National Health Information Infrastructure (NHII)

William A. Yasnoff, MD, PhD, FACMI
Senior Advisor
National Health Information Infrastructure
Department of Health and Human Services
Overview

I. What is NHII?
II. Why hasn’t it already been done?
III. Current Status of NHII
IV. What can be done to accelerate NHII progress?
V. NHII activities in HHS
I. What is NHII?

- Comprehensive knowledge-based network of interoperable systems
- Capable of providing information for sound decisions about health when and where needed
- NOT a central database of medical records
What is NHII? (continued)

- Includes technologies, practices, relationships, laws, standards, and applications, e.g.
  - Communication networks
  - Message & content standards
  - Computer applications
  - Confidentiality protections

- Individual provider Electronic Medical Record (EMR) systems are only the building blocks, not NHII
What will NHII enable?

1. Test results and x-rays always available → eliminate repeat studies
2. Complete medical record always available
3. Decision support always available: guidelines & research results
4. Real-time aggregation to detect patterns (e.g. bioterrorism detection)
5. Quality & payment information derived from record of care – not separate reporting systems
6. Consumers have access to their own records
Three Domains of NHII

NHII

Personal/Consumer

Clinical

Community/Public Health
Characteristics of NHII

- Immediate availability of information for patient care
  - All patient records (NOT a database)
  - All relevant decision support
- Availability of aggregate information
  - Real-time health monitoring
  - Developing decision support
- Protecting privacy
  - Secure, confidential information
- Government role: facilitate (not direct)
  - Voluntary standards (not regulatory like HIPAA)
  - Promote public-private collaboration
Elements of NHII (1 of 3)

- Standards: Messaging & Content
  - Foundation for remainder of NHII
- Electronic Medical Record (EMR) Systems
  - Hospital
  - Outpatient
- Consumer Health Information Systems
  - Personal health record
  - Electronic patient-provider communication
  - Support groups
  - Authoritative information
Messaging Standards

- What information is requested
- Where is the information in the message
- Example: “phone number” message
  - Pick up phone
  - Listen for dial tone
  - Dial number
    - If first digit is 1, then long distance, otherwise local
Content Standards

- A common, agreed-upon, detailed vocabulary for all medical terminology

- Without a standard:
  - “high blood pressure”
  - “elevated blood pressure”
  - “hypertension”

- With a standard
  - C487231, hypertension
  - Unambiguous meaning for both sender and receiver
Elements of NHII (2 of 3)

- Ancillary health care systems
  - Pharmacy
  - Laboratory
  - Physical therapy
  - Home health
  - Public health reporting

- Communication/networking systems
  - Information moves with patient
  - Integrated information from all types of providers
  - Electronic consultation (telemedicine)
Elements of NHII (3 of 3)

- Decision Support & Education
  - Professional
  - Consumer
- Confidentiality protections
  - Information available on need-to-know basis
  - Authentication of all users
  - Encryption of data in transit
  - Audit trails of all usage
  - Penalties for violations
Benefits of NHII

- Monitor and Protect Public Health (e.g. rapid disease detection)
- Improve Patient Safety
  - IOM: 44,000-98,000 preventable deaths/year (more than motor vehicle accidents, breast cancer, or AIDS)
  - Estimated cost of medication errors alone is over $76 billion/year
- Improve Quality of Care
- Effectively Share Decision Support
- Understand Health Care Costs
- Better-informed Health Care Consumers
Overwhelming Support for NHII

2. IOM: “To Err is Human” (2000)
4. IOM: “Crossing the Quality Chasm” (2001)
Overwhelming Support for NHII (continued)

5. President’s Information Technology Advisory Committee: “Transforming Health Care Through Information Technology” (2001)

6. NCVHS report on NHII (2001):
   “The Committee believes that implementation of the NHII will have a dramatic impact on the effectiveness, efficiency, and overall quality of health and health care in the U.S.” [p. 2]
II. Why hasn’t NHII already been done?

- Health care is the largest sector of the economy that has not fully embraced information technology

- Analogies to NHII in other sectors
  - Airline reservation systems
  - Banking information infrastructure
    - Access to funds via ATMs
    - Personal financial management
  - Auto industry: supply chain management
  - Retail industry: supply chain management, inventory control
Why hasn’t NHII already been done? (continued)

- Health care information is very complex → IT systems more expensive and difficult to build
- Health care is highly fragmented
- Organizational and change management issues from IT systems are difficult to manage in clinical environment
  - Physicians are independent contractors
  - Lack of incentives for information sharing
- Difficult to generate capital needed for IT investment
  - IT is regarded as an add-on cost, not an investment for competitive advantage
III. Current Status of NHII

- Islands of Information
- Fragmentary & isolated elements of NHII exist
  - Uneven distribution
  - Lack of coordination
  - Minimal interoperability
  - Many “one-of-a-kind” systems
- Much duplicative work
  - Limited dissemination of
    - Systems
    - Lessons learned
Current Status of NHII (continued)

- NHII requires:
  - **Information capture**: all medical information must be in machine readable form
  - **Connectivity**: electronic connections must exist among all providers and institutions
  - **Communication standards**: everyone must agree on how messages will be sent & received
  - **Content standards**: everyone must agree on the terms to be used and their meanings
IV. Accelerating NHII progress

- Standards – Messaging and Content
  - Interoperability
  - Comparable Information

- Coordination and Collaboration
  - Collecting and disseminating information
  - Facilitating cooperation

- Encourage Capital Investment
  - Promote market-based solutions

- Research
  - What are the problems of NHII?
  - Learn from prototype systems
V. NHII activities in HHS

- HIPAA
  - Transaction standards
  - Message format standards
  - Privacy & security rules
- NCVHS activities
  - NHII blueprint and continued hearings
  - Continuing development of standards recommendations
- Consolidated Health Informatics project
- IOM report on actions to facilitate NHII deployment
NHII activities in HHS (continued)

- Senior Advisor, NHII (in ASPE)
  - Inform
    - Disseminate NHII vision
    - Catalog NHII activities
    - Disseminate “lessons learned”
  - Collaborate with Stakeholders
  - Convene
    - National meetings on NHII
    - Start in 2003
  - Voluntary process – no new regulations
Questions?

William A. Yasnoff, MD, PhD
william.yasnoff@hhs.gov
202/690-7862