residents to practice in underserved rural and urban communities where the health provider needs are most acute. This proposal which is part of the University's biennial budget request, would fund approximately 30 partial scholarships/forgivable loans in FY16 and 100 in FY17 and in future years (assuming \$15,000 per student).

Cost: FY16 - \$500K, FY17 - \$1.2M, Recurring \$1.2M.

Important Considerations: Currently, the Medical School only has two full scholarships for every incoming class of 230 students. The Minnesota Department of Health (MDH) currently offers a loan forgiveness program for physicians interested in practicing in underserved areas; however, due to limited funding, the loan forgiveness program is only able to fund 2 physicians per year. MDH's evaluation of the rural physician's loan forgiveness program shows that over 87 percent of recipients are still practicing in rural areas after 10 years, and after 20 years, 75% remain in rural areas (MDH Office of Rural Health and Primary Care, 2014, September). If additional funding for loan forgiveness becomes available, the Medical School would use this money for scholarships.

Additionally, partnerships with private funders are also possible. For example, Avera Marshall offers a scholarship to one medical student per year from the Duluth campus. The scholarship is worth \$24,000 over 4 years (\$12,000 in year 1, and \$4,000 in each of the remaining three years). Opportunities to incentivize hospitals and provider groups to consider offering scholarships and other workforce development initiatives should be considered.

3. Increase diversity of the workforce by expanding pipeline programs

- **Expand Pipeline Programs**

Overview: Minnesota's health professional workforce does not reflect the growing ethnic, tribal, and immigrant make-up of the state. The Medical School has established a goal of a student body that is at least as diverse as the state's general population. Funding to expand the Medical School's and Academic Health Center's pipeline programs for students from underrepresented groups will help prepare underrepresented students to successfully apply for admission to the Medical School and the University's other health professional schools.

Executive Order Components Addressed: 4

Impact: The goal is to increase the diversity of the state's health professional workforce. The Medical School believes that its current pipeline program, Minnesota Future Doctors, has been effective in developing interest and providing support to underrepresented groups. Despite the program's success, many of the students choose to attend out-of-state Medical Schools that can offer them full scholarships. The funds would be used to further strengthen and expand the education/training elements of the Medical School's pipeline program and provide full or partial scholarships to pipeline participants who are admitted to the University's Medical School. Without the additional scholarship money, the pipeline program will likely lose its brightest students.

Cost: FY16 - \$500K, FY17 - \$1.2M, (Recurring \$1.2M).

Important Considerations: This proposal is part of the University's biennial budget request. While the proposal includes all of the health sciences schools (since many students are interested in exploring multiple careers when they are undergraduates), a significant portion of the request would support the efforts of the Medical School.

4. Meet the most acute workforce needs:

- **Expand MD/Ph.D. Program**

Overview: Nationally, individuals who have joint MD/Ph.D. degrees are major recipients of NIH research funding. These individuals are trained both as physicians and as research scientists. Nationally prominent Medical Schools have at least 10% of their students enrolled in joint MD/Ph.D. programs. Their graduates often join the faculty and become major drivers in the school's research programs. Currently, the Medical School's MD/Ph.D. program is limited to 9 students per year. With additional state support, the program would be expanded by 2 students per year for an additional 8 students over 4 years.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: Expansion of the MD/Ph.D. program will raise the Medical School's national prominence and provide a pipeline for graduates who can later join the faculty as productive, highly funded researchers.

Cost: FY16 = \$ 145,706, FY 17 = \$ 299,501, FY18 = \$ 464,211, FY19 = \$ 635,730, FY20 = \$650,000 (\$650,000 recurring)

Important Considerations: Overall Medical School enrollments will not be increased.

- **Expand education/training programs in psychiatry and mental health services**

Overview: Minnesota faces a critical shortage of psychiatrists and other mental health providers. As part of its biennial budget request, the Medical School proposes expanding its child and adolescent psychiatry fellow programs by 50% (given the critical shortages of psychiatrists) and to increase the number of medical, nursing, and other health professional students and residents trained in the diagnosis, assessment, management, and treatment of mental illnesses. The latter uses an integrated care model that leverages and fully utilizes the skills and knowledge of a full range of health professionals. Using this model will enable Minnesota to more quickly and effectively meet the critical shortages of mental health providers than relying solely on expanding enrollments in mental health provider training programs. Under the integrated care model, primary care physicians, nurses and other health care providers (in the course of their usual work) will be able to help specialized mental health professionals provide critical mental health services.

Executive Order Components Addressed: 2, 3, 4

Impact: The goal is to help the state respond as rapidly as possible to the mental health crisis and the lack of trained providers in Minnesota by increasing the training of current students, residents, and practitioners in the diagnosis, assessment, management, and treatment of mental illnesses.

Cost: FY16 - \$250K, FY17 - \$750K, (\$750K recurring)

Important Considerations: The Mental Health Workforce Summit will issue its report shortly documenting the mental health workforce needs of the state and making recommendations on how to address them. The University's proposal is part of this broader effort to respond to the state's mental health work force needs. The proposal is part of the University's biennial budget request.

- **Invest in programs in Geriatrics and care of the elderly**

Overview: With the aging of the state’s population, the demand for health and long term care and its costs will increase exponentially. The prevalence of illness and disease increase with age, and chronic conditions such as cancer, heart disease, stroke, diabetes, obesity, arthritis, and pain among the elderly continue to rise. The Medical School does not have a geriatrics program, and training of students and residents in care of the elderly is very limited.

The proposal would enable the University to recruit five additional faculty to expand geriatrics education, training, and research programs. It would also increase the number of physicians, nurses, and other health professionals certified in geriatrics and expand the curriculum and clinical training experiences of all health professional students and residents to provide more in-depth training in the care of the elderly.

- Executive Order Components Addressed: 2, 3, 4
- Impact: The goal is to ensure that the state has the health professional workforce needed to care for the elderly.
- Cost: FY16 - \$500K, FY17 - \$1,750M (Recurring \$1.750M)

Important Considerations: The State of Minnesota has developed a comprehensive plan (Aging 2030) on how to respond to the state’s rapidly aging population and its implications for the state’s workforce, economy, health care, housing, social services, and more. In reviewing that plan, the University’s health professional schools, including the Medical School, saw two key roles they needed to play in ensuring that the state has the health professional workforce needed to care for state’s elderly population and conducting research on chronic disease and other conditions affecting the elderly to develop new models of care to reduce mobility, improve quality of life, and reduce costs.

Strategy 6: Developing new models of health promotion and care:

- **New Models of Care**

Overview: A key responsibility of the Medical School is to translate its scholarship and research discoveries into new models of health promotion and care that are widely available and commonly used in practice across Minnesota and nationally. With the enormous changes underway in health care, the Medical School has a unique advantage working with the University's other health professional schools to develop and pilot new models of interprofessional health promotion and care that will optimize access, coordination, quality, and affordability of care. The pilot projects would be joint efforts done in collaboration with the state's health care systems and providers. Initial projects would focus on chronic diseases, including cancer, heart disease, stroke, diabetes, obesity, and arthritis. The University of Minnesota is nationally recognized for its research in these areas.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: Nationally, half of all adults have one or more chronic health conditions. One in four adults has two or more chronic health conditions. Chronic disease is even more pronounced in our rapidly growing older population. 90% of all adults 60 years and older have at least one chronic health condition. Seven of the top 10 causes of death are chronic diseases. The majority of health care and related economic costs stem from the costs of chronic disease. Speeding the translation of research discoveries into new models of health promotion and care will reduce morbidity, improve quality of life, and reduce health care costs.

