



**University of Minnesota Academic  
Health Center**

Preparing for the Future

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Faculty Consultative Committee

A little over a month ago, I presented the comprehensive report I prepared for the Regents to this consultative committee.

I'm here today to follow up – and to share with you the work taking place within the Academic Health Center as part of the U-wide strategic repositioning effort taking place.

# What is an Academic Health Center?

- Educating and training the next generation of health professionals
  - Different way of thinking & making decisions
- Practicing in the competitive health marketplace to fulfill the mission
  - Core to education & financial model
- Performing health research that is principally funded by NIH
  - Pursuit of new knowledge – the “DNA of curiosity”
- Community partnerships with private practitioners and the health industry
  - Learning relationships that guide training of the next generation

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Let's begin by defining what an Academic Health Center is – all of you are familiar with the basic structure of the University's AHC – we have six individual schools, nearly 20 interdisciplinary centers or institutes, allied health programs, and offer 62 degree programs to more than 6,400 students who will become a majority of the health professionals in this state.

For today's discussion – however – I want to focus on what defines an Academic Health Center nationally – what's our core.

First is education - Core to our existence is our role in educating and training the next generation of health professionals – simply stated, we're a group of schools dedicated to educating, guiding, and influencing the professionals who will take care of you and your families – who will diagnose and make decisions about your health. Big responsibility on behalf of the state

Also – faculty within AHCs need to practice to fulfill their role – it's core to education (one can't teach what one doesn't do) – and practice is key to the financial model

Faculty within AHCs also perform important health and medical research – principally funded by the National Institutes of Health – Of course, this pursuit of new knowledge is an intrinsic characteristic of all faculty – the difference in the AHC is that it's new knowledge that ends in improving the care of patients or the health of populations.

Finally – AHCs can not be successful without community partnerships with private practice and health industry partners. We rely on learning relationships in the community that guide the training of the next generation.

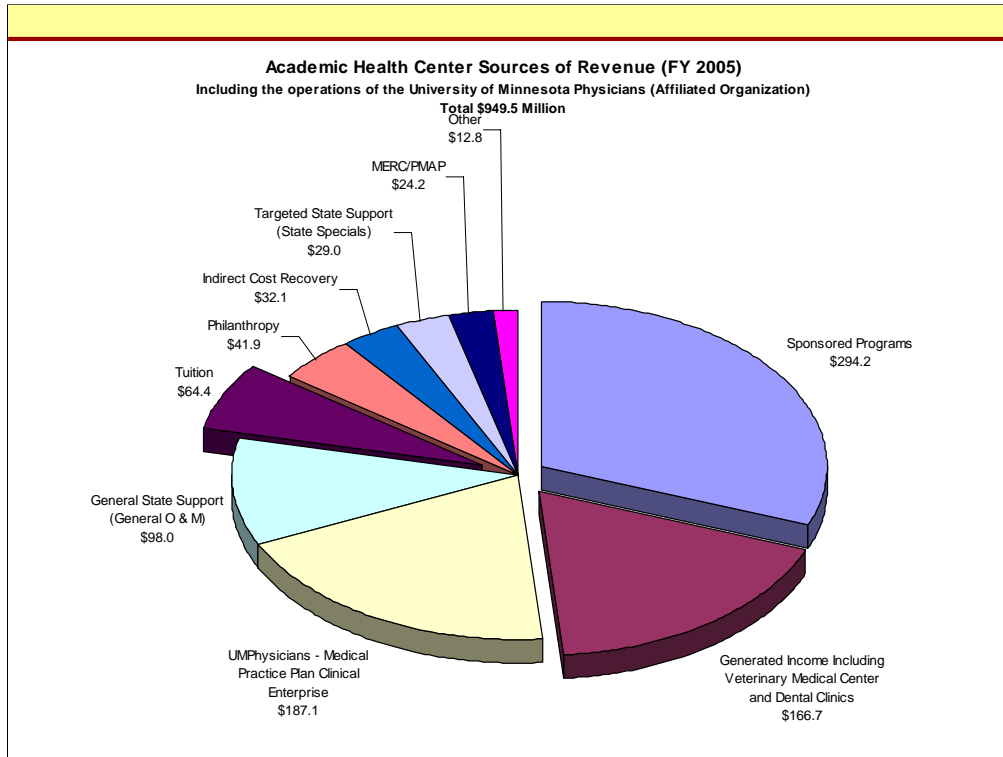
## Faculty in The AHC

- Prepare **two-thirds** of the health professionals practicing in Minnesota,
- **Discover new knowledge** to prevent and treat disease
- **Share that new knowledge** directly with the next generation of professionals and via the literature
- Provide crucial **outreach and service**, including clinical care to patients, and
- Attract **more than half of all federally funded research dollars** coming into the University

Since I'm here talking to faculty – let me focus on the AHC faculty for a minute – Frankly – I'm pretty proud of the results of our faculty.

