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A New Patient-centric and Sustainable Approach to Health Information Infrastructure

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Outline

- I. What is the National Health Information Infrastructure (NHII)?
- II. How does the NHII help address current health care problems?
- III. How can we organize the creation of the NHII?
- IV. What is the path to HII in communities?

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I. What is the NHII?

- Comprehensive knowledge-based network of interoperable systems
- Capable of providing information for sound decisions about health when and where needed
- “Anywhere, anytime health care information and decision support”
- NOT a national database of medical records

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I. What is the NHII? (continued)

- Includes not only systems, but organizing principles, procedures, policies, and standards, e.g.
 - Organization & governance
 - Alignment of financial incentives
 - Operational policies
 - Message & content standards
- Individual provider Electronic Health Record (EHR) systems are only the building blocks, not NHII



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II. How does NHII 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



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III. How Can We Organize the Creation of the NHII?



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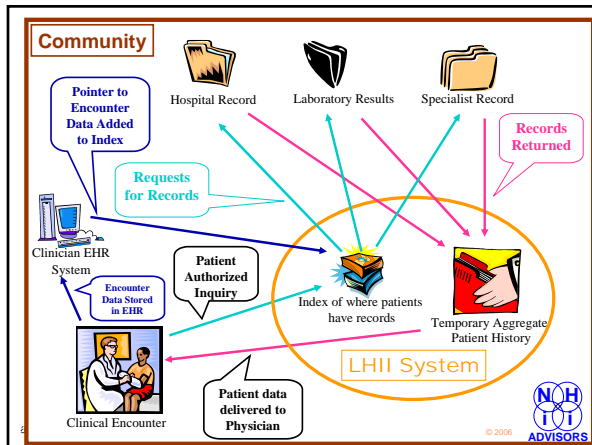
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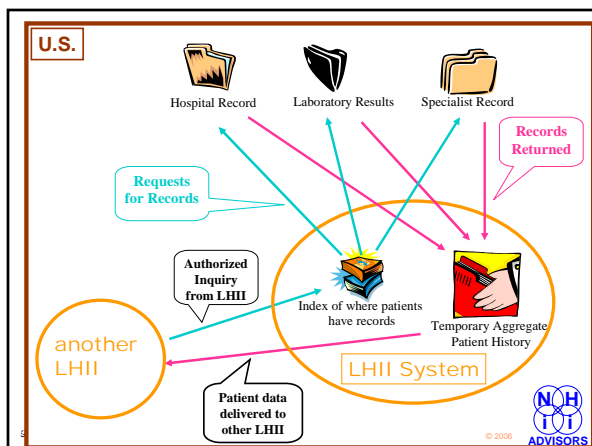
Community Approach to HII

- Existing HII systems are local
- Health care is local → benefits are local
- Facilitates high level of trust needed
- Easier to align local incentives
- Local scope increases probability of success
- Specific local needs can be addressed
- Can develop a repeatable implementation process
- Parallel implementation → more rapid progress



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Problems with scattered data model for community HII

- All health information systems must have query capability (at extra cost)
 - Organizational cooperation challenge (esp. for physicians)
 - Maintaining 24/7/365 availability with rapid response time will be operationally challenging (& costly)
- Searching HII repository is sequential (e.g. for research & public health)
- Where is financial alignment & sustainability?

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Examples of Community HII

<u>Name</u>	<u>Data Storage</u>	<u>Financially sustainable?</u>
Spokane, WA	Central	YES
South Bend, IN	Central	YES
Indianapolis, IN	Central	Not yet

Number of operational community HII systems using scattered model: NONE

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Key Problems of Community HIIs

- Privacy assurance for consumers
- EHR incentives for physicians
- Financial sustainability
- Ensuring cooperation of health care institutions
- Adoption and gradual improvement of standards

How can these problems be solved?