Cost: FY16 - \$500K, FY17 - \$1.5M, (recurring \$1.5M)

Important Considerations: This proposal is part of the University's biennial budget request. While Minnesota is ranked among the healthiest states in the country, it is also ranked as the state with one of the greatest disparities between the health of our majority white community and our minority ethnic, tribal, and immigrant communities. Increased efforts to understand, treat, cure, and manage chronic disease in the state's underserved communities can be a key part of a comprehensive state effort to close the health disparities gap in Minnesota. Another potential benefit of these pilots is to use their findings to revamp the University's education and training programs to better prepare students, residents and current practitioners.

- **Minnesota Electronic Health Library**

Overview: The Electronic Health Library aims to provide online 24/7 access to licensed, evidence-based, clinical care resources to health care professionals and all Minnesotans. It will include information intended for use at the point-of-care, prescription drug reference information, and full-text medical books and journals. Such professional-level

health information is only available through costly licenses from publishers. The Electronic Health Library will give health providers throughout Minnesota access to quality information resources that can help them better understand their patients' health, use the best research evidence to guide their diagnosis and treatment, and improve the quality of care. It will allow patients to find trusted, comprehensive, and authoritative health information that goes beyond what is freely available so they can become more informed, engaged, and empowered.

These resources, however, are very expensive to purchase. Their high cost means that the majority of our state's health care providers, educators, students, researchers, librarians, and our state's 5 million citizens do not have access to the information they need to support their work and training, or to promote patient engagement and informed decision-making. Access is especially limited in rural and underserved urban communities and for independent health care providers and smaller clinics, hospitals, and health care systems. Additionally, the Minnesota Electronic Health Library initiative should present a strong opportunity for collaboration with Mayo, the state's other health care systems, and the state's libraries. While the first priority is to ensure access to these resources to the state's health care providers, students, and residents, for a modest additional investment these resources can be made available to all Minnesotans.

Executive Order Components Addressed: 2, 3, 4

Impact: The Minnesota Electronic Health Library will provide equal access to evidence-based health information to all health care providers, students, and residents across the state as well as to the general public. It will facilitate the training, recruitment, and retention of health care providers, especially in rural and underserved urban communities and assist with workforce development and lifelong learning of health care providers. It will enable greater patient engagement and informed decision-making with the ultimate goals of improved health outcomes, reductions in health disparities, and lower health care costs.

Cost: FY16 - \$1M, FY17 - \$2.75M, recurring (\$2.75M)

Important Considerations: This proposal is part of the University's biennial budget request. The proposed Minnesota Electronic Health Library should not be confused with the Minnesota Department of Health's e-health initiative, which is a public-private collaboration to advance the adoption of electronic health records and other health information technology.

- **Develop a M.D./Dr. P.H. Program**

Overview: The Institute of Medicine and the Centers for Disease Control have called for greater integration of public health and medicine to increase quality, contain costs, and improve health (Institute of Medicine, 2012). By emphasizing analytical skills in leadership, policy development and management, along with an academic excellence in these oft fragmented systems, this dual degree exemplifies health system innovation needed in interprofessional training, practice and research.

Funding would be utilized to develop a new MD/Dr. P.H. program at the university, which would lead to more "practice-based research" and help integrate clinical and public health practice. This would also facilitate the interdisciplinary/interprofessional training/research. First, a Doctorate of Public Health (Dr. P.H.) program would be developed collaboratively by the School of Public Health and Medical School. The cost estimate includes the recruitment of additional faculty and funding for curriculum development. Following the development of the Dr. P.H., the joint MD/Dr. P.H. degree program would be created.

Executive Order Components Addressed: 4

Impact: In this era of health system reform, as prospective students seek rigorous, multidisciplinary academic environments, the proposed dual degree may increase the university's ability to recruit highly motivated, exceptional candidates to the Medical School -- who otherwise may opt to enroll in the limited number of existing schools that offer this option.

Graduates will pave the way for a stronger, more integrated health system in Minnesota through applied research on health system structure, financing and workforce. The dual degree program will also elevate the stature of the university and increase competitiveness for extramural awards.

Cost: FY16 = \$750,000, FY17 = \$1M (Recurring \$1.5M)

Important Considerations: As we progress toward a dual Dr. P.H./MD program, a first step is to establish a Dr. P.H. program. Development of the dual program could build on the existing Public Health Practice degree, which is currently offered as an MD/MPH.

Strategy 7: Investing in critical core facilities:

- **Clinical Research Facilities**

Overview: In addition to the programmatic investments needed to expand its clinical research capacity and regain its national research prominence, the Medical School also needs state of the art facilities to house the Medical Discovery Team hires (as proposed in Strategy 3) and to conduct clinical research. While the Medical School is able to accommodate the first several Medical Discovery Teams in existing space, the school will quickly reach capacity and will need additional facilities. The University is currently undertaking a comprehensive strategic facilities planning effort for all the Academic Health Center schools and programs to predict demand and develop long range capital plans. Once completed, more detailed programmatic planning and pre-design work can begin on the more specific requirements for clinical research facilities, which are easily accessible to patients, state of the art, and support interdisciplinary work.

Executive Order Components Addressed: 1, 2, 3

Impact: While Minnesota is the home to over 400 biomedical companies, many do not work with the Medical School on clinical research projects citing among other factors, the lack of sufficient clinical researchers, lack of adequate clinical research facilities, and lack of access to sufficient patient volumes to conduct clinical trials. As a result, many companies have developed partnerships with universities and research organizations outside Minnesota and in some cases internationally; however, many have expressed an interest in transferring that work back to Minnesota if the Medical School addresses the issues of faculty, facilities, and patient volumes. Doing so would not only enhance the national research prominence of the Medical School but could also provide a strong economic benefit to the state.

Cost: \$100M is the current planning estimate. A firmer, more detailed cost estimate will be developed as part of programmatic planning and a pre-design study for the facilities. **It may be possible to combine the clinical research and health education facilities into a single new structure or a combination of new and remodeled space. Those options will be explored during the programmatic planning and predesign study.**

Important Considerations: This proposal is a facility request.

- **AHC Twin Cities Professional Educational Facilities**

Overview: Fundamental changes are underway in medical and health sciences education and training programs in Minnesota and nationally, driven by changes in accreditation requirements, faculty and student expectations, and how the Medical School can better educate/train health professional students. Almost all of the educational and training

facilities for the Medical School and other health professional schools are over 40 years old and are in need of major renovation and renewal. They do not support the current curriculum, the needs of students and faculty, and new accreditation standards for our programs. Classrooms are widely dispersed; over 40% of the educational space is fixed seating tiered lecture halls; there are insufficient active learning classrooms, simulation facilities, clinical training spaces, and study space.

Most of our neighboring states, including Wisconsin, Iowa, and North Dakota, have built new state of art educational facilities for their health sciences schools in the last several years, as have many of the Medical School's peer institutions nationally. It is increasingly difficult to deliver the current curriculum in the current facilities, to say nothing about the difficulty of trying to change the curriculum to match the changing world of health care and our understanding of how students best learn. The facilities would be used by all of the University's health sciences schools since the educational needs are similar and more importantly it will enable the integration of the education and training programs across the schools to facilitate interprofessional education and training, which will better prepare students and residents for practice.

Executive Order Components Addressed: 1, 2, 3, 4

Impact: New educational and training facilities to replace 40 year old, outmoded facilities are critical to the Medical School's ability to adequately train and prepare students and residents for practice. It is an issue shared by all the health sciences schools.

Cost: \$100M is the current planning estimate. A firmer, more detailed cost estimate will be developed as part of programmatic planning and a pre-design study for the facilities. **It may be possible to combine the clinical research and health education facilities into a single new structure or a combination of new and remodeled space. Those options will be explored during the programmatic planning and pre-design study.**

Important Considerations: This proposal is a facility request. These facilities are part of the University's current six-year capital plan.

