PathFinders: Advancing Personalized Health

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Introduction

**Charge**: “Further development of University-wide strategy for personalized medicine”

**Mission**: “To develop a framework and strategy to guide personalized health across the state of Minnesota that is accessible, dynamic, and aligned with our strengths.”
Methods

1) Establish Definition:
Precision medicine vs Personalized Health

- **Precision Medicine** - focused on genetics and genomics

- **Personalized Health** - patient centered approach that can include genetics/genomics but also includes health and well-being, prevention and treatment, individual behaviors, and environmental and social factors.
Methods

2) Performed External Reviews:
U Wash, Vanderbilt, Baylor, UCSF, Harvard, MD Anderson, U Penn, Mayo, Essentia Health

3) Performed Internal Interviews:
Pamela Jacobson, Genevieve Melton-Meaux, Gerry August

4) Conducted a Focused Literature Review
SWOT Analysis: Strengths

- Major health sciences educator in the state
- Comprehensive academic health sciences
  - Centers in genomics, drug development, bioethics, CTSI, health informatics, and Microbiota Therapeutics Program
- Faculty/staff with expertise and interest
  - Several ongoing personalized / precision health initiatives
- Strong relationships (Fairview, Minnesota Children’s Essentia, Industry, etc)
- Community engagement/extension
SWOT Analysis: Weakness

- Lack of unified strategy for personalized health
  - No centralized support and administrative structure
  - No FTE support for faculty/staff
- No current standardized clinical implementation of pharmacogenomics
- Inadequate integrated bioinformatics support and outcomes analysis support combining ’omics, EHR data, and social determinants of health for new discoveries
SWOT Analysis: Opportunities

- Create personalized health brand in practice, education and research
  - Differentiation: education, breath of research areas of excellence, statewide outreach/engagement
- Motivated faculty and staff
- Partnership outside of health sciences
  - Social work, sociology, law/ethics, urban planning, and community partners
- Financial
  - Revenue, research, monetize clinicogenomic data
SWOT Analysis - Threats

- Competition from other health systems with personalized health initiatives (Mayo)
- Lack of action institutionally
- Rapidly evolving technology and knowledge
  - Need to develop a dynamic, rapid learning system
- Sustainability and low funding from the State and shrinking federal government resources
Current University Personalized Health Initiatives

- UMN College of Pharmacy Institute of Personalized Medicine (IPM)
- Phase III Grand Challenges Initiative “Toward Pharmacogenomics- Enabled Healthcare at Statewide Scale: Implementing Precision Medicine.”
  - Formed the Minnesota Precision Medicine Collaborative (MPMC)
  - Goal: “Long-term goal is to build state capacity for pharmacogenomics research and clinical care, so every person in Minnesota will derive benefit from precision medicine innovations

- Proposals, Visions, and White Papers
  - Establishing a comprehensive Pharmacogenomics Enterprise at the University of Minnesota with State-wide and National Impact (September 25, 2019)
  - Establishing a Vision for Precision and Personalized Medicine at the UMN, by the MPMC (March 12, 2018)
  - Vision for Pharmacogenomics in the State of Minnesota, by the MPMC (January 16, 2018)
IMPLEMENTATION OF PHARMACOGENOMICS INTO CLINICAL CARE

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A Conceptual Framework to Guide Personalized Health Initiatives and Areas of Research Inquiry

Adapted from Thomas Glass and Matthew McAtee (Social Science & Medicine, 2006)
Guiding Personalized Health Initiatives and Areas of Research Inquiry

**Environment**
- Societal
- Community
- Institutional
- Interpersonal
- Individual (Mind/Behavior)

**Life Course**
- Childhood
- Adolescence
- Young Adult
- Midlife Adult
- Older Adult

**Ecological Systems**
- Factors that broadly influence the health of populations
- Factors that influence the health of neighborhoods and communities
- Characteristics that vary across workplaces, schools, clinics, and other institutions
- Characteristics that vary across families, friendships, and other close relationships
- Cognitive, affective, psychosocial, and behavioral factors that vary across individuals

**Biological Systems**
- Individual (Biology/Body)
  - Co-morbid medical conditions and biologic function/dysfunction
- Multi-organ systems
  - Microbiome/host response, tissue injury/inflammation
- Cellular function
  - Hormonal environment, exposure to medications
- Molecular function
  - Genetics that vary across individuals
- Genomic substrate

**Embodyment**
- Risk Factors
- Protective Factors
- Expression
Opportunities for Personalized Health Initiatives at UMN
**“New” Patient Experience**

Integrated cores
- Comprehensive Omics
- Health Informatics: Data analytics and outcomes
- Patient outcomes and social determinant core

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Patient reported outcomes/experiences

Interprofessional
Personalized
Healthcare Service:
tailored approach to
prevention and treatment
Short-Term (Year 1) Recommendations

- Charge an **multidisciplinary steering committee (with community advisors)** to further create a vision, leadership structure, and detailed strategy
  
  - Task the committee in focused areas:
    - Education — training new leaders
    - Practice — create an Interprofessional Personalized Healthcare Service
    - Research — new discoveries and innovation in personalized health
  
  - Refine the core infrastructure needed to be successful
    - Comprehensive Omics and Microbiome
    - Health informatics: advanced data analytics and outcomes
    - Patient reported outcomes and social determinants of health

- Investment in and alignment of core infrastructure and personalized health initiatives across focal areas
Intermediate Term (Years 2-3) Recommendations

- Create the University of Minnesota Center for Personalized Health
  - Integrate personalized health within all components of our mission (research, education, clinical work, service)
  - Address all levels of social ecology and biology
- Build and align core infrastructure needed to support initiatives
- Create, hire and launch the Interprofessional Personalized Healthcare Clinical Service and Educational Programs
- Launch a portfolio (RFAs) of transdisciplinary, community engaged research initiatives based upon the recommendations of the steering committee leveraging strengths
Long-Term (Years 3+) Vision and Recs

- Engagement and impact across the state, regionally and nationally
  - Extend scope of Grand Challenges to implement Personalized Health across the state
- Sustainable funding mechanisms
  - Work with the legislature and constituents to prioritize personalized health
  - Apply for center grants
- Continually ensure faculty support and incentive structures are adequate to support personalized health initiatives
Questions