National Health Information Infrastructure: Challenges for Communities

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Outline

I. Background and History
II. What is the NHII?
III. How can IT help address current health care problems?
IV. How does a community health information exchange (HIE) system work?
V. Key Issues in NHII / LHII progress
I. Background & History

“Current practice depends upon the clinical decision making capacity and reliability of autonomous individual practitioners, for classes of problems that routinely exceed the bounds of unaided human cognition”

-- Dan Masys, MD
IOM Annual Meeting (2001)
Managing a Factory ...

... without internal details ...

... is like health care!

Health Care System Challenges

i. Error rates are too high
ii. Quality is inconsistent
iii. Research results are not rapidly used
iv. Costs are escalating
v. New technologies continue to drive up costs
vi. Demographics of baby boomers will greatly increase demand
vii. Capacity for early detection of bioterrorism is minimal
## National Expert Panel Reports

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"The committee believes that establishing this information technology infrastructure [NHII] should be the highest priority for all health care stakeholders."

-- Committee on Data Standards for Patient Safety: "Patient Safety: Achieving a New Standard for Care" Institute of Medicine, November, 2003 (Executive Summary)
Recent NHII Developments

i. 2003
   - SNOMED licensed for all in U.S.
   - Federal government announces CHI standards for its own use (HL7, SNOMED, LOINC, DICOM, IEEE 1073, NCPDP SCRIPT)
   - Consensus National Agenda developed (at NHII 2003 meeting)

ii. 2004
   - President establishes NHII as goal for U.S.
   - Health Information Technology coordination office created (in HHS)
   - Dozens of communities exploring LHII implementation

II. What is the National Health Information Infrastructure (NHII)?
II. What is the NHII?

A. Vision
B. Elements
C. Requirements

A. NHII Vision

i. Comprehensive knowledge-based network of interoperable systems
ii. Capable of providing information for sound decisions about health when and where needed
iii. “Anywhere, anytime health care information and decision support”
iv. NOT a national database of medical records
A. NHII Vision (continued)

i. Includes organizing principles, systems, standards, procedures, and policies, e.g.
   - Communication networks
   - Message & content standards
   - Computer applications
   - Confidentiality protections

ii. Individual provider Electronic Health Record (EHR) systems are only the building blocks, not NHII

Four Domains for NHII

- Personal/Consumer
- Clinical/Provider
- Public Health/Community
- Research/Policy
B. Elements of NHII (1 of 3)

i. Standards: Messaging & Content
   • Foundation for remainder of NHII

ii. Electronic Health Record (EHR) Systems
   • Hospital
   • Outpatient

iii. Consumer Health Information Systems
   • Personal health record
   • Electronic patient-provider communication
   • Support groups
   • Authoritative information

Messaging Standards

i. What information is requested

ii. Where is the information in the message

iii. 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

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

ii. Without a standard:
   - "high blood pressure"
   - "elevated blood pressure"
   - "hypertension"

iii. With a standard
   - C487231, hypertension
   - Unambiguous meaning for both sender and receiver

B. Elements of NHII (2 of 3)

i. Ancillary health care systems
   - Pharmacy
   - Laboratory
   - Physical therapy
   - Post-acute care
   - Public health reporting

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

i. Decision Support & Education
   - Professional
   - Consumer

ii. 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

C. NHII Requirements: Functions

i. Overall: “Anytime, anywhere health care information and decision support”

ii. Immediate availability of complete medical record (compiled from all sources) to any point-of-care

iii. Enable up-to-date decision support at any point of care

iv. Enable selective reporting (e.g. for public health)

v. Enable use of tools to facilitate delivery of care (e.g. e-prescribing)

vi. Allow patients to control access to their information
C. NHII Requirements: Implementation Strategy

i. No national database or identifier
ii. Alignment of incentives
iii. Allow each care facility to maintain its own data
iv. Minimize cost & risk
v. Use proven implementation strategies (where possible), e.g. incremental approach
   - Each implementation step benefits all participants
   - Implementation scope coincides with benefits scope

III. How Can IT Help Address Current Health Care Problems?
III. How can IT help address current health care problems?

A. Improving Healthcare Delivery at Point of Care (Improving Quality)
   - Complete patient information
   - Decision support

B. Reducing Costs & Achieving Efficiencies
   - Eliminate duplicate tests & imaging
   - Eliminate duplicate communication channels (labs, x-rays, etc.)