You should know that the AHC faculty serving the University –

- Prepare two-thirds of health professionals practicing in Minnesota
- Discover new knowledge – promoting health, treating disease, and building bridges to new ideas.
- Share that new knowledge through our students and by publishing
- Touch thousands of communities through clinical service and outreach, and
- attract research dollars – more than half of all federal funding to the U comes to AHC researchers – faculty who are working to transform human and animal health.



You're all familiar with pie charts – So – here's the University's Academic Health Center – this represents nearly half of the University's operating budget with a billion dollars worth of revenue – I'd like to point to a few of these slices –

All of your schools have a slice for state support – or O&M dollars – for the AHC, that's about 10 percent of our operations. What's different for our schools is this blue slice, and then these maroon and gold slices

The blue represents the nearly \$300 million portfolio of sponsored research projects, and these maroon and gold chunks are the generated revenues of our faculty practice plans – we do have a veterinary medical center, and dental clinics – and the gold is the revenue generated by University of Minnesota Physicians slice. All of the clinical faculty who teach in the Medical School practice medicine through UMPHysicians.

Each of these slices I've pointed out has challenges currently – challenges we're preparing to tackle in the strategic workplan we're developing to take us to the year 2011 –

(why 2011? Because it's five years from now..and that's how far out we try to plan..)

## AHC 2006: Research Challenges

- No expected increases in NIH funding
- Lack of 21<sup>st</sup> Century research space hurts ability to recruit faculty and capture added research marketshare
- Need more collaboration with disciplines and professions across the University
- Need enhanced partnerships with the private sector for commercialization of new discoveries
- Research requires cross-subsidization
- Maintenance of the resource-hungry research infrastructure

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First set of challenges are to our research enterprise –

our future is challenged by impending limits on traditional sources of funding – federal funding is increasingly competitive and limiting.

**And then there's the issue of space – WITHOUT IT, WE CAN'T PLAN and we can't. Although we've replaced a number of buildings - a lack of research space—sufficient and up-to-date, sophisticated space, laboratories, and equipment—hampers our growth in research.**

**In particular, the lack of top-shelf space hampers our recruitment of outstanding faculty, for whom it's a seller's market.**

To make a difference in human health, this University is poised today – more than most others – to fully leverage all our disciplines to advance medical science. Our challenge will be how we foster those collaborations and provide the right incentives for doing so.

We've done a good job establishing systems for public/private partnerships – the model needs to continuously improve.

For every dollar we receive from the federal government, we need to find nearly a dollar more to support the indirect costs of doing the work.

**Staying ahead of the next generation of technology enables our scientist to be world-leaders.**

**It sounds challenging – and it is, but we have a vision...**

## AHC 2011 Research: *Talent Magnet*

- Established corridors of research, connecting discovery with prevention and treatment of disease
- Environment of innovation and creativity without disciplinary boundaries
- Support for new business development
- \$200 million in new sponsored research revenue
- More than 500 clinical trials; leveraging community clinical trials
- University-Mayo Partnership is meeting its outcome goals for the development of biomedical sciences in Minnesota

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In 5 years – this University will be part of the research teams that are on the cusp of a cure for Type 1 diabetes through stem cell research; We have pioneered the imaging techniques that have brought a drug for the treatment of early on-set Alzheimer's disease to market, we rank among a handful of destination centers for innovative outreach to stop the advancement of our country's obesity epidemic. We are shaping our area of competitive difference and shaping the new biomedical science economy of the state.