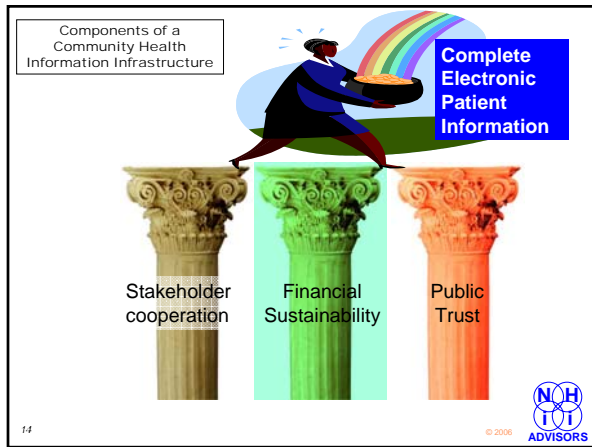
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IV. What is the Path to HII in Communities?

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Complete Electronic Patient Information

- Most information is already electronic: Labs, Medications, Images, Hospital Records
- Outpatient records are mostly paper
 - Only 10-15% of physicians have EHRs
 - Business case for outpatient EHRs weak
- **Requirement #1:** Provide financial incentives to create good business case for outpatient EHRs

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Requirements

- 1. Provide financial incentives to create good business case for outpatient EHRs

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Complete Electronic Patient Information

- Need single access point for electronic information
- Option 1: Gather data when needed (scattered model)
 - Pro: 1) data stays in current location; 2) no duplication of storage
 - Con: 1) all systems must be available for query 24/7/365; 2) each system incurs added costs of queries (initial & ongoing); 3) slow response time; 4) searching not practical; 5) huge interoperability challenge (entire U.S.); 6) records only complete if every possible data source is operational

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Complete Electronic Patient Information

- Need single access point for electronic information
- Option 2: Central repository
 - Pro: fast response time, no interoperability between communities, easy searching, reliability depends only on central system, security can be controlled in one location, completeness of record assured, low cost
 - Con: public trust challenging, duplicate storage (but storage is inexpensive)

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Complete Electronic Patient Information

- Need single access point for electronic information
- **Requirement #2: Central repository for storage**


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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. **Central repository for storage**

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Stakeholder cooperation

- Voluntary ➡ Impractical
- Financial incentives
 - Where find \$\$\$\$\$?
- Mandates
 - New ➡ Impractical
 - Existing
 - HIPAA requires information to be provided on patient request
- **Requirement #3: Patients must request all information**

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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information

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Financial Sustainability

- Funding options
 - Government
 - Federal: unlikely
 - State: unlikely
 - Startup funds at best
 - Healthcare Stakeholders
 - Paid for giving care
 - New investments or transaction costs difficult
 - Payers/Purchasers
 - Skeptical about benefits
 - Free rider/first mover effects
 - Consumers
 - 72% support electronic records
 - 52% willing to pay >=\$5/month
- Requirement #4: Solution must appeal to consumers so they will pay

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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information
4. Solution must appeal to consumers so they will pay

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Public Trust

A. Public Trust = Patient Control of Information

- **Requirement #5: Patients must control all access to their information**




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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information
4. Solution must appeal to consumers so they will pay
5. **Patients must control all access to their information**



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Public Trust

B. Trusted Institution

- Via regulation (like banks) → impractical
- Self-regulated
 - Community-owned non-profit
 - Board with all key stakeholders
 - Independent privacy oversight
 - Open & transparent
- **Requirement #6: Governing institution must be self-regulating community-owned non-profit**



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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information
4. Solution must appeal to consumers so they will pay
5. Patients must control all access to their information
6. **Governing institution must be self-regulating community-owned non-profit**

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C. Trustworthy Technical Architecture

- Prevent large-scale information loss
 - Searchable database offline
 - Carefully screen all employees
- Prevent inappropriate access to individual records
 - State-of-the-art computer security
 - Strong authentication
 - No searching capability
 - Secure operating system
 - Easier to secure central repository: efforts focus on one place
- **Requirement #7: Technical architecture must prevent information loss and misuse**

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Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information
4. Solution must appeal to consumers so they will pay
5. Patients must control all access to their information
6. Governing institution must be self-regulating community-owned non-profit
7. **Technical architecture must prevent information loss and misuse**

