

How Predictive/Preventive Medicine Will Change Healthcare Delivery and the IT That Drives It

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Definition of Terms: Predictive Medicine

- This branch of medicine involves predicting the onset of a particular disease & then instituting preventive measures
 - The goal is to prevent the disease altogether or significantly decrease its effect upon the patient
- Key emerging strategy in predictive medicine is the greater use of genomic/proteomic laboratory tests
 - Serum proteins called biomarkers performed singly or in panels (IVDMIAs); latter require interpretive algorithms
- Genomic testing provides evidence of predisposition to disease; proteomic tests detect actual onset of disease

Definition of Terms: Preventive Medicine

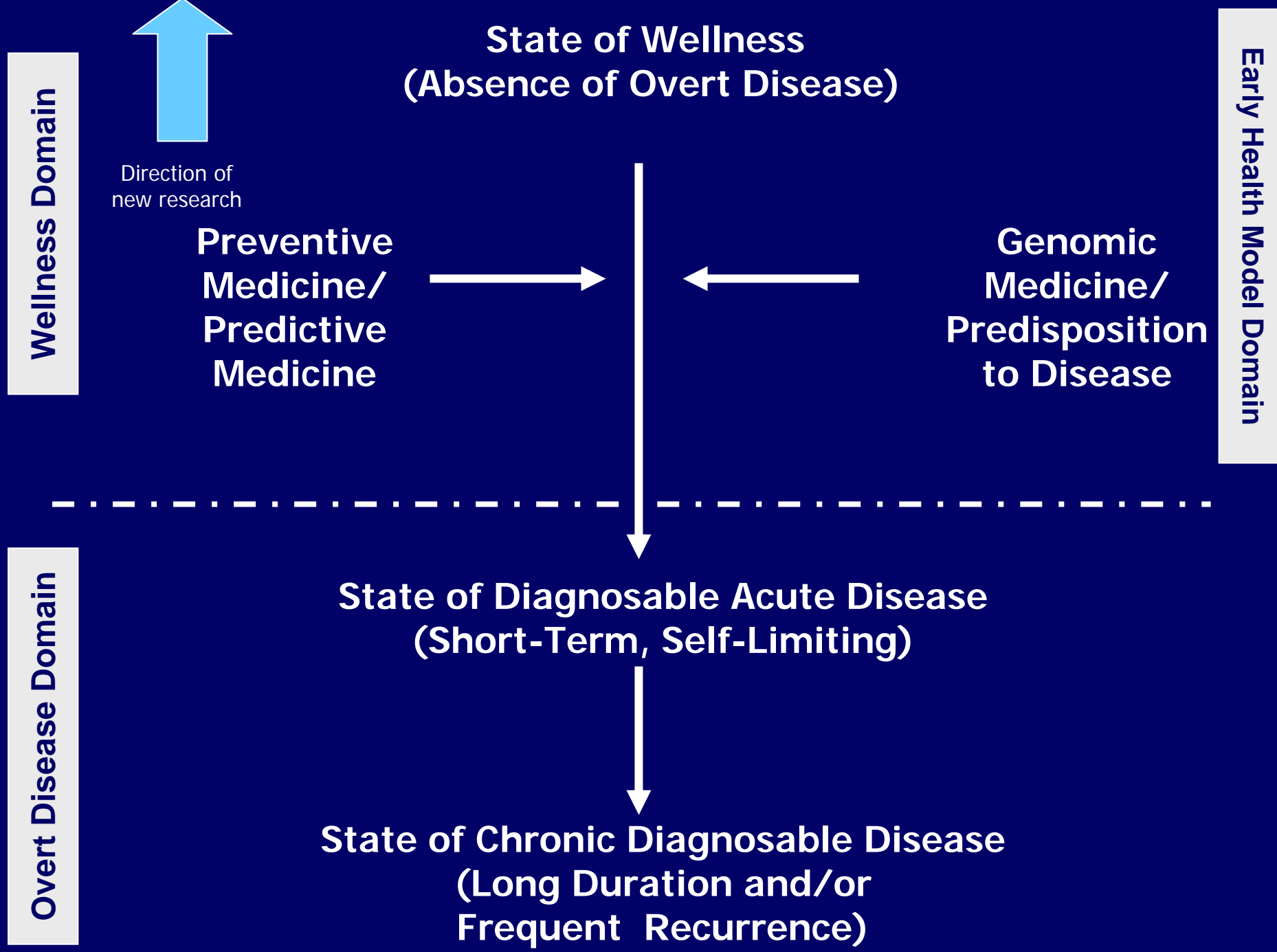
- This branch of medicine focuses on actions to protect, promote, & maintain health of individuals & populations
 - When focus is on large populations, referred to as public health; major focus on infectious diseases
- Healthcare IT designed to serve current healthcare industry; little or no linkage to preventive medicine
- Healthcare industry (hospitals, MDs, pharmaceutical companies) do not profit from preventive medicine
- Preventive/alternative medicine practitioners operate separately from classically-trained disease-oriented MDs