We've done this because we have become a magnet for top talent. And, we've established:

Well-developed **corridors of interdisciplinary research** within the AHC and across the University that connect discovery with application to care delivery and improvement of health in focused areas of excellence. **As examples:**

1. **Neuroscience: cognitive sciences in CLA are connected with translational science in Alzheimers and the clinical scholars are applying new therapies in the clinic.**
2. **Regenerative Medicine: Stem cells can be coached to become heart cells and are in clinical trials for the treatment of heart attacks.**
3. **Transplantation: The immunologists and cell biologists and working with the geneticists to create processes that enable organs to be transplanted with better and longer function and much fewer complications.**
4. **Nanobiology: The engineers have developed a nano-delivery system for a cancer bomb that precisely delivers the bomb to the cancer cells and destroys them.**
5. **Therapeutics: a. basic biology of solid tumors like prostate, lung, breast, and colon, are used to design and synthesize drugs that are targeted and specific that are then manufactured in the GMP facility and put into clinical trials for testing.**  
**b. Biomedical engineering and medicine are working in the Center for Device Development to bring new delivery systems new therapies, and new ways of managing the affects of paralysis.**

Imagine this example – touching all areas of our university:

A basic scientist in the Cancer Center discovers a receptor on a cell that stops the growth of a cancer; a medicinal chemist then discovers a compound that can activate that receptor and designs and makes the drug; the clinical trials unit proves the drug's efficacy; the technology is licensed into a new company to produce and market the drug.

# Value to Minnesota

## A Research Talent Magnet

A community of talented researchers and physicians driven to discover through the corridor of new knowledge to new care



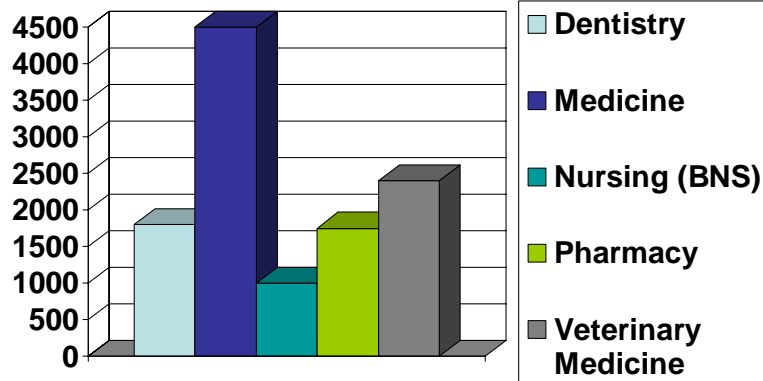
Great research is its own talent magnet, a true recruiting tool to bring others to our community –

True strength in neurosciences- in cancer – in BMT, or blood and marrow transplantation – in cell therapies That’s our goal for the state..

And that new knowledge becomes better care and treatments for patients, and sometimes those discoveries lead to start-up companies that become world competitors – like St. Jude Medical, Medtronic, and others.

Next area of challenge – evolving models of health professional education...

## Required Clinical Hours per Student



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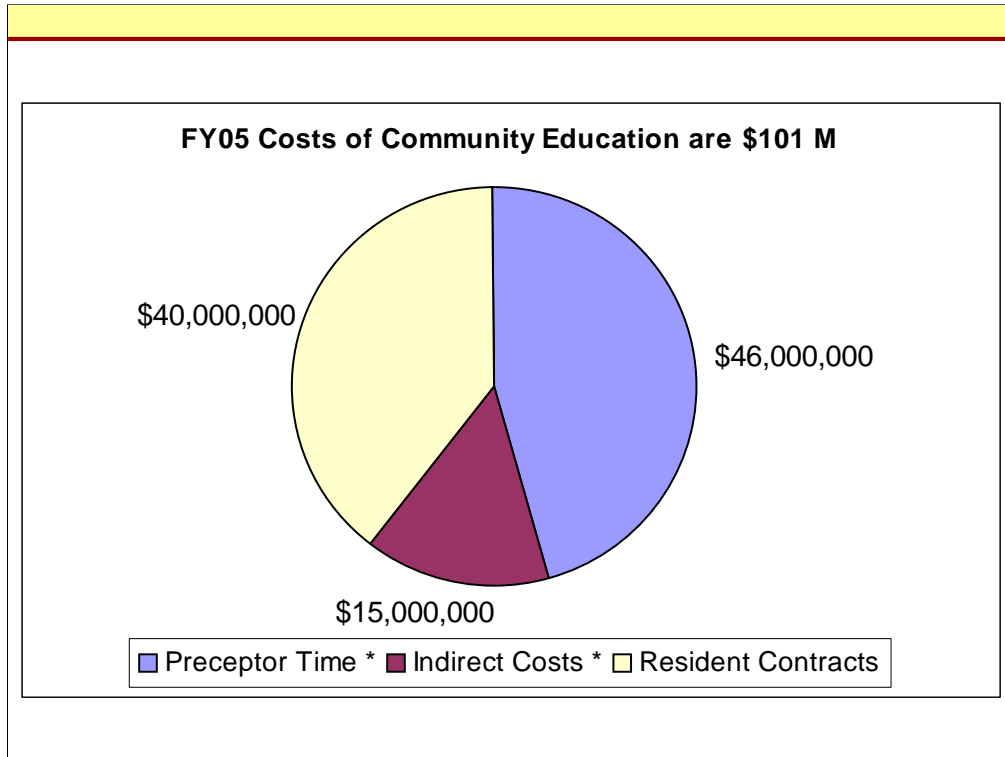
Here's one component of that education –