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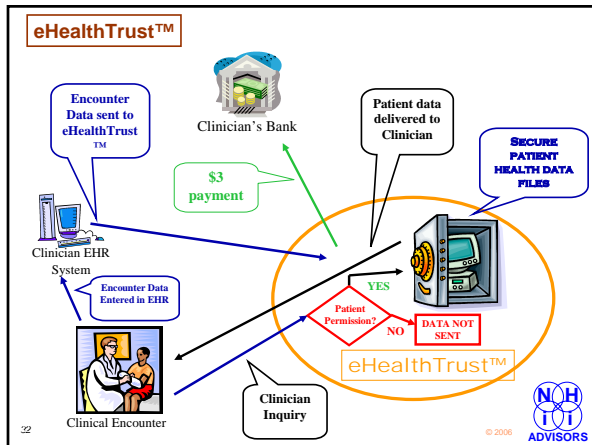
eHealthTrust™ Model

- All information for a patient (from all sources) stored in single eHealthTrust "account" controlled by that patient
- Charge \$60/year/patient (\$5/mo)
 - Paid by patient, payer, or purchaser
- All data sources contribute at patient request (per HIPAA)
- Operating Cost < \$20/year/patient
- Payments to clinicians for submitting standard electronic clinical info provides incentives for EHR acquisition (~\$3/encounter)**

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**patent pending





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eHT Model Meets Requirements

1. Provide financial incentives to create good business case for outpatient EHRs
2. Central repository for storage
3. Patients must request all information
4. Solution must appeal to consumers so they will pay
5. Patients must control all access to their information
6. Governing institution must be self-regulating community-owned non-profit
7. Technical architecture must prevent information loss and misuse

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eHealthTrust™ Advantages

- Easily Integrated with
 - Patient-entered information
 - Patient education information
 - Patient reminders
 - Patient-provider electronic communication
- Promotes Gradual Standards Adoption
 - Initial standard enforced through patent
 - Reimbursement policy can improve standard over time (e.g. to increase coding)
- Provides Transition from Paper Records
 - Fax images of paper records stored
 - Metadata facilitates some indexing
- Immediate Realization of Benefits
 - Each eHealthTrust™ member gets immediate benefit from complete records
 - Benefits not contingent on critical mass

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How does eHealthTrust Architecture Assure Security?

- Clinical server ("cubbyhole server")
 - Ultra-secure "separation kernel"
 - Subset of secure operating system
 - Each user has hardware-enabled "virtual machine" that cannot impact others
 - Only operation is retrieval of one record
 - User then logged off
 - No searching possible
 - No database software
 - Hacker worst case: one record retrieved
- Research server has copy of clinical data
 - No phone lines or network connections
 - Access requires physical presence
 - Standard database software
 - Consumer permission required for searching
 - Bulk of searching revenue -> consumer

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Strategy for Funding eHealthTrust™

- Issue two RFPs
 - 1) Vendor builds eHealthTrust in exchange for long-term guaranteed operations contract (Vendor owns software)
 - 2) Non-exclusive licenses to integrate eHealthTrust information with web-based health information services (➡ startup funds)
- Engage purchasers to enroll beneficiaries to guarantee operational revenue
 - Need about 100,000 subscribers to break even (~\$6 million/year revenue)
- Once system operational, market to individual consumers through physicians

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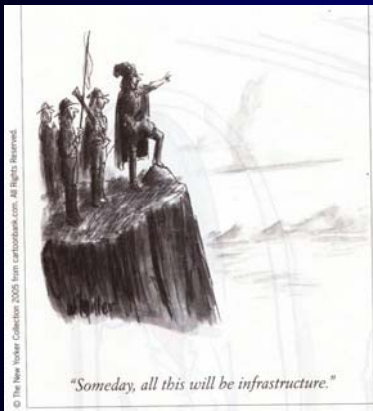
SUMMARY

A New Patient-centric and Sustainable Approach to HII

- I. Central Community Repository
- II. Paid for and Controlled by Patients
- III. Solves Key Problems
 - Privacy Assurance for Consumers
 - EHR incentives for physicians
 - Financial Sustainability
 - Cooperation by health care institutions
 - Adoption and Gradual Improvement of Standards

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Questions?

For more information:

www.ehealthtrust.com

www.yasnoff.com

www.jouhie.org

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