

Health Informatics in Clinical Care

State of Maryland
Community Health Resources Commission

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President's Advisory Commission on Consumer Protection & Quality in Health Care

- **The purpose of the health care system must be**
 - **to continuously reduce the impact & burden**
 - **of illness, injury & disability**
 - **and to improve the health and function of the people of the United States**

Quality First: Better Health Care for All Americans

1998

Information Management Problems

- **Information overload**
- **Delay in relay of information**
- **Necessary information not available**
- **Available information not accessible**
- **Accessible information not usefully organized**

Clinical Informatics Capabilities

- **Increase consistency**
- **Reduce redundancy**
- **Automate surveillance**
- **Facilitate education & awareness**
- **Enhance collaboration**

Information & Evolution of Informatics in Health

Information Society

- **Evolution**

- From Agricultural focus
 - to industrial production of goods
- From Industrial society
 - to mass production of information
- From Information society
 - to integrated communication of information
- From a Communication society
 - to use of information for knowledge-based discovery & decision making
- Knowledge society

Information Society

- Consequences
 - Explosions of information
 - Challenge is selection - not supply
 - Source of power is “know how”
 - Knowledge based worker
 - Most jobs require working with information
 - Increased pace of change
 - Collapse of information float
 - Information spends less time in the channel between sender & receiver
 - Increased need for technology
 - Brings order to the chaos of information pollution

Information Explosion

- Impact on Society
 - Increased electronic communication and interaction
 - Transformation of work environments.
 - New options for education, commerce, play & healthcare
 - Continued search for physical contact & relationships

Information Explosion

- Impact on Healthcare
 - Healthcare delivery requires information about
 - Science of care
 - >30K references added each month to MEDLINE database
 - Need access and IT skills to search databases
 - Patient
 - Electronic records for cradle to grave data
 - Access across encounters anytime / anyplace
 - Provider
 - Access to experts virtually
 - Credentialing & performance monitoring
 - Outcome
 - On line access to guidelines
 - Process & system of care delivery
 - Virtual home visits

Information Explosion

- Impact on Patient / Consumer Health
 - Active informed participant
 - Increased use of IT
 - Email providers
 - Access medical records
 - Create personal health records
 - Search internet for health information
 - Access on line patient education
 - Engage in virtual support groups

Information Explosion

- Impact on Patient / Consumer Health
 - Expect providers
 - to translate information
 - to evaluate and advise on information resources
 - to be skilled in using information technology

Structure of Information

- Data
 - syntactic
 - uninterpreted elements, raw material
 - no context
 - examples: 180, temperature 104F
- Information
 - semantic
 - collection of data, organized, processed & displayed into a structure with interpretation
 - examples: 180/120, patient has a fever & hypertension
- Knowledge
 - Pragmatic
 - Synthesized information with formalized relation between data and information.
 - Used in decision making
 - Examples: treat with antipyretic & antihypertensive drug

Structure of Information



Informatics

- Integration of
 - computer science
 - cognitive science
 - information science
 - healthcare science
 - Nursing Informatics - nursing science
 - Medical Informatics – medical science

Informatics

- Identify, collect, process & manage
- Data - Information - Knowledge
 - Symbolic representation of a discipline
- Methods & technology of information handling
- Not the content or context of information

Evolution of Informatics

- 1980s Automation
- 1990s Info-mation
- 2000 Communication &
Integration
- 2010 Knowledge Creation

Evolution of Informatics

- data cemetery → knowledge repository
- data entry → data extraction
- documentation → decision support
- text → vocabularies/taxonomies

Evolution of Informatics

- information silos → integrated networks
- technology for convenience → safety & outcomes
- disciplinary → interdisciplinary
- provider resource → consumer resource

Informatics Challenge

- Information is power
 - Healthcare information has the power to promote health and wellness.
 - All providers are affected in all aspect of care by processing healthcare information
- Competent providers exploit the technology
 - Ignorant providers become its victims

Informatics Challenge

- Balance use of technology with faith in human judgment
 - Wisdom & insight
 - come from quiet reflection
 - Morality, integrity, compassion & caring
 - Come from the spirit of our humanity

National Directions in Health Informatics

Surgeon General 's Priorities for Health

- Prevention
- Public Health Preparedness
- Eliminating Health Disparities

(Health Literacy as the currency for the
priorities)

Public Health Challenges 21st Century

IOM Report, 2003 *Who Will Keep the Public Healthy*

- Globalization
 - Increase trade, travel, economic growth
 - Diffusion of technology
- Advances in Science & Technology
 - Increased communication & distribution of health information
 - Concerns over misinformation & privacy & security
- Demographic Transformations
 - Aging population with chronic conditions
 - Increased racial and ethnic diversity

President's Vision: Harness HIT to Transform US Healthcare

- **Office of the National Coordinator for Health Information Technology (ONC)**
- **Established in response to Executive Order 13335, April 27, 2004**
- **Widespread adoption of interoperable Electronic Health Records within 10 years**

Decade of Health Information Technology: Office of the National Coordinator (ONC)