This chart represents the number of hours of experiential education required for each of the health care professions within the AHC. **Experiential education happens outside the traditional classroom under the direct supervision of a mentor/teacher. Hence, it is more akin to field training, and is the reason we have affiliation agreements with over 1000 community, clinic and hospital sites in the State of Minnesota. This model also allows us to recruit from communities and train in those communities, increasing the likelihood that the students will then practice in those communities. This model also provides us the opportunity to develop and test various models of care delivery that employ the various providers in different roles.**

**This experiential model means we are dependent on the communities, clinics, and health systems who help guide our students toward practice.**

**This represents a significant community contribution – and challenge to the AHC.**





**That contribution is even more apparent in this chart showing the real costs for our community affiliates.**

**The Preceptor time here is pro bono to the Medical School. The resident contracts and indirect costs are currently paid by Medicare a source of revenue that will be going away over the next several years.**

**MERC dollars are in addition to this, and follow the students**

We do have a vision for our educational effort in 2011 -

## AHC 2011 Education: *Mark of Distinction*

- Future health professionals thrive in an patient centered environment of continuous learning and improvement.
- World-renowned scholars in clinical sciences
- Recognized for interdisciplinary models of education and care delivery
- Fully engaged in community partnerships along the spectrum of health care needs
- E-health is real

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Through work of the strategic positioning task forces within the AHC we have a much clearer vision of the educational mark of distinction we can accomplish by 2011 -

Future health professionals will thrive in a patient centered environment of **continuous learning and improvement**.

We will be World-renowned **scholars in clinical sciences**

Recognized for **interdisciplinary models** of education and care delivery

Fully engaged in **community partnership** along the spectrum of health care needs

**E-health** is real – education platforms, online learning, immediate knowledge always accessible.

## Value to Minnesota

### Educational Mark of Distinction

Relationship with practice partners informs professional education – driven to be

- cost-effective,
- patient-centered,
- quality focused,
- systems-based,
- lifelong learner graduates.

Education impacts and frames care delivered by two-thirds of health professionals practicing in Minnesota

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Accomplishment of those goals will provide true value to Minnesota – and to our community partners throughout Minnesota.

And for the final core component of our vision for 2011 – the clinical sciences..

First a bit of definiton

# Clinical Sciences Enterprise In an Academic Model

- Patient care
  - Students as part of a team of care providers
  - Environment of inquiry and discovery, seeking answers and new solutions\*
  - Creates the “meaning” for the research and development
- Core to role of faculty
  - “Can not teach what you do not do”
  - Connects new discovery with disease
  - Critically challenges the existing state of practice
- Provides essential support to education and research mission

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## So what is the clinical sciences enterprise?

**It's part of the braided mission of education/research/and care that characterizes an academic health professional – it can be seen in patient care..**

**Students are part of most teams who care for patients** – and yes, having students on the team has a profound impact on care – and perhaps not in the way you would think at first.

**think of the last time you taught a son or daughter or any other young person how to do something – there are a series of “whys” and “hows” asked that cause you** to rethink your assumptions. In medicine – that process of rethinking assumptions and asking questions can be life-saving –

Wattenberg story – one of our more famous retired faculty members who discovered the anti-cancer properties of broccoli had a cut on his hand that wasn't healing, and he became ill while playing tennis. When he showed up at the U of M ER, the on-call doc was shadowed by a student who saw the cut and thought it looked like something she'd just learned about...the student curiosity led the doc to go beyond merely treatment and discharge and Dr. Wattenberg's life may have been saved when a serious staph infection – a flesh-eating bacteria – was diagnosed and specialized treatment was begun

**This care takes place within an environment of inquiry and discovery** – seeking answers and new solutions to medical and health questions.