- **Duluth Medical Facility**

Overview: The Medical School, Duluth Campus facility was built in the early 1970s. It is overcrowded and in need of major renovation. Discussions have just begun on the best use of the current facility and the best use of potentially a new facility either on or off campus. Currently, there are three options being proposed for a new facility:

Option 1: Medical School Education programs only

Option 2: Medical School Education and Research programs

Option 3: Also include pharmacy and other AHC programs

Executive Order Components Addressed: 1, 2, 3, 4

Impact: The Duluth branch of the Medical School faces the same challenges in delivering a state of the art curriculum in its current facilities as does the Medical School in the Twin Cities. The facility needs are comparable.

Cost: FY16 = \$500k to \$1M (for planning), FY17 = \$0

Important Considerations: This proposal is a facility request. The FY16 costs represents one percent of the total project cost. The facility should be designed to model interprofessional and team-based care.

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Appendices

STATE OF MINNESOTA
EXECUTIVE DEPARTMENT



MARK DAYTON
GOVERNOR

Executive Order 14-13

**Establishing the Governor's Committee on
the University of Minnesota Medical School**

I, Mark Dayton, Governor of the State of Minnesota, by virtue of the authority vested in me by the Constitution and applicable statutes, do hereby issue this Executive Order:

Whereas, the University of Minnesota Medical School plays a crucial role in ensuring Minnesota remains a leader in health care transformation and provides quality health care to its citizens; and

Whereas, the University of Minnesota Medical School's continued success is vital in achieving Minnesota's goals of improving patient and population health, lowering costs, and improving health care experiences.

Now, Therefore, I hereby order that:

1. The Governor's Committee on the University of Minnesota Medical School is created to advise the Governor and Legislature on future strategies, investments, and actions to strengthen the position of the University's Medical School.
2. The Committee will consist of a Blue Ribbon Commission of members appointed by the Governor.
3. The purpose of the Blue Ribbon Commission is to:
 - a. Ensure the Medical School's national preeminence by attracting and retaining world-class faculty, staff, students, and residents.

- b. Sustain the University's national leadership in health care research, innovation, and service delivery, capitalizing on the State's investments in biomedical research and technology.
 - c. Expand the University's clinical services to strengthen its ability to serve as a statewide health care resource for providers and patients, as a training site for health professional students and residents, and as a site for cutting-edge clinical research.
 - d. Address the state's health workforce needs to serve Minnesota's broad continuum of health care needs, including primary care, a growing aged population, and increased chronic health needs.
- 4. The Blue Ribbon Commission will provide recommendations and convey its findings in a report to the Governor's Office, the Legislature, and the public by December 15, 2014.
 - 5. The Commissioner of the Office of Higher Education will provide general administrative and technical support to the Blue Ribbon Commission.
 - 6. The Blue Ribbon Commission will make its meetings open to the public and provide opportunities for public comment.

This Executive Order is effective fifteen days after publication in the State Register and filing with the Secretary of State, and shall remain in effect until rescinded by proper authority or until it expires in accordance with Minnesota Statutes, section 4.035, subdivision 3.

In Testimony Whereof, I have set my hand on this 30th day of July, 2014.



Mark Dayton
Governor

Filed According to Law



Mark Ritchie
Secretary of State



Appendix B: Medical School department NIH rankings

Table 9: NIH rankings by Medical School department, 2014⁴¹

Department	Rank	Funding
Family Medicine	3	\$3,966,283
Pediatrics	8	\$26,434,062
Pathology	12	\$11,954,531
Neurology	13	\$11,257,545
Physical Medicine	13	\$911,733
Radiology	14	\$7,449,406
Surgery	14	\$6,791,073
Biochemistry	16	\$9,103,727
Neurosciences	17	\$6,581,251
Otolaryngology	23	\$876,160
Genetics	26	\$5,909,164
Psychiatry	26	\$9,173,660
Emergency Medicine	30	\$301,328
Pharmacology	30	\$5,363,541
Dermatology	32	\$364,002
Internal Medicine	36	\$29,115,469
Orthopedics	41	\$137,727
Microbiology	45	\$4,651,460
Ophthalmology	54	\$874,245
Physiology	37	\$2,461,161
Anesthesiology		\$0
Neurosurgery		\$0
Obstetrics and Gynecology		\$0
Urology		\$0
Miscellaneous*	No Rankings Exist	\$736,725
Duluth Campus	No Rankings Exist	\$596,068
Total:		\$145,010,321.00

Source: Blue Ridge Institute for Medical Research, 2014.

Awards 1 October 2013 - 30 September 2014

* Miscellaneous is NIH funding to the Medical School that is not associated with an individual department.

⁴¹ The table only depicts new NIH awards by department/campus in 2014, which is the basis for the Medical School's NIH ranking. It does not account for the total current active NIH funding for each department/campus. For example, the Duluth campus received \$596,068 in new awards in 2014, but had over \$9 million in active NIH funding from grants that awarded from 2009 to 2014. Accounting for active NIH funding show significant increases for various Medical School departments.

Appendix C: Medical Discovery Teams

Table 10: Detailed revenue and expense projections for the Medical Discovery Teams by source, FY2016 to FY2023

