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**
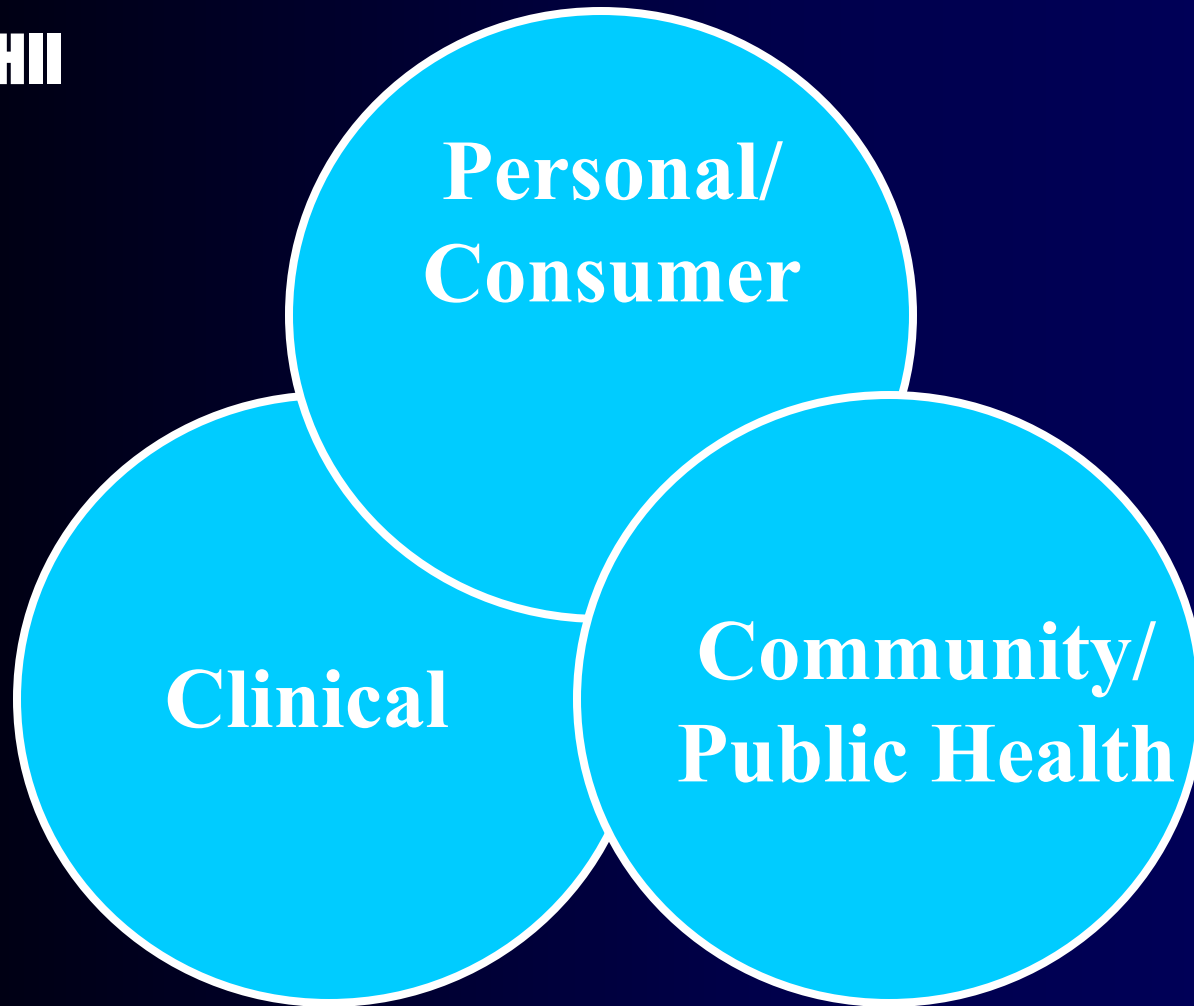
Characteristics of NHII

- **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

- **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

- **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)**

- **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**

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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**

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Overwhelming Support for NHII

1. **IOM: Computer-Based Patient Record (1991, updated 1997)**
2. **IOM: "To Err is Human" (2000)**
3. **National Research Council/Computer Science & Telecommunications Board: "Networking Health: Prescriptions for the Internet" (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