McMillan story – I heard recently of the experience of one of our young physicians who saves the lives of children with cancer through bone marrow transplantation. One of the major complications from that lifesaving procedure is something called “graft versus host” disease that can be a barrier after 30 to 50 % of transplants. However – this doc tells me that because she moved to the U with its basic, translational, and clinical science strengths, she's found the support she needs for her natural impatience with that kind of complication rate – a 30-50% rejection rate is just not good enough –so one of her colleagues who works with mice has learned how to reduce that complication rate, and Margy McMillan has received FDA approval to take that new protocol to her patients within the next few months to cut that rate of failure – again that natural impatience of physicians with results that are less than perfect is heightened in an academic environment where they rub shoulders with basic scientists.

The clinical sciences enterprise – as seen in **our clinics and hospitals are core to the ability of our faculty to perform their teaching role.** You know the adage – You can not teach what you do not do – and our faculty must continue to practice their professions in order to teach the next generation to practice as well. This follows the apprenticeship model – working alongside a professional to learn how to practice your profession.

**And finally – the financial impact is core.** The revenues generated by our care of patients supports the education and research mission of the University. Nearly all revenue generated by the clinical enterprise is reinvested in the AHC enterprise. So – what are the successes and challenges of the current enterprise?

# AHC 2006: Clinical Sciences Success & Challenges

## **Success**

- Clinical research: 150-200 clinical trials per day
- Nationally recognized GMP test article production facility
- Clinical Scientist recruitment and mentoring program
- Established pipeline for moving technology into commercialization

## **Challenges**

- Need to recruit and support clinical scientists
- Need to recognize clinical scholarship
- Need updated clinical facilities to support the mission
- Increased demand for practice plans to cross-subsidize the education and research missions.

-We are conducting up to 200 clinical trials each day –

-We have a nationally recognized facility to produce “GMP test articles...(define GMP)

-We have established a program to recruit and mentor clinical scientists

-And have established pipelines, or corridors for moving new technologies into commercialization...

Still, we face challenges.

Recruiting excellence takes time – in some cases years

We also need to recognize clinical scholarship with new models of support.

**Our clinical facilities do not support the clinical research and the education of the next generation of health professionals. The clinics were designed for a care model that was used 30 years ago and were not designed for the over 300,000 patient visits that now occur. Our pioneering partnership with Fairview through the University of Minnesota Medical Center relies on a facility that can not support the volume of activity needed for our academic enterprise.**

**And finally – the practice plans – where clinical science takes place are being called on to subsidize more and more of the education and research mission of the AHC.**

**Again – those challenges did not stop the results coming from the strategic positioning task forces – and here’s the vision for 2011**

## AHC 2011 Clinical Science: *Destination of Choice*

- Destination of choice for clinical scholars, whose work informs policy and practice in prevention and treatment of disease.
- University of Minnesota Physicians expansion; encompassing cross-disciplines and the spectrum of health needs
- Technology – right time, right place, and into the community
- Pioneering Fairview partnership competes effectively to support academic mission

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The University of Minnesota is a destination of choice for clinical scholars whose work will improve health care policy and practice.

They see University of Minnesota Physicians in 2011 as an integrated group practice that encompasses medicine, pharmacy, nursing, and dentistry. It incorporates wellness, disease prevention, and chronic care management into an efficient, electronically supported evidence- and best-practice-based system of care delivery.

The University is the destination of choice for patients seeking the leading edge, patient-centered care – offering break-through knowledge for preventing and curing diseases.

Technology – our e-health reality – works to benefit patient privacy, access to the most current medical practice and expertise, ensure the seamless participation in the clinical experience, and provide choice for the patient.

They see a relationship with Fairview Health Services in 2011 that supports the education and research mission of the Academic Health Center and competes effectively in the health marketplace.

## Value to Minnesota Care Destination of Choice

Clinical sciences enterprise provides care throughout the state – and draws patients from around the world

Innovative Genesis for:

- Cardiovascular Care
- Transplantation
- BMT Breakthroughs

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The value to Minnesota of achieving our 2011 vision is important -

Of course, many of our programs today draw patients from the world – certainly in transplantation and BMT breakthroughs...