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
New Faculty Hires / Year	20	20	20	20	20			
Cumulative Total New Faculty	20	40	60	80	100			
Federal Grants Revenue								
FY16 Cohort	\$ 3,333,333	\$ 6,666,667	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000
FY17 Cohort		\$ 3,333,333	\$ 6,666,667	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000
FY18 Cohort			\$ 3,333,333	\$ 6,666,667	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000
FY19 Cohort				\$ 3,333,333	\$ 6,666,667	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000
FY20 Cohort					\$ 3,333,333	\$ 6,666,667	\$ 10,000,000	\$ 10,000,000
FY21 Cohort						\$ 3,333,333	\$ 6,666,667	\$ 10,000,000
Assume "P" Program Grants @ \$1.5 Direct (One per Cluster)	\$ 1,500,000			\$ 3,000,000	\$ 6,000,000	\$ 9,000,000	\$ 12,000,000	\$ 15,000,000
Indirect Cost Recovery - NIH @ 49.5%	\$ 1,650,000	\$ 4,950,000	\$ 9,900,000	\$ 16,335,000	\$ 22,770,000	\$ 27,555,000	\$ 30,690,000	\$ 32,175,000
Total Incremental NIH Award Revenue	\$ 4,983,333	\$ 14,950,000	\$ 29,900,000	\$ 49,335,000	\$ 68,770,000	\$ 83,221,667	\$ 92,690,000	\$ 97,175,000
Incremental Expense:								
PI Salaries	\$ 3,090,375	\$ 6,335,269	\$ 9,740,476	\$ 13,311,983	\$ 17,055,979	\$ 17,482,378	\$ 17,919,438	\$ 18,367,424
Incremental Staff Salaries	\$ 4,510,000	\$ 9,245,500	\$ 14,214,956	\$ 19,427,107	\$ 24,890,981	\$ 25,513,255	\$ 26,151,087	\$ 26,804,864
Fringe Benefits	\$ 2,660,131	\$ 5,453,269	\$ 8,384,401	\$ 11,458,682	\$ 14,681,436	\$ 15,048,472	\$ 15,424,684	\$ 15,810,301
Start-Up Costs Annualized	\$ 10,250,000	\$ 20,756,250	\$ 31,525,156	\$ 42,563,285	\$ 43,627,367	\$ 33,121,117	\$ 22,352,211	\$ 11,314,082
Research Operations Estimated at 55% of Salaries & Fringe	\$ 5,643,278	\$ 11,568,721	\$ 17,786,908	\$ 24,308,775	\$ 31,145,617	\$ 31,924,258	\$ 32,722,364	\$ 33,540,423
New Building Annual Operating Costs (Utilities and O&M)					\$ 4,320,000	\$ 4,428,000	\$ 4,538,700	\$ 4,652,168
Central Cost Pool Estimated at 10% of Total Expenditures	\$ 2,615,378	\$ 5,335,901	\$ 8,165,190	\$ 11,106,983	\$ 13,140,138	\$ 12,308,948	\$ 11,456,978	\$ 10,583,709
Total Incremental Expense	\$ 28,769,163	\$ 58,694,909	\$ 89,817,087	\$ 122,176,815	\$ 148,861,518	\$ 139,826,428	\$ 130,565,461	\$ 121,072,970
Net Income (Loss)	\$ (23,785,830)	\$ (43,744,909)	\$ (59,917,087)	\$ (72,841,815)	\$ (80,091,518)	\$ (56,604,762)	\$ (37,875,461)	\$ (23,897,970)
Beginning of Year Cash Flow Balance		\$ 1,214,170	\$ 7,469,261	\$ -	\$ -	\$ -	\$ -	\$ 12,124,539
RECURRING STATE SPECIAL @ \$50M by Year 2	\$ 25,000,000	\$ 50,000,000	\$ 50,000,000	\$ 50,000,000	\$ 50,000,000	\$ 50,000,000	\$ 50,000,000	\$ 50,000,000
End of Year Cash Flow Balance	\$ 1,214,170	\$ 7,469,261	\$ (2,447,827)	\$ (22,841,815)	\$ (30,091,518)	\$ (6,604,762)	\$ 12,124,539	\$ 38,226,568
University of Minnesota Foundation Philanthropy			\$ 2,447,827	\$ 22,841,815	\$ 30,091,518	\$ 6,604,762	\$ -	\$ -
								\$ 59,538,095
Planning: 1) AHC Professional Education Building (\$100M) and 2) Clinical Research Building (\$100M) - Assume Design @ 12% of Cost		\$ 24,000,000						
AHC Professional Education Building Debt Service (U 1/3 Share)				\$ 2,262,869	\$ 2,262,869	\$ 2,262,869	\$ 2,262,869	\$ 2,262,869
Clinical Research Building (U 1/3 Share)				\$ 2,262,869	\$ 2,262,869	\$ 2,262,869	\$ 2,262,869	\$ 2,262,869
University Contribution Toward New Building Debt	\$ -	\$ 24,000,000	\$ -	\$ 4,525,738	\$ 4,525,738	\$ 4,525,738	\$ 4,525,738	\$ 4,525,738
								\$ 46,628,691

Source: University of Minnesota

Appendix D: AHC External Review Report



External Review of the University of Minnesota Academic Health Center: Final Report

Submitted by:

Dr. Kenneth Kaushansky

Dr. Carol Aschenbrener

Dr. Lee Goldman

Background/Charge

The University's Academic Health Center (AHC) is one of the most comprehensive in the nation. It is the primary provider of healthcare workers in Minnesota, home to significant research breakthroughs, and a provider of quality clinical care in a wide range of disciplines and specialties.

Over the past 15 years the University of Minnesota (U of M) AHC has undergone several external and internal reviews, including a self-study in 2011. The last review, while valuable, answered mainly questions surrounding the structure of the AHC and was not intended to answer broader questions involving the future of the University's health sciences. Moreover, because of its internal construction, the 2011 self-study was received with skepticism by many within the University and the schools that comprise the AHC.

While many of the University's health science schools are highly ranked, the Medical School's reputation and rankings, which have gradually declined, are of great concern throughout all the schools of the U of M AHC. Also of concern is considerable uncertainty surrounding the rapidly changing healthcare environment and how best to position the U of M AHC to prepare for the changes afoot.

President Kaler has set improving the reputation of the Medical School and the entirety of the health sciences programs as a strategic goal for the University. To help create a path forward, the president decided to commission an external review of the AHC.

The president asked Dr. Ken Kaushansky to serve as the chair of the External Review Committee and recruited Dr. Lee Goldman and Dr. Carol Aschenbrener to join him. Our biographies are attached.

In May of 2012 President Kaler charged this external committee with a forward-looking review including the following questions:

- How does the U of M AHC compare with its peers nationally?
- What changes and investments are necessary to meet our goal of providing top-rated health science education, research, and clinical care?



- How do the AHC and schools within it maximize the partnership with the University of Minnesota Physicians (UMP) and Fairview Health System?
- Is the AHC structured to respond to the changing healthcare environment?

Process

In preparation for the review, we were provided summaries of past reviews of the AHC, budget and accreditation documents, information regarding the healthcare landscape in Minnesota, survey results from faculty and staff of the AHC, and summary documents about the major components of the AHC. From August 1–3, 2011, we conducted on-campus interviews with AHC faculty, staff, and administration, as well as senior leadership from the University. That information, combined with our assessments, resulted in our findings.

Survey results

Prior to the on-campus portion of the review, a survey was sent to all AHC faculty and staff, a population totaling 9,289. The survey was included as part of the review process to gather a broader level of input than was possible through in-person interviews and to give the whole AHC community the opportunity to make their voices heard. The survey was qualitative and included all open-ended questions. The results are therefore difficult to quantify, but they do provide information about the concerns of faculty and staff.

The survey asked questions similar to those posed by President Kaler in his charge to the review team, as well as specific questions about challenges facing colleges and centers, and asked respondents what they felt was most important for the reviewers to focus on.

Responses were received from every college in the AHC, with 48 percent of responses coming from the Medical School. Responses reflected the wide range of views held across the AHC about the current status and the strengths, opportunities, and barriers going forward.

The following issues were mentioned many times by survey respondents as important considerations for the reviewers:

- The leadership structure of the AHC
- The value of the current AHC structure
- The relationship with Fairview Health Services
- The University's relationship with the broader healthcare community
- The strength of the Medical School
- Funding for the health sciences
- A lack of vision for the AHC and/or Medical School
- Interdisciplinary education—both as a strength and an area needing additional focus
- The need to connect research with teaching and with clinical care

Strengths identified by respondents included a number of different specialties and departments as well as interdisciplinary education and research. Opportunities in education and research included improvements in technology, facilities, funding, and faculty



recruitment and support. Respondents identified primary care as an area for improvement, as well as improving relationships between UMP and Fairview Health Services, better facilities, and more focus on patients.

On-campus interviews

The committee was on campus in early August for two and a half days. Beginning with a meeting with President Kaler to discuss the charge, we had the opportunity to meet with more than 50 faculty, staff, and administrators in groups small enough to allow for dialogue. Participants represented a wide range of disciplines and roles within the AHC and the University.

Each interview began with a short explanation of the process and asked participants to talk about what they saw as the opportunities and challenges facing the AHC and the health science schools. Participants seemed pleased to be included in the process, and the conversations were productive and candid.

Findings

Our overall impression was that the University of Minnesota's health sciences are strong, but are at risk from several external and internal forces.

The AHC has many assets, including the breadth of work and the strength of world-class faculty and programs, high-quality students, and an impressive research portfolio. There was a great deal of internal pride and external admiration (on the part of the review committee) for the state of interdisciplinary education and collaborative research. Because of the comprehensive nature of the health science enterprise at the University of Minnesota, there is a tremendous opportunity to lead nationally in these areas. And with this foundation there exists the potential to move up to the next tier of national rankings.

Our interviews covered a wide range of topics but several specific themes emerged. These centered primarily on the structure of the AHC, the status of the Medical School, and the clinical relationships among the school, clinical practices, and the hospital and clinics. There is a range of opinion about all of these issues.

Culture

Before discussing future strategy and tactics, we would like to comment on the culture we observed during our time on campus.