Definition of Terms: Early Health Model

- Diseases now being identified/treated earlier in preclinical pre-symptomatic states using biomarkers
- This approach referred to as the Early Health Model (EHM) by GE Medical which focuses on diagnostics
- Presumed but still unproven advantage of EHM is that early diagnosis/treatment more effective & less costly
 - Balancing act; intuitive that rx of, say, single malignant lesion simpler than metastatic disease
 - Possibly offset by fact that molecular diagnostics & molecular imaging may also be more costly
- Consumers are more enthusiastic about Early Health Model than MDs, insurance companies, drug companies

Treatment Imperative Operating in Current Healthcare Delivery Model

- In healthcare continuum, diagnostics is precursor to therapeutics; treatment is expected after diagnosis
- Also important to keep the Hippocratic Oath in mind when treating patients: First do no harm? (Primum non nocera)
- Types of harm that can occur: drug side effects, drug ineffective, cost burden of rx when harmful/ineffective
- Ineffective/harmful rx well intentioned; treatment imperative such that both MD/patient expect it
- Current healthcare system rewards MDs/hospitals on fee-for-service basis; incentives to "do something" for patient



Predictive and Preventive Health Benefits and Infrastructure

- Predictive medicine
 - Exploding research in genomic/proteomic testing
 - Sophisticated imaging studies to confirm lab tests
 - Easier direct consumer access to lab testing (DAT)
 - Genomic testing more accessible in health plans
- Preventive medicine
 - Greater access to health clubs, local health classes, fresh foods, self-help organizations help meet goals
 - Public thirst for quality medical information being fulfilled on the web with blogs & reference materials

Need for Data Linkage Between Hospital/Office EMRs & Consumers

- “Sickness” data resides in hospital/office EMRs; consumers need more data to support “wellness” goals
- Solution to problem obvious; need “tethered” personal health records (PHRs) for data exchange with EMRs
- “Tethered” should signal greater consumer access/control & not data control by health systems
- Major current PHR players are HealthVault & Google Health; both developing liaisons with health systems
- Major PHRs are all web based; may provide incentives, in time, for hospital/office EMRs migration to “cloud”

Preventive Medicine Is Critical for Healthcare Reform & Cost Reduction

- Heart disease, diabetes, prostate cancer, breast cancer & obesity: responsible for 75% of health-care costs
- Problems can be prevented or improved by changing diet, greater exercise, weight loss, smoking cessation
- In 2008, we spent \$2.1 trillion medical care or 16.5% of the gross national product; figure now 18% & rising
- Of these trillions, 95¢ of every \$ spent to treat disease after it has occurred; need emphasis on prevention
- Changing lifestyles to prevent/ameliorate disease not easy; tools now available: PC, smart phone, & PHR

Summary of Key Lecture Points

- Hospitals and MDs oriented toward disease dx/rx
- EHM: pre-clinical, pre-symptomatic diagnosis
- Current EMRs/LISs/RISs support "disease model"
- Need greater emphasis on predictive/ preventive med.
- Clinical labs offer biomarkers for the pursuit of this goal
- Preventive med. facilities & support are readily available
- Need linkages between hospital/office EMRs & PHRs
- Tethered web-enabled PHRs can provide such linkages
- PHRs as key repository for preventive/predictive data
- Investment in healthy lifestyles yield major \$ savings