C. Support Public Health Initiatives & Biosurveillance
   - Automated disease reporting
   - Automated syndrome reporting

A.1. Complete Patient Information

i. Patients treated by multiple providers

ii. Records often unavailable (even within single care organization)

iii. When available, information in paper records not easily organized for use

iv. Result: Information for care largely dependent on patient memory

v. Outcome: errors, overuse, underuse
A.2. Decision Support

i. RAND: only 55% of recommended care delivered

ii. Widespread application of new medical research results takes average of 17 years

iii. Clinicians know what needs to be done, but 100% accurate application of knowledge is cognitive impossibility

iv. When reminded, clinicians demonstrate greatly improved compliance

B. Reducing Costs
Net National Savings

TOTAL
$131+

~77
$ Billions

~10

Outpatient
EHR

~44

Inpt
EBR

Community
Health
Information
Exchange

Source:
Center for
Information
Technology
Leadership,
Partners
Health
Care,
Harvard
(2004)
C. Impact of Surveillance on BT Mortality

IV. How Does a Community Health Information Exchange System Work?
Advantages of LHII Approach

i. Existing HII systems are local
ii. Health care is local → benefits are local
iii. Facilitates high level of trust needed
iv. Easier to align local incentives
v. Local scope increases probability of success
vi. Specific local needs can be addressed
vii. Can develop a repeatable implementation process
viii. Parallel implementation → more rapid progress
ix. Use of standards allows connectivity between LHII → NHII

V. Key Issues in NHII / LHII Progress
VI. Key Issues in NHII/LHII Progress

A. Key enablers for effective health IT

B. Key issues in developing a Health Information Exchange (HIE)

C. Strategic principles to guide HIE development

A. Key enablers for effective health IT

i. Electronic Health Records (EHRs)

>>> Requires Reimbursement Reform

ii. Community Health Information Exchange
A. Key enablers for effective health IT (continued)

3. Interoperability
   - What *exactly* is it?
   - How will we get it?
   - Many activities in progress
     - CCHIT - Certification Commission for Health Information Technology (HIMSS, AHIMA, The Alliance)
     - Standards Organizations (HL7, ASTM, X12, SNOMED [CAP])
     - EHRVA - EHR Vendor Association
     - Systemic Interoperability Commission (part of MMA)

B. Key issues in developing a Health Information Exchange (HIE)

i. Buy-In
ii. Governance
iii. Ownership of Information
iv. Finance
v. Technology
B. Key issues in developing a Health Information Exchange (HIE)

4. Finance

- New organization often needed
- Separate privacy oversight board

Ownership of Information

- Endless battle - no winners
- Transform to “access”
  - Patient information needs to be available for care
  - Use of available information is well-established principle
  - Withholding needed patient information untenable
B. Key issues in developing a Health Information Exchange (HIE)

3. Ownership of Information
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4. Finance
   - Grants may impair sustainability
   - “Stakeholders” must have a real “stake” (by contributing $$)
   - Payments for operations should come from those who benefit
B. Key issues in developing a Health Information Exchange (HIE)

5. Technology
   - Should not drive initiative
   - Don’t put technologists in charge
   - Use proven products and techniques (“Does it work?”)
   - Test and train
   - Overcommunicate

C. Strategic principles to guide HIE development

i. Learn from others
ii. Build consensus
iii. Implement incrementally
iv. Do easy projects first
v. Make each step self-sustaining
vi. Gradual implementation of comprehensive system
Mission: Stop flying blind by ...

... adding data-driven guidance