

# The Health Systems Institute

## Shaping the Next Health Care Transformation

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**Health Systems Institute**  
A Georgia Tech / Emory Initiative

## Health Care Facts

- © \$57,000/second; \$1.779 Trillion in 2004
- © 15.4% of GDP
- © 7.2% projected annual growth rate
- © 45 Million uninsured (14% of population)
- © 30% of health care costs are administrative
- © Elderly (12% of population) consume 35%
- © 80% of health \$ related to chronic diseases
- © 25% of health \$ linked to risky behaviors

# Healthcare Systems Performance

- ◎ Fragmented industry
- ◎ Complex system
  - ◎ Nonlinear, dynamic, uncertain
  - ◎ Multi-agent, multi-stakeholder, multi-attribute
  - ◎ Distributed, uncoordinated decision making
- ◎ Lack of business case: value proposition
- ◎ Misaligned reward/incentive structures
- ◎ Lack of “product/process” specifications

# Changing Environment

- © Growing cost pressures
- © Aging of population
- © Growing complexity of science and technology
- © Biological and computing revolutions
- © Consumerism

# Health Care Transformation

## Current System



## 21<sup>st</sup> Century System

Provider-centered

Individual-centered

Price-driven

Values-driven

45 million uninsured

100% coverage

Hidden price and quality information

Transparent price and quality information

Knowledge-disconnect

Knowledge-intense

Slow diffusion of innovation

Rapid diffusion of innovation

Disease-focused

Prevention and health-focused

Paper-based

Electronically-based

Third party controlled market

Binary mediated market (individual – provider)

Process-focused government

Outcomes-focused government

Limited choice

Increased choice

Predatory trial lawyer litigation system

New system of health justice

Overall cost increases

Overall cost decreases

Quantity and price measured

Quality of care and quality of life

# Key Drivers of Transformation

- ◎ User-centered information and decision support
  - ◎ Patients/Consumers
  - ◎ Clinicians/Providers
- ◎ Patient safety and patient outcomes
- ◎ System and culture of quality and value
- ◎ Systems approach and systems alignment
- ◎ Information and communication technologies
- ◎ Biomedical and healthcare technologies
- ◎ Individual knowledge, responsibility and power to choose

# Health Systems Institute: An Agent of Change

© **Interdisciplinary** Initiative led by GT/Emory  
Department of Biomedical Engineering

© **Research objectives:**

- © design, develop, implement, and evaluate novel integrated, patient-centered, and personalized health care delivery systems that
- © capitalize on state-of-the-art information, communication, decision support, healthcare and biomedical technologies.

© **Mission:** transform healthcare delivery systems

# The Health Systems Institute

## Research Thrusts

- ◎ Health Outcomes and Quality
- ◎ Human Factors / Human-Computer Interaction
- ◎ Health Decision and Risk Analysis
- ◎ Biostatistical Modeling and Data Management
- ◎ Healthcare Information Technology
- ◎ Healthcare Operations & Logistics
- ◎ Adoption and Diffusion of Biomedical and Healthcare Innovations

## Focus Areas

- ◎ Integrative Patient-Centered Systems
- ◎ Pediatric Care, Health and Wellness
- ◎ Chronic Care and Disease Management
- ◎ Sustainable Aging
- ◎ Home Health / Telehealth
- ◎ Reimbursement and Payment Systems
- ◎ Health Policy

# Potential Solutions

- ◎ Data Management
  - ◎ Consolidation & Standardization
  - ◎ Configured for analytics and data mining
- ◎ Information Technology tools
  - ◎ Analytics/Business Intelligence
  - ◎ Clinical Decision Support
  - ◎ Research
- ◎ Rapid Deployment of New Knowledge to the Practice
- ◎ New Models of Care Delivery

# Cornerstone

## Traditional Medical Evaluation and Record

- ⊙ Chief Complaint
- ⊙ History of Illness
- ⊙ Past Medical History
- ⊙ Family History
- ⊙ Social History
- ⊙ Physical Exam
- ⊙ Diagnostic Tests
- ⊙ Assessment and Plan