To move the AHC forward, there are evident cultural challenges to overcome. First and foremost, an imbalanced amount of energy is being spent on organizational issues (e.g. who should lead the AHC, what should the mission of the AHC be, and what is the value added of the AHC) that appear to be affecting the quality of the work and environment in the AHC. Addressing these issues and refocusing on the future and the University's opportunities to advance will be an important first step in moving the health sciences from good to great. The agents of change are the faculty members. Like in all academic medical centers, faculty drives the core mission of the health sciences: teaching, research, and clinical work. It will be important to ensure that faculty voices are heard throughout this process and that the



University and the AHC continue to strive to provide the support necessary for great teaching, research, and clinical practice.

Structure and leadership

It was clear from the differing opinions heard by the committee that there is no consensus about the “right” structure or leadership model. The two major points of discussion were 1) the value added of having an administrative structure that oversees the functioning of the healthcare mission of the University of Minnesota (the AHC), and 2) whether the dean of the Medical School (or any health science school’s dean) should also hold the role of head of the AHC. It was also clear that these discussions have been a primary focus for far too long and that there is a desire to have these functional questions answered and to move on.

The committee heard from many that the AHC administrative structure is not well understood and there is concern that the individual schools do not receive enough value from it. On the other hand, we heard several examples of good service and value from the various components of the administrative structure. There was agreement that greater transparency about the cost and function of the AHC structure would be welcomed.

There is also a variety of opinion about the leadership structure. Many believe that the dual role of vice president for health sciences and dean of the Medical School can be a conflict of interest and/or that the job is too big for one person. From the majority of Medical School faculty members with whom we spoke, somewhat surprisingly, the committee heard that the school would prefer a dean focused on only the Medical School, without serving as head of the AHC. But in the true spirit of having one’s cake and eating it too, most in the Medical School also wanted the dean to be granted a direct reporting line to the president, despite acknowledging that no other dean in the University holds that distinction.

Medical School

There was agreement in essentially every corner of the University that the Medical School needs to become more highly regarded, based on enhanced research, educational innovation, and clinical impact, both locally and nationally. Because the Medical School, as in any mature academic health center, is the largest school, it is to the benefit of all when the school is thriving. Each of the health science schools acknowledged there is benefit to them, their rankings, or their research and training opportunities, to be connected to a strong Medical School. It was also made clear that the improvement should not be made at the expense of other schools.

However, there is no clear vision of how to accomplish the goal of strengthening the Medical School. People seem to feel they are in neutral, which is creating a malaise. One faculty member said there is no “north star” guiding the work. We asked, many times, “Who do you want to be?” The responses made it evident that there is no consensus regarding the goals or aspirations of the Medical School.

Clinical relationships

A great deal of concern was expressed about the relationship with Fairview Health Services. Interviewees mentioned a discordance in fundamental values and missions, challenges with clinical training sites, and barriers to interprofessional education, as well as problems with funding for the Medical School.



This relationship, its origins, and its future are consuming the discussions of clinical care at the University to the exclusion of preparation for changes in care resulting from healthcare reform and development of new clinical partnerships.

Recommendations

1. Update the administrative structure of the AHC for 2012 and beyond

The committee heard a number of concerns about the size or purpose of the administrative structure that supports the Academic Health Center.

While the origins of the shared services model make sense, to move forward, the priority must be to determine the right-size structure for 2012 and for 10 to 15 years from now. The services should be sufficient to provide quality support to the health sciences schools and colleges, as well as the research enterprise, interprofessional education, and the centers, without adding unnecessary staff and burden to the operation. And this must be done in a transparent and highly visible fashion, to attain the requisite buy-in from rank-and-file faculty members.

The committee believes that there is an opportunity to make changes to update the role of the AHC administration, and to centralize or localize functions where appropriate. Specifically, the committee heard that there is support for a more central connection for AHC Information Technology Services and Human Resources. Interviewees identified that this type of connection worked well for the legal and financial services offered by the AHC. Whether changes are necessary or all of the services stay in place, an important step is clearly communicating the role, purpose, and value of the AHC administration going forward.

We understand that many aspects of this work have been reviewed and analyzed several times over the past 10 to 15 years. It is likely that decisions can be made with a thorough review of that work. The president may also consider an external audit of these functions, but whatever route is chosen, faculty representation is critical, and the visibility and transparency of the process and conclusions even more so.

2. Determine the leadership structure of the health sciences

As noted, there was a great deal of discussion about the dual role of vice president for health sciences and dean of the Medical School. Each different leadership model—whether this is one position or two—has pros and cons.

The committee believes that there is a great deal of work that needs to be done: The Medical School needs to improve and the University needs a clinical delivery strategy that is far less “dependent on the kindness of strangers.” In order to focus on that work, the leadership model that is best for the University of Minnesota needs to be decided.

There is no right answer. We will offer an analysis of the options available. However, we also believe that regardless of the model chosen, the definition of vision and clear strategic priorities is imperative and should be articulated and strongly endorsed by the president as soon as the structure and leadership are determined; in our opinion no one else can substitute.

Model 1: Continue a dual leadership role, possibly augmented by an adviser for health systems strategic decisions

The committee discussed during several interviews the differences between a dean who is purely academic, and a dean who is both academic and executive (in the vernacular referred to as “weak dean” and “strong dean” models, respectively).

With the broad agreement that the Medical School needs to be stronger, it follows that the school will require strong leadership. Executive/academic dean positions generally have at least two of the following three responsibilities: oversight of a practice plan, leadership of a hospital, and/or responsibility for other health sciences schools.

At the University of Minnesota, the hospital is owned by Fairview Health Services, the dean has some responsibility for the practice plan, and the other health science schools report largely to the provost and only to the vice president for health sciences for interprofessional education and clinical work. In addition, the larger centers (including the Clinical and Translational Sciences Institute and the Masonic Cancer Center) are a part of the AHC, not the Medical School. Separating the dean and vice president for health sciences positions therefore leaves the dean’s job relatively weak, which could adversely affect the ability to strengthen the Medical School.

Under this model, because improving the Medical School is a priority for the University and because the University is involved in a complicated clinical relationship, it may make sense for the leader to hire a senior adviser to develop a health systems strategy in order to effectively allow for both jobs to be done by one person.

Model 2: Separate roles, each with clear responsibilities

In this scenario, it is critically important to ensure the Medical School dean’s and the vice president for health sciences’ positions are of sufficient magnitude to attract outstanding leaders.

To strengthen the dean’s role, consider giving the dean of the Medical School more responsibility for the practice plan. This may be accomplished by having the dean also chair the Board of University of Minnesota Physicians. Also consider moving the large centers of research currently administered in the AHC to the Medical School.

The vice president’s role, in addition to health system strategy work and an emphasis on external relationships, could have more oversight of the health sciences schools, either with or without responsibility for promotion and tenure.

For this scenario to work, it will be essential to find two leaders who can work effectively together.



Model 3: Medical School dean with a vice president of clinical services title, and a rotating convener of the health sciences schools

In this model, the dean of the Medical School assumes the clinical and research responsibilities currently held by the vice president for health sciences. The Deans' Council would continue to meet, convened by a rotating chair, for work on mutual priorities and interdisciplinary education and research.

This model creates an executive/academic Medical School dean position and relieves the conflict of interest concerns expressed by deans of the other health science schools. It, however, loosens the association between the health science schools, which may affect the collaborative work currently being done. It would be difficult to have substantial administrative responsibilities under the authority of a rotating leadership.

3. Implement strategic planning for the Medical School

We heard from many interviewees that the Medical School needs a vision of where it is going and how it will get there. The faculty needs inspiration—a “north star”—perhaps in no area more mission critical than research (see point 4, below).