- Goals
 - Inform Clinical Practice
 - Encourage EHR adoption and diffusion
 - Interconnect Clinicians
 - Consumers move seamlessly across POC & providers
 - National health information network
 - Personalize Care
 - Informed choice
 - Personal health records & tele-health
 - Improve Population Health
 - Timely reporting

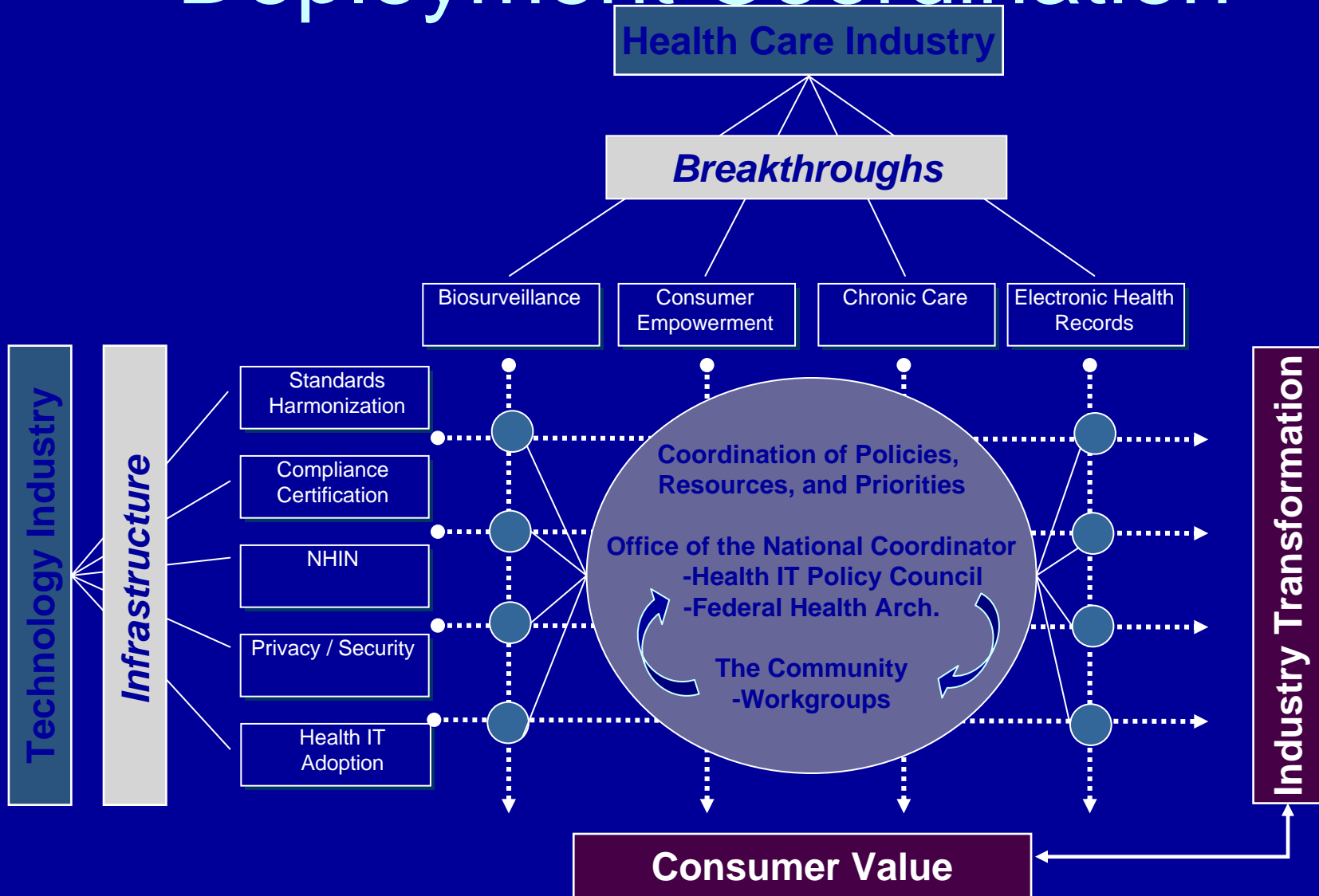
National Directions in Health Information Technology

- Technology Industry
 - HIT Adoption Initiative
 - Standards Harmonization
 - Compliance certification for Electronic Health Records
 - National Health Information Infrastructure
 - Privacy & Security Solutions

National Directions in Health Information Technology

- Health Care Industry
 - American Health Information Community
 - Breakthroughs
 - Bio surveillance
 - Consumer Empowerment
 - Chronic Care
 - Electronic Health Record

Health Information Technology Deployment Coordination



Quality Health Care Service

IOM Report

- Safety
- Effectiveness
- Patient / family-centeredness
- Timeliness
- Efficiency
- Equity
- No death
- No pain
- No helplessness
- No wait
- No waste
- For anyone

IOM Report: *To Error is Human*

- **“It may be part of human nature to error, but it is also part of human nature to create solutions, find better alternatives and meet the challenges ahead.”**

1999 IOM