## Personalized Prospective Evaluation and Record

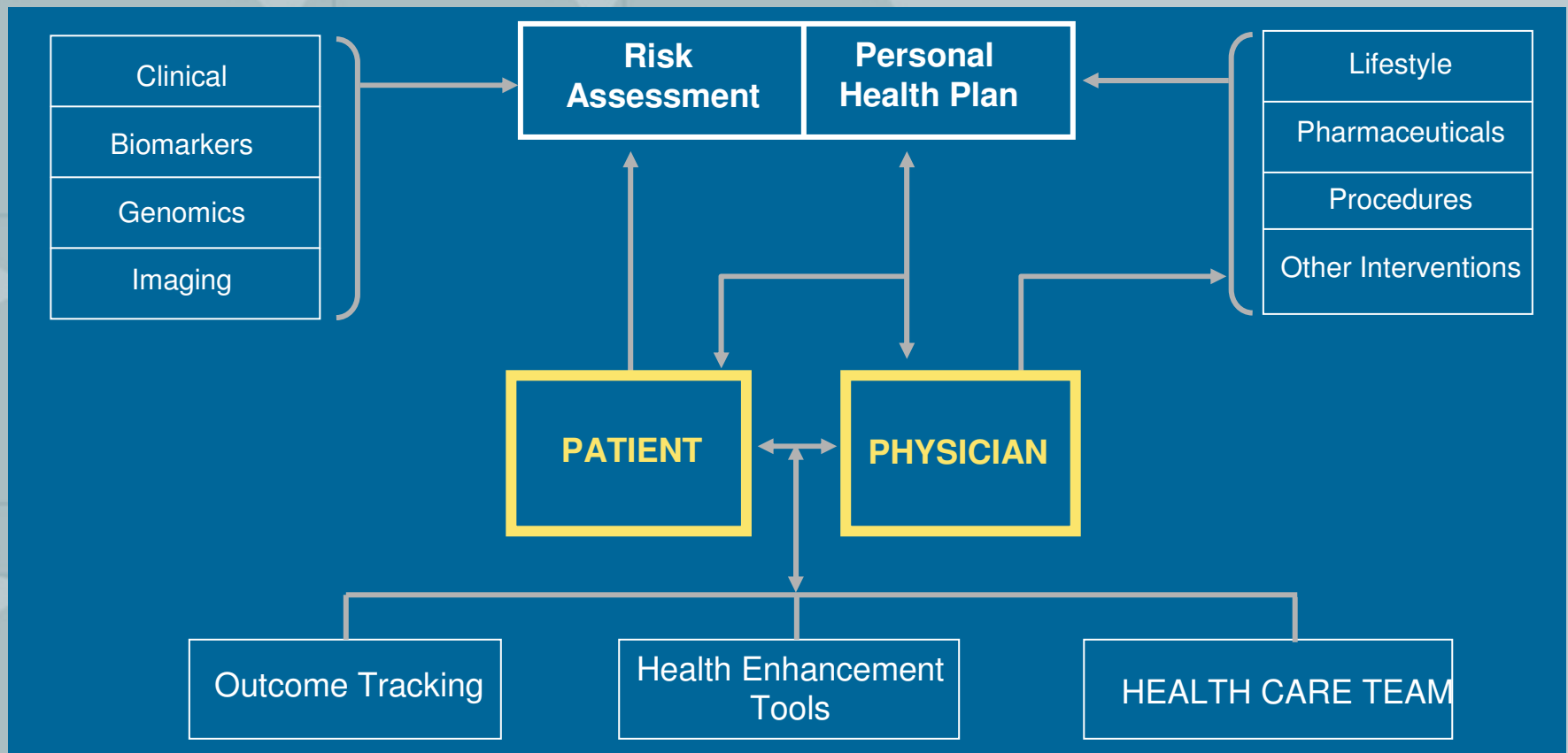
- ⊙ Health Profile Summary
- ⊙ Current (immediate)  
Health Status
- ⊙ Health Risk Analysis
  - ⊙ Genetic
  - ⊙ Environmental
  - ⊙ Lifestyle
- ⊙ Disease Susceptibilities
- ⊙ 1 year health plan
- ⊙ 5 year health plan

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Source: Ralph Snyderman, 2005

# Model for Personalized Health Plan



**Source: Ralph Snyderman, 2005**

# Acknowledgements

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