To begin to refocus the Medical School on the future (rather than the problems of the past) the review committee recommends that President Kaler charge the dean of the Medical School to carry out a strategic planning process. This process should broadly involve faculty and staff, as well as the research and healthcare communities. At the end of the process, it is critical that the plan is endorsed and embraced by internal and external stakeholders.

A new, inspirational vision will be important both for driving excellence internally and for building support in the community. Advocates and philanthropists in Minnesota will be an important part of ensuring continuing prominence of the University and the health sciences.

4. Strengthen the focus on the Biomedical Discovery District

The Biomedical Discovery District (BDD)—with the focus on collaborative research, the new flexible space, and the targeted areas of excellence—is a golden opportunity to improve research funding and rankings. The committee was struck by how infrequently the interviewees even mentioned the potential for excellence the BDD can engender, but we believe strongly that this is an exciting opportunity for the University and must be an area of planning and focus.

The committee recommends the University determine the scientific priorities with an emphasis on what will be the strength of the University's health sciences. One possibility is convening a space planning committee and building around the best faculty/researchers in the new space, while ensuring representation from a broad range of disciplines. Obviously, the Medical School strategic plan should dovetail with the emphasis planned for the BDD.



Ultimately, investment in targeted faculty recruitment in determined areas of excellence will drive increased National Institutes of Health and industry funding, economic impact, and school rankings.

5. Develop a strategy for healthcare reform

Analyzing the full scope of the legal relationship between the University and Fairview Health Services was outside the work of this committee. However, we understand that in addition to financial challenges, there are longstanding agreements between the two organizations that would make dissolving this relationship extremely challenging.

The work currently under way to redefine the relationship through the integrated structure, to partner more effectively, and to drive resources to the Medical School is important to the long-term success of the health sciences.

At the same time, it is not enough to wait for this relationship to improve. In the Twin Cities market, 60 percent of physicians are employed. As that number increases, it will have significant implications for the University's specialists.

The committee recommends that University of Minnesota Physicians and the AHC work to strengthen and develop new clinical partnerships in the community and regionally to improve access to clinical training sites and to improve market share. It is also worth exploring expanding the University's role in primary care and in health outcomes research. The committee feels that this aspect of clinical development cannot be overemphasized. The University must take an aggressive posture in becoming self-sufficient in the healthcare marketplace; otherwise, the clinical research, training, and revenue possibilities that come from a robust healthcare endeavor will be even more endangered.

The rapid pace of healthcare reform requires the University to participate and to lead. The UMP is highly respected within the region, but its success in making an important clinical impact is being held back by the priorities of its hospital partner. Success in today's marketplace requires that energy be redirected from a focus on past decisions to how the University's clinical practice can succeed in the future.

Conclusion

The University of Minnesota's Academic Health Center is strong. It plays a major role in the development of healthcare professionals for Minnesota and the nation, provides quality clinical care, and has a long history of important research breakthroughs.

The College of Pharmacy, School of Dentistry, and College of Veterinary Medicine are well ranked and play critical roles as the only schools for their professions in the state or region. The School of Public Health is a top-ten school, and the School of Nursing is playing a pivotal role in training nurses at the top end of their professions and with its growing research portfolio.



The Medical School has faced a number of challenges over the last two decades but is the main provider of physicians in Minnesota, offers the metro area's largest specialty practice plan, and has strong faculty performing groundbreaking research. The critical components exist to reverse the negative reputational trajectory and feelings of malaise that exist.

With the changing healthcare environment and the rapid pace of the biomedical sciences, the breadth of the expertise at the University of Minnesota—within and outside the Academic Health Center—offers great opportunity for excellence.

With new vision, important structural and leadership decisions made, and a focus on the future, the committee believes the goals expressed by President Kaler and those within the health sciences will be realized.

We thank all of you who participated for your time and candor.



External Review Committee

Dr. Kenneth Kaushansky

Dr. Kaushansky is the senior vice president for health sciences and dean, School of Medicine, at Stony Brook University. He previously served as professor and chair of the Department of Medicine at UC San Diego and as faculty at the University of Washington and Hematology section chief at the University of Washington Medical Center. Dr. Kaushansky earned his B.A. and M.D. degrees from the University of California, Los Angeles, and completed his residency and fellowship at the University of Washington.

Dr. Kaushansky has earned many awards and honors, including the Outstanding Investigator Award from the American Society for Medical Research and the Dameshek Award from the American Society of Hematology. Dr. Kaushansky is a member of the Institute of Medicine, the American Society for Clinical Investigation, and the Association of American Physicians.

Dr. Lee Goldman

Dr. Goldman is the executive vice president for health and biomedical sciences and dean of the Faculties of Health Sciences and Medicine at Columbia University. Previously he served as professor and chair of the Department of Medicine and associate dean for clinical affairs of the School of Medicine at the University of California, San Francisco, and professor of medicine at Harvard Medical School and professor of epidemiology at Harvard School of Public Health. He received his undergraduate degree, master's degree in public health, and medical degree from Yale University. He did his clinical training in medicine at UCSF and Massachusetts General Hospital, and in cardiology at Yale New Haven Hospital.

Dr. Goldman has published more than 450 scholarly research articles and is the lead editor of the recently renamed Goldman's Cecil Medicine. Dr. Goldman is a member of the American Society for Clinical Investigation and the Institute of Medicine. He has served in leadership positions in a number of organizations and has received the highest awards from the Society of General Internal Medicine, the American College of Physicians, and the Association of Professors of Medicine, as well as the Outstanding Achievement Award from the American Heart Association.

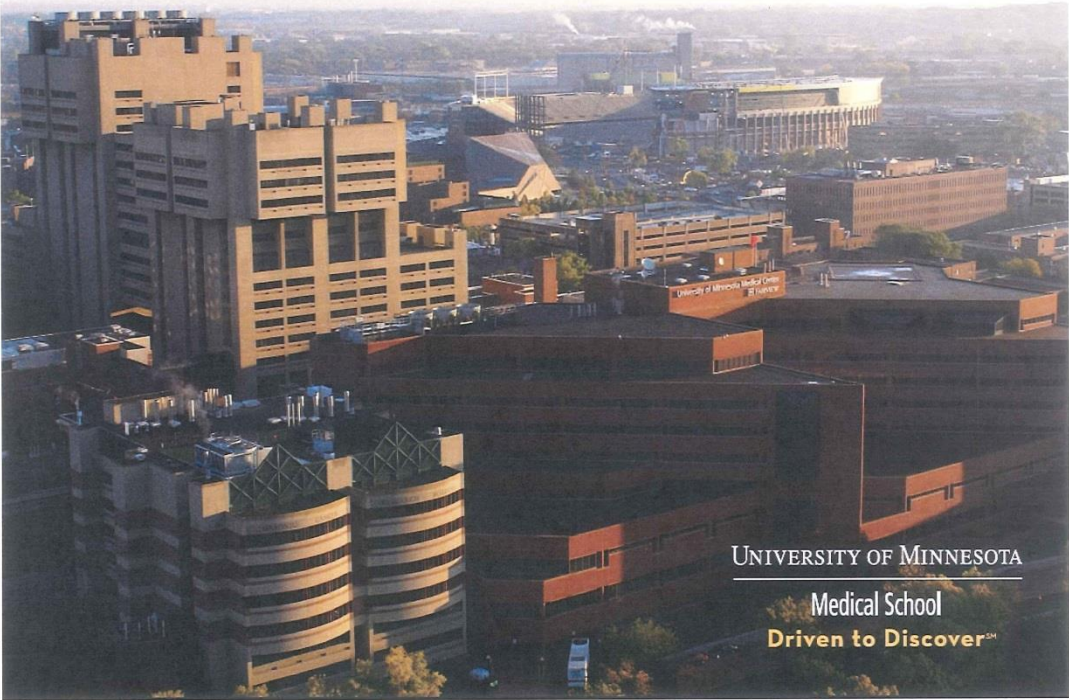
Dr. Carol Aschenbrener

Dr. Aschenbrener is the chief medical education officer at the Association of American Medical Colleges (AAMC). Before joining the AAMC she spent seven years as a consultant to academic health centers, focused on strategic planning. Previously she served as the chancellor of the University of Nebraska Medical Center and held various positions in the Dean's office at the University of Iowa College of Medicine. Dr. Aschenbrener received her B.A. from Clarke College, her M.S. from the University of Iowa, and her M.D. from the University of North Carolina. She did her residency training at the University of Iowa Hospitals and Clinics.