I use this idea of innovative genesis to make a point – we have achieved great things at the U – and we're poised to do so again..

It was only 50 years ago when a heart surgeon at the U decided it was unacceptable that children with small holes in their heart had to die. Other children's hospitals – including our esteemed colleagues from Boston – stopped trying to repair children's hearts because the risk was so high. But Walt Lillehei didn't stop – he thought these kids needed a chance for long lives, so he persisted – and today, surgery that same surgery – the atrial septal defect repair – is practically routine. That's what being driven to discover does – it takes the frontiers of medicine and makes them routine –

**So your question is – how do we get to 2011? I'm glad you asked -**

## Getting to 2011: Education

- Develop and implement education models that transform care delivery and support prevention
- Implement effective interprofessional education through all stages of professional development
- Recognize and reward education work and innovation
- Strengthen community-campus partnerships with statewide and international learning platforms
- Master learning technology and create an environment of continuous learning
- Set effective performance expectations for education
- Reduce the time and cost of a health professional degree

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Let's start with Education -

What we've outlined in education can best be described by our friends in the business community as **continuous quality improvement**.

To get there, we are developing leadership models of health professional training and increasing our interprofessional training, because health care now is delivered by teams. We are deepening our partnerships to better respond to local and statewide needs for health professionals and to better reach underserved communities. We are making more profound our mastery of technology and information systems to better teach our students.

We cannot state this enough – it is an education imperative for Minnesota and the country. We must reduce the time and cost of a health professional degree.



## Getting to 2011: Research

- Build effective corridors that integrate discovery with application of knowledge
- Recruit the most capable faculty
- Enhance the corridors of discovery to be more efficient and effective
- Leverage research strengths – make smart investments
- Set research performance expectations
- Continue the development of the University-Mayo Partnership

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Now – on to research – to achieve our vision for 2011 –

As we detail in the report, to become a top-three public research university, we will need to **increase our research funding by \$160 to \$250 million. New faculty would number between 470 and 830**, depending on the assumptions. **Costs for each one would be about a half-million dollars**, typically, to equip a lab and pay for work until the grants are written and awarded.

Moving knowledge from the bench to the bedside – we must have corridors of collaboration that enable that work to move more quickly to the patients who demand it. We will build on existing relationships, such as the U-Mayo partnership, as well as finding new ones.

And we will continue to leverage the strengths of this institution in health sciences as well as engineering, chemistry, and other disciplines – enabling this institution to be seen as a unique asset with a unique and unparalleled research mission.

We will make smart research investments and set high expectations for results in research. We will make choices – choices that mean strategic investments faculty and their infrastructure of advance core scientific strengths in the new biology.

## Getting to 2011: Clinical Sciences

- Increased efficiency and effectiveness of clinical research
- New prevention and care delivery models
- Bridge knowledge management into health care delivery
- New strategic relationship with Fairview
- Recognize and reward clinical scholarship and practice

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The exciting vision for clinical sciences will require –

Increased efficiency and effectiveness of clinical research

New models of prevention and care delivery

Bringing knowledge management into health care, through health informatics, competencies education, and improved links to information systems. Evidence and best practice with continuous improvement must become the core of decision-making for care delivery.

New facilities to support the new care delivery and to compete effectively in the marketplace. The current inpatient and outpatient facilities now are supporting more than three times the patient visits they were designed to accommodate.

A leadership group from AHC, Fairview, and UMPHysicians has been working for several months on a new model for our pioneering relationship with Fairview—and I'm very optimistic for the future.

**There's one more part of securing success for our future vision of 2011 – and I'm talking about those foundational fuels for an AHC – facilities and finances.**

# AHC 2011 Facilities and Finances

## Facilities

- Minnesota Biomedical Sciences Research Facilities Authority realized and operational
- Facilities and faculty that efficiently and effectively support research
- New clinic, children's hospital and enhanced adult care delivery services that are cutting edge in their practice models

## Finances

- Expanded sources of revenue – philanthropy, private industry, sale of education enhancing tools
- Increased partnerships and relationships of investment
- State of Minnesota has invested in the vision

In our vision for 2011, the Minnesota Biomedical Sciences Research Facilities Authority has been successfully implemented. I want to return to the present for a moment to say that we came a long way during the last session of the legislature and I believe we will have an opportunity next year to re-introduce this proposal for four new research buildings over 10 years.

