Department of Biomedical Informatics
DBMI Vital stats

**Personnel**
- 36 faculty
  - 16 VC5
  - 4 ICRC
- 54 trainees
  - 30 PhD
  - 15 masters
  - 9 post-doc
- 24 developers, managers
- 9 admin staff

**Budget**
- $5M + $3M grants
- $2M hospital pass through
- $2M tuition, recruitment, other

**Space**
- Vanderbilt Clinic 5
- Irving Cancer Center 8,9
- Presbyterian Hosp 15
Newman Grouping to detect community structure
Three “communities”

Empirical discovery & prediction (natural science)
- systems biology and medicine
- modeling, data mining, and knowledge discovery

Human & organizational factors (social science)
- cognition, team interaction, & organizational impact
- human-computer interface and usability
- consumer health

Information management (engineering)
- clinical information systems
- knowledge management
- information standards and interoperability
EHRs and Meaningful Use
2,500,000 patient records

62,000,000 laboratory test batteries
  12,000,000 glucoses

6,000,000 clinical notes: discharge summary, admission, progress, signout, and visit notes

34,000,000 narrative reports from 40 ancillary departments, including radiology, pathology, cardiology, pulmonary

20,000,000 inpatient orders, outpatient orders flow sheeted nursing documentation c VS
Surveillance

ILI proportion, 7-day running average
Rita Kukafka
Web 2.0 and Social Technologies

Gethealthyharlem.org

Leverage social connections and community knowledge for health

Empower users as creators, curators, consumers of health information

Actionable, local, contextual information that could enable lifestyle change
Tailored Behavioral Interventions

Tailored Lifestyle Conversions (TLC)

– brief intervention modality
– integrates clinical data from EHR w/ patient-supplied assessment data
– tailored outputs (patient & provider) for clinical encounter

Tailored TLC Report

Sample behavioral risk graphic:
Tailored TLC Report

Sample patient decision support:

### Smoking
- **Your Risk:** 17% vs. Normal Risk 5%
- **Readiness:** Not at all ready
- **Confidence:** Low
- **Risk Calculator:** Success: Low chance
  Benefit: High

### Weight Management
- **Your Risk:** 14% vs. Normal Risk 5%
- **Readiness:** Thinking about it
- **Confidence:** Medium
- **Risk Calculator:** Success: Average chance
  Benefit: Medium

### Physical Activity
- **Your Risk:** 9% vs. Normal Risk 5%
- **Readiness:** Getting Ready
- **Confidence:** High
- **Risk Calculator:** Success: High chance
  Benefit: Lower

**DIET:** Healthy and Above Average
## Provider’s Report

### Talking Points

**Smoking**
- Highly dependent on tobacco
- Heavy smoker (20 cigarettes/day)

**Chance of Success & Benefit of Behavior Change**
- Success: Low chance
- Benefit: High

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**Physical Activity**
- Sedentary lifestyle
- Average <1 hour light physical activity per week

**Chance of Success & Benefit of Behavior Change**
- Success: Average chance
- Benefit: Medium

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**Diet**
- **Problem areas:**
  - High fat foods
  - Not enough fruits & vegetables
  - High calorie beverages
- **Positive areas:**
  - Adequate protein (beans, chicken, fish)
  - Few desserts

**Chance of Success & Benefit of Behavior Change**
- Success: High chance
- Benefit: Lower

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**Weight Management**
- Healthy!
- BMI = 23

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**Important to Know...**
Your patient does not know:
- Cholesterol
- Blood pressure

As a result, we could not calculate overall Framingham risk.

---

**Important to Know...**
Your patient:
- **Has limited health literacy.** Many patients hide their literacy levels well.
  - Use plain language. No medical jargon.
  - Ask patients to repeat *in their own words* what they need to do when they leave your office.
- **Has a high level of stress.** Stress could be affecting the patient’s health.
Millennium Villages

1. Koraro, Ethiopia
2. Bonsaaso, Ghana
3. Dertu, Kenya
4. Sauri, Kenya
5. Kokoyah, Liberia
6. Mwandama, Malawi
7. Tiby, Mali
8. Timbuktu, Mali
9. Ikaram, Nigeria
10. Pampaida, Nigeria
11. Mayange, Rwanda
12. Potou, Senegal
13. Mbola, Tanzania
14. Ruhiiira, Uganda
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**Notes:**
- H3: High dose
- M: Medium dose
- L: Low dose
- PEN: Penicillin
- CTK: Cephalosporin
Common Multilingual Structured Data Dictionary

Millennium Global Village-Net Terminology Service Bureau

Names and synonyms

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Short Names and Abbreviations

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The Millennium Villages Project: eHealth M&E Logical Framework

**Inputs:**
- Computers/Servers
- Electronic Medical Records
- Telecommunications Infrastructure
- Capacity Building
- Community Health Care Worker Training
- Emergency Medical Services protocol
- Non-emergent referral system
- Telemedicine system
- mHealth Applications and mLearning

**Outputs:**
- Basic Voice and Text Communication
- Community Mobilization, Wellbeing, and Empowerment
- Data warehouse
- Disease Surveillance and Early Warning
- Supply Chain Management
- Improve point-of-care decision making and service delivery
- Improve treatment compliance
- Improve disease prevention

**Outcomes:**
- Raise knowledge and awareness about diseases
- Reduce Error Rates from Data Entry
- Behavior Change
- Monitor and target specific MDG indicators
- Reduce Isolation/Improve Psychosocial Outcomes

**Impact:**
- Leverage Achievement of MDGs
  - Goal 4: Reduce Child Mortality
  - Goal 5: Improve Maternal Health
  - Goal 6: Combat HIV/AIDS, Malaria, other diseases

- Improve access and quality of health care
- Reduce administrative and point-of-care costs
- Improve coordination and administration of health service delivery
- Improve Intra-facility Communication
- Improve Monitoring and Evaluation
Public Health Systems Research

Infrastructure and capacity development
- Organizational decision support
- Data visualization, non-linear techniques
- Growth of scientific discipline
  - LICOS
  - PHSR CoLab

HIE for PH
- Primary Care Information Project
- HEAL NY Phase 5
Knowledge Management to produce standard data: Taxonomy Development

- Essential elements for a taxonomy of work performed in any local health department
- Evidence-based management decisions
  Optimize common elements across systems
What we found comparing local health department organizational networks…
Health Information Exchange for PH

Homophily & Proximity in EHR implementation
- Multi level data sets and SEM

Impact of HIE for PH
- Comparative case study
QUESTIONS

AND

DISCUSSION