Dr. Aschenbrener has served on the LCME, the ACGME, the Iowa Medical Society Board, and the AMA Council on Medical Education.

Adopted 2013

Strategic Vision 2025



Message From the Strategic Planning Committee: We Must Create A Culture of Excellence

The University of Minnesota Medical School educates medical students and graduate physicians, provides patient care, and performs biomedical and clinical research through the hard work of nearly 1700 full-time and affiliate faculty, 2800 adjunct clinical faculty, and 1500 staff. Medical students are accomplished, graduating with an excellent education, high national board scores, and prestigious post-graduate training opportunities. The Medical School has committed to changes in medical education to meet the challenge of the evolving health care environment. Hospital and clinic patient care is highly rated by the patients and the medical community, and the new integrated structure for the University of Minnesota Physicians and the University of Minnesota Medical Center, Fairview, will increase the academic support for the Medical School. Research in many areas is highly funded with national prominence, and supported with new Biomedical Discovery District facilities. The University of Minnesota Medical School consistently ranks in the upper tiers of all medical schools. Our results and impact are impressive, but we aspire to be the best.

The faculty recognizes that significant changes are needed to enhance our research, educational innovation, and clinical impact both statewide and nationally.

RESEARCH: An increase in the research portfolio and NIH funding that is transformative, leading to national and international recognition of centers of excellence and faculty development.

EDUCATION: Innovative educational and research opportunities that prepare medical students for the changing practice of medicine in the future.

PATIENT CARE: Strong clinical programs and reputation that drive patient recruitment, faculty development, research, and education for the academic missions of the Medical School.

The faculty understands THEY are the agents of change. Faculty must drive recruitment, curriculum, promotion and tenure, patient care, and research. A review of high-performing U.S. medical schools, data review, and faculty input during the strategic planning process identified multiple challenges in our industry and environment. In partnership with the Board of Regents, President, University, and Health Systems, the faculty are committed to achieving a new level of excellence in research, clinical care, and education. A culture of excellence is the essential requirement for the Medical School to regain its position of excellence by 2025. The following Strategic Plan for the Medical School provides the platform to accomplish this vision.

OUR VISION:

To be a world-class medical school, advancing health at the forefront of learning and discovery.

OUR STRATEGIC INTENT:

Promote a culture that demands and rewards excellence.

Critical Strategies: Transforming Medical Care

1. Leadership that transforms the culture of the Medical School by demanding and supporting excellence in all aspects of our mission.
2. Research that distinguishes the Medical School through centers of excellence, scholarship, and the development of destination educational and clinical programs that change the practice of medicine.
3. Education that advances all aspects of medicine through innovative teaching and learning practices that set national trends.
4. Clinical Care that transforms the practice of medicine in a valued, patient-centered environment.

STRATEGY - LEADERSHIP: Leadership that transforms the culture of the Medical School by demanding and supporting excellence in all aspects of our mission.

RATIONALE: High-performing medical schools are built on a culture of clear expectations and milestones that demand and reward excellence. The culture of the Medical School must change. Hardwired systems of accountability built on clear metrics of excellence and defined reward and recognition are required. Our leaders – from the University President through the leaders inside each Department – must be held accountable in our pursuit of excellence and our resources must be prioritized to value and incentivize our best performers. Leadership turnover in the Medical School has prevented achievement of long-term planning goals.

METRICS OF EXCELLENCE:

- We encourage senior leadership to develop metrics based upon the following:
- Defined, measurable, and clearly communicated expectations of all staff, faculty, and Division/Department/Center/Institute leaders and programs.
 - Hardwired accountability systems – including evaluation, rewards, recognition, and consequences for failure – and methods to ensure application of expectations to all faculty, staff, and leaders.
 - Consistent measurement and enforcement, with transparency of results.

Key Initiatives	Objective	Timeline
1. Recruit a new Dean who is committed to long-term support for cultural transformation to ensure an environment that demands and rewards excellence.	Leadership focused on and held accountable to long-term excellence.	2014
2. Develop a rigorous and substantial leadership performance review process.	Ensure leadership accountability to excellence.	Begin 2013
3. Create a formal internal leadership development academy for high-potential faculty and staff, preparing our next generation of leaders. This program should be supported with appropriate centralized funding.	Develop our next generation of leaders.	2015
4. Hold all levels of leadership, including Department Heads and Center/Institute Directors, and affiliate leaders, accountable for achieving the metrics of excellence within their units through: <ul style="list-style-type: none"> • A more substantial faculty performance review process; • Better recognition for top performers; • Strategic recruiting; • Diligent long-term planning. 	Accountability to demand excellence.	Begin 2013

5. Develop metrics of excellence to measure Program and Department performance to prioritize investment.	Prioritization to direct resources towards excellence.	2014
6. Align other current sources of academic investment, such as the Dean's Tax, Academic Transfers, and committed Integrated Structure support, towards excellence, supporting the priorities outlined in this plan. As investments are made, outcomes should be transparently tracked over time so that results can be reported.	Align academic resources to support academic success.	Begin 2013
7. Transparently and regularly report Department, Center, and School-wide financial results and hold leadership accountable for sharing with faculty.	Increased transparency.	Begin 2013
8. Expect defined, accountable, and rewarded exemplary mentorship.	Reward and support development of successful faculty.	Begin 2013

STRATEGY - RESEARCH: Research that distinguishes the Medical School through centers of excellence, scholarship, and the development of destination educational and clinical programs that change the practice of medicine.

RATIONALE: High-performing medical schools establish, endorse, and nurture a culture of excellence in research and its dissemination through the allocation and reallocation of resources towards those faculty school-wide who demonstrate a sustained high-impact scholarship program. This generates high-impact research and national recognition.

METRICS OF EXCELLENCE:

1. Sustained high quality/impact scholarship, as determined by:
 - Quality of papers, patents, data sets (these metrics should be discipline specific);
 - Minimum of one paper/year as Senior Author following promotion to Associate or Full Professor, measured on a 5-year average; expectation is that faculty will exceed this minimum requirement;
 - Post-tenure award assessment (rolling 5-year periods, see Key Initiative #3 below).
 - Faculty member to identify best 5 high-impact papers and department to request outside evaluation from experts within the field.
2. Peer reviewed extramural grants or funding, as determined at Department or School level by:
 - Number of individual and interdisciplinary grants per faculty member;
 - External funding dollars per faculty member;
 - 50% of salary recovery on grants over a rolling 5-year period (for tenure track faculty);
 - Multi-grant portfolio at post-tenure award level.
3. Identify 5 aspirational peer institutions to determine appropriate number or ratio of physician-scientists.
4. Identify 5 aspirational peer institutions to determine appropriate number of K grants and career development awards.
5. Increase patient participation in clinical trials:
 - Achieve same participation rate as our 5 aspirational peers.
5. Increase in the number of national awards (HHMI, NAS):
 - Dean to set a target and goal.
6. Increase the number of collaborative research grants.