But back to the future: The first building, the Medical Biosciences Building, is now filled with scientists performing **cutting-edge research in cancer, infectious disease, and immunology**. A second biomedical research facility is under construction. It will house interdisciplinary activities in **neuroscience, nanomedical science, and other programs that jointly engage the Institute of Technology** and the Academic Health Center.

**We have recently opened our doors to the finest children's hospital in the region – marking Minnesota as a leader in pediatric services**

**In 2011, our growing revenues rely on philanthropy, partnerships with industry and clinical care, external sales from education programs.**

**We are partnering with the health systems and communities to determine number of health professionals needed and developing the financial model to produce that workforce.**

Based on the return on investment to this state and its citizens, the State of Minnesota invests in the vision with the University.

And how do we achieve this?

## Getting to 2011: Facilities and Finances

### Facilities

- Educational facilities reflect patient-centered service
- Enact Facilities Authority to accomplish research goals
- Build new facilities to support clinical research and care delivery with technology of tomorrow

### Finances

- Capture increased market share of federal grants
- Support growth through successful clinical enterprise
- Expand philanthropic outcomes
- Develop new lines of mission-based revenue, e.g. learning technology
- Successful technology commercialization

To realize this future, we need facilities to train tomorrow's clinicians in a patient-centered, service driven model; facilities with technology to enhance efficient and team-based learning

We cannot hope to recruit top talent without first getting us on track for a new research facilities.

I hope you will support our efforts when we go back to the Legislature next session for the facilities authority. We need this investment so that we don't fall behind other states, who are making substantial investments in research.

Our faculty need **space**. As we hire over 500 new faculty, we would need up to 600,000 square feet of lab space, at a cost of some \$370 million. The return on this investment will be fantastic.

To be a destination of choice for care – new models – again, patient-centered models – will advance the institution the pipeline of leading –edge research, and the experience worthy of our patients.

## Making It Happen

- Leverage the disciplines inside and outside the AHC to compete for research dollars – target our strengths!
- Leverage the interprofessional nature of the AHC to develop new education models and to compete in the marketplace
- Develop integrated research and service corridors
- Recruit the faculty and invest in the facilities
- Develop a sustainable financial model to support growth
- Drive efficient and effective education paradigms and platforms.
- Build strategic alliances in the marketplace
- Assume leadership role in transforming health care

In summary:

**This University has a unique AHC. Few other institutions in this country can claim to be home to a more comprehensive center of health professionals who can easily reach across streets, campuses and buildings to partner with leaders in the fields of engineering, food and nutrition, agriculture, information technology, law, and public policy. We must leverage this strength to move ahead and achieve the vision that is within our grasp!!**

**We are not building from scratch – our vision is one built on moving beyond foundation success and toward national excellence.**

Leverage the disciplines inside and outside the AHC to compete for research dollars – target our strengths!

Leverage the interprofessional nature of the AHC to develop new education models and to compete in the marketplace

Develop integrated research and service corridors

Recruit the faculty and invest in the facilities

Develop a sustainable financial model to support growth – **Cost of education and doing business must be reduced.**

Drive efficient and effective education paradigms and platforms.

Build strategic alliances in the marketplace

Assume leadership role in transforming health care

## Conclusion

- Academic isolation is not our future. Success will occur where we cross boundaries.
- An academic health center provides the core of a world class university that is devoted to human and animal health, as well as to the breakthroughs that promote health and treat and cure disease.
- ***The AHC needs a strong University to succeed and the University needs a strong AHC. Together we become a top-three public research university.***

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During this presentation, I have pointed out highlights of the AHC's current situation and future prospects. Compared with the past, today's AHC is operating from a stronger position, with faculty and staff in the institution clearly focused on future opportunities and expanded internal and external relationships.

There is more to be done. There are no top three public research universities without a successful academic health center.

An academic health center is the core of a world class university devoted to human and animal health, and to the breakthroughs that promote health and treat and cure disease. To be successful, we will need the support and understanding of the Regents.

Combining the strengths of this institution will provide the foundation for the University to advance to its aspirational goal of becoming top three among public research universities, and will allow the AHC to advance to its next level of development.

Thank you.

## Getting to 2011: Clinical Sciences

- Increased efficiency and effectiveness of clinical research
- New prevention and care delivery models
- Bridge knowledge management into health care delivery
- New strategic relationship with Fairview
- Recognize and reward clinical scholarship and practice

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