Key Initiatives	Objective	Timeline
1. Substantial investment for recruitment of a critical mass of early career faculty with a demonstrated potential for excellence in research in targeted areas. This should include: <ul style="list-style-type: none"> • Recruit 6-9 faculty as cluster hires across basic and clinical Departments, with at least 2-3 M.D.-scientists, supported by centralized funding. • Mandate rigor in every faculty recruitment process to ensure strategic use of resources and a diverse applicant pool. 	Develop a diverse pool that will be competitive for and result in HHMI appointment.	2014

<ul style="list-style-type: none"> Development of a "Biomedical Scholars" program, allowing new hires to compete for funding in addition to their start-up packages (non-renewable). 		
<p>2. Recognition and allocation of resources to mid-career faculty. This should include:</p> <ul style="list-style-type: none"> Development of an internal "Distinguished Scholars Program," allowing current faculty to compete for 5-year awards (in the range of \$250K/year) for research (renewable). Development of a "Dean's Distinguished Lectureship," a competitive honor for faculty making seminal research discoveries, accompanied with a monetary one-time award. Development of a "Physician-Scientist Scholars Program," supporting development and mentoring for a cadre of physician-scientists. Hold leadership (Deans and Heads) accountable to actively preparing and advocating for outstanding faculty to distinguished national awards (i.e., NAS appointment, HHMI investigators). Appoint a <i>standing advisory committee</i> to actively vet and act upon faculty recommendations made by leadership. 	Create competitive internal support for mid-career faculty.	2013
<p>3. Develop a rigorous annual review process for all faculty at the assistant professor level. This should include:</p> <ul style="list-style-type: none"> Developing initial plans for new junior faculty to clearly set expectations for promotion. Using the metrics of excellence for research to measure performance. <p><u>After award of tenure</u>, research faculty must undergo an intensive review every 5 years, to include outside evaluation by peers in their field to measure evidence of a sustained research program and scholarship, and to re-allocate resources as necessary.</p> <p><u>After promotion to associate professor (for non-tenure tracks)</u>, an intensive 5-year review process (similar to that described above) should be developed for non-tenure tracks to measure progress.</p>	More actively measure faculty progress.	Begin 2013
<p>4. Strategically build and leverage technological infrastructure and operational services that facilitate success of faculty and staff.</p> <ul style="list-style-type: none"> Strategically invest in the computational and physical infrastructures for tissue and specimen bio-banking as a resource for all investigators. 	Provide infrastructure support to enhance research outcomes.	Begin 2014

<ul style="list-style-type: none"> • Develop a centralized infrastructure that assists with vetting scientific ideas for translation as well as matching the appropriate ideas, investigators, and resources. The current Office of Discovery and Translation (part of CTSI) could be further developed to meet this goal. • Develop an infrastructure that will assist investigators with identifying and attaining funding sources for their research. • Create high-functioning computational platforms that leverage health information technology to facilitate research. 		
<p>5. Develop metrics for excellence in education and research for basic science graduate programs, to include the appropriate size and funding for the various programs, and to achieve better integration with faculty research.</p>	<p>Create a culture of excellence in basic science graduate education.</p>	<p>Start 2014</p>

STRATEGY - EDUCATION: Education that advances all aspects of medicine through innovative teaching and learning practices that set national trends.

RATIONALE: High-performing and state-supported medical schools are committed to supporting teaching excellence, educational innovation, and diversity to ensure its learners are prepared to be collaborators and leaders in the modern health care environment and meet the needs of the health care workforce for the entire state.

METRICS OF EXCELLENCE:

1. Ongoing success of student learners reported and tracked:
 - Students accepted to top institutions;
 - Students placed in leadership positions;
 - Board scores;
 - # of external fellowships for graduate students;
 - Feedback from clinical partners on trainee and learner preparation.
2. Number of students participating in basic or clinical research and discovery.
3. Percent of alumni donating to UMN.
4. Number of faculty promoted on the teaching track.
5. Number of faculty receiving teaching awards.
6. Student, resident, and fellow evaluations.
7. Educational scholarship (publications and other written scholarship).
8. Peer evaluation of teaching.
9. National leadership positions.

Key Initiatives	Objective	Timeline
1. Create an environment across the Medical School and affiliate sites to support exemplary education practices through a series of certification programs to include: 1) Master Teacher; 2) Program Directors; and 3) Program in Educational Leadership.	Expand the network of exemplary educators and develop educational leaders.	2014
2. Improve relationships with affiliate partners and community stakeholders to ensure a comprehensive learner experience in our community.	Improve and leverage community resources to improve educational experiences and outcomes.	2013

3. Strengthen curriculum changes that prepare our students, residents, and fellows for lifelong learning and the future of health care delivery.	Educate a physician workforce for the future.	Begin 2014
4. Develop metrics of excellence for GME programs that would allow for program stability and learner competency to be measured regularly.	Success and re-accreditation of stable training programs.	2014
5. To promote lifelong learning, medical student research and scholarship should be supported across the continuum, to include: <ul style="list-style-type: none"> – Seed support for and attainment of an institutional T-35 grant to improve medical student scholarship opportunities; – Intentional support to attain additional institutional R-25 grants to improve medical student scholarship opportunities; – Development of a database to match interested students to faculty research opportunities. 	Create a culture that values scholarship for all learners.	Start planning 2014
6. Develop an infrastructure that aids students as learners and faculty as educators.	Infrastructure for educational excellence.	Begin 2014
7. Increase philanthropy efforts to improve scholarship funds available for high performing and diverse medical students, with a deliberate attempt to improve retention of high performers.	Retain excellent and diverse applicants.	2014

STRATEGY – CLINICAL CARE: Clinical care that transforms the practice of medicine in a valued, patient-centered environment.		
RATIONALE: High-performing academic medical centers recognize and value a group of physicians who are considered superior, and who are distinguished from their peers, by an exceptional depth of knowledge in their field, by remarkable interpersonal and communication skills, by a commitment to professionalism, by drawing referrals and being sought out for advice and care for difficult cases, by being frequently asked to care for other faculty and family members of this medical community, by being skilled mentors, by creating scholarly work relating to their area of clinical impact and a commitment to acquiring and disseminating new knowledge, and by evidence of impact outside of their specialty area.		
METRICS OF EXCELLENCE:		
<ol style="list-style-type: none"> 1. Create a culture that values excellence in clinical care, with performance that is: <ul style="list-style-type: none"> – Safe; – Timely; – Effective; – Efficient; – Equitable; – Patient-centered. 2. Percent of clinical faculty teaching or patients cared for by learners (support education). 3. Participation in clinical research as evidenced by grant support, patient enrollment, and publications. 		
Key Initiatives	Objective	Timeline
1. Create an internal “Academy of Master Clinicians” within the Academic Health Center to recognize exceptional clinical care.	Visibly value excellence in clinical care.	2014
2. Begin an in-depth review of the Clinical Scholar track to better determine: <ul style="list-style-type: none"> – The type of scholarly activity and metrics for promotion and-reward that should be expected in this track; – The type of development and infrastructure needed to support this kind of scholarly activity; – Appropriate ranges of protected time to perform scholarly work that allows for faculty success; – The appropriate background faculty must possess who are hired on to this track; – The appropriate compensation model for clinical scholars across the Medical School. 	Identify keys to success for clinical scholars.	Begin 2013

3. Support the University of Minnesota and Integrated Structure patient care strategies for top decile clinical performance.	Align with current initiatives.	2013
4. Demonstrate integration with UMP Vision 2014 Strategic Plan: a culture of exceptional patient experience, and innovation through translational research, care delivery, and improvement of outcomes.	Align with current initiatives.	Begin 2013