

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



Basic Research

Medical Informatics Methods, Techniques, and Theories

Applied Research

Bioinformatics **Imaging Informatics** **Clinical Informatics** **Public Health Informatics**



Molecular and Cellular Processes

Tissues and Organs

Individuals (Patients)

Populations And Society



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

Reconciliation Date

Add Medication Orders:

| Order | Dose | Unit | Route | Frequency | Start Date | Du |
|---|----------------------------|------|-------|-----------|------------|----|
| <input type="checkbox"/> <input type="checkbox"/> | Click here to add an Order | | | | | |

EHRs and Meaningful Use

The screenshot shows a Netscape browser window displaying a PDF document. The browser's address bar shows the URL: <http://infonet.nyp.org/Pharmacy/Forms/Medication/INR-policy-final-adult.pdf>. The document content is as follows:

TABLE 1: Recommendations for the Medical Management of ADULT Patients with an Elevated INR Value Secondary to Chronic Warfarin Administration

| INR value | Clinical Presentation | Recommended Intervention(s) |
|--|--|--|
| INR >3 but ≤5 (assuming target INR is 2-3*) | No significant bleeding Low bleeding risk based on INR value | INR 3.1-3.9 Day 1: subtract 5-10% of total weekly dose (TWD) Weekly: reduce TWD by 5-10% Re-Check INR in 72 hours** INR 4.0-5.0 Day 1: no warfarin Weekly: reduce TWD by 10-20% Re-check INR in 72 hours** |
| INR >5 but <9 | No significant bleeding At risk for bleeding based on elevated INR value (No additional risk for bleeding based on Appendix A) | <ul style="list-style-type: none"> Hold warfarin** Monitor INR daily until it reaches upper limit of the therapeutic range* Weekly: reduce TWD by 20-50% Re-check an INR in 72 hours*** |
| INR > 9 | No significant bleeding At risk for bleeding based on elevated INR value (No additional risk for bleeding based on Appendix A) | <ul style="list-style-type: none"> Hold warfarin** Give vitamin K 0.5 mg IV or approximately 1 mg PO (one quarter of a commercially available 5 mg tablet)** Admit the patient to the hospital Monitor INR frequently over the next 24-48 hrs (at least daily) until it reaches the upper limit of the therapeutic range* Re-institute warfarin after decreasing the TWD by 20-50% Re-check INR daily until re-stabilized, then weekly |
| INR > 5 | Significant risk for bleeding At risk for bleeding based on elevated INR value And At risk for bleeding based on characteristics outlined in Appendix A | <ul style="list-style-type: none"> Hold warfarin Give vitamin K 0.5 mg IV or approximately 1 mg PO (one quarter of a commercially available 5 mg tablet)** Monitor INR frequently over the next 24-48 hrs (at least daily) until it reaches the upper limit of the therapeutic range* Re-institute warfarin after decreasing the TWD by 20-50% Re-check INR daily until re-stabilized, then weekly |
| INR >3* | Bleeding | <ul style="list-style-type: none"> Hold warfarin Give vitamin K by IV infusion ^{a,b} ADULT DOSE: 1-5 mg Give FFP^c |

The browser window also shows a sidebar with navigation links: Lab su, Lab up, 12h, Admin, All, Bef, Labora, Radiol, Pathol, Disch, Op/Cli, Oper, Cons, Clin S, Eclips, Neuroj, Ob/Gy, GI Enc, Cardio, HEEN, Pharm, PFT, Alerts, Signout, Notes, DOP. The bottom of the browser shows a 'Sponsored by:' field and a 'Document: Done' status.

Clinical data warehouse

2,500,000 **patient records**

62,000,000 **laboratory test** batteries

12,000,000 gluceses

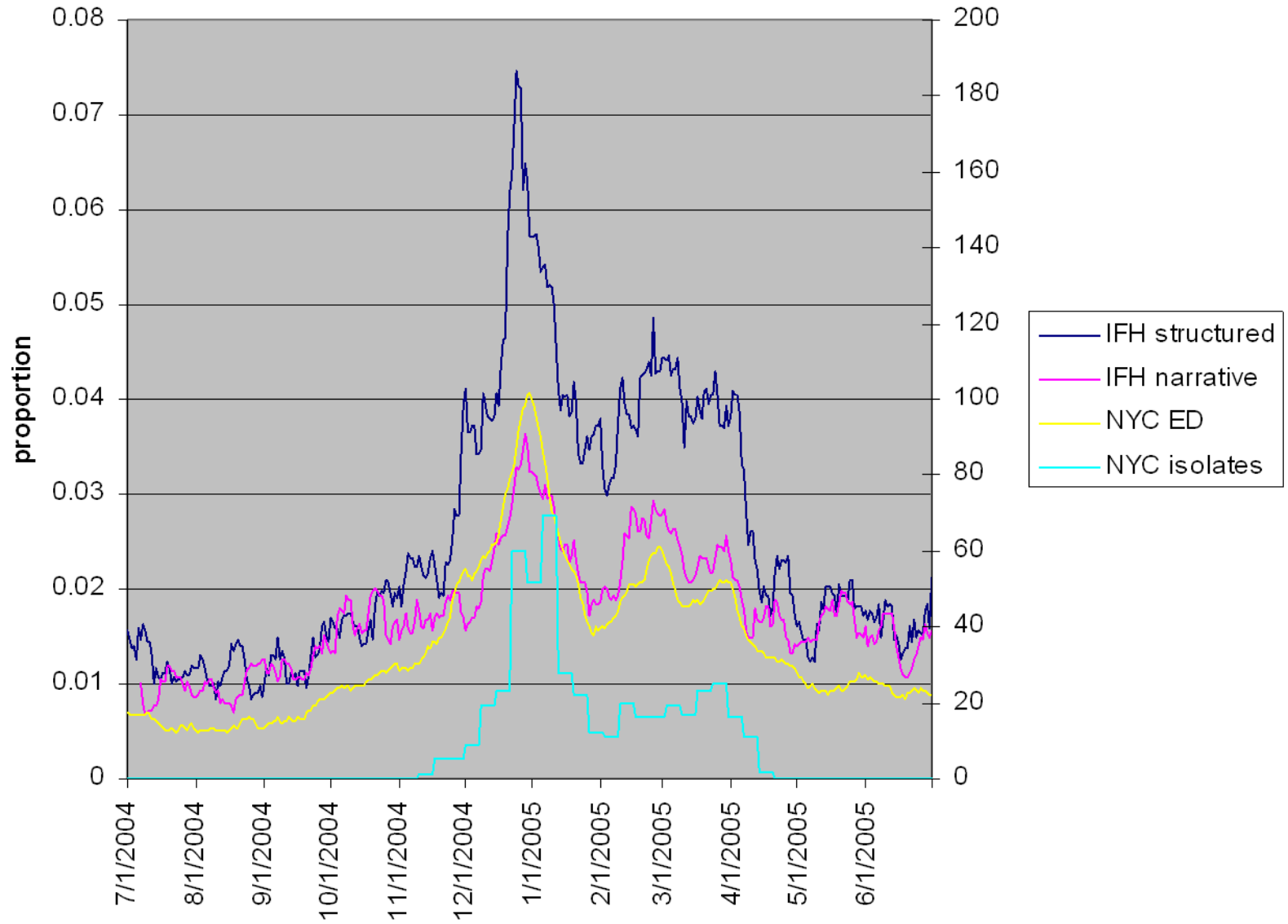
6,000,000 **clinical notes**: discharge summary, admission, progress, signout, and visit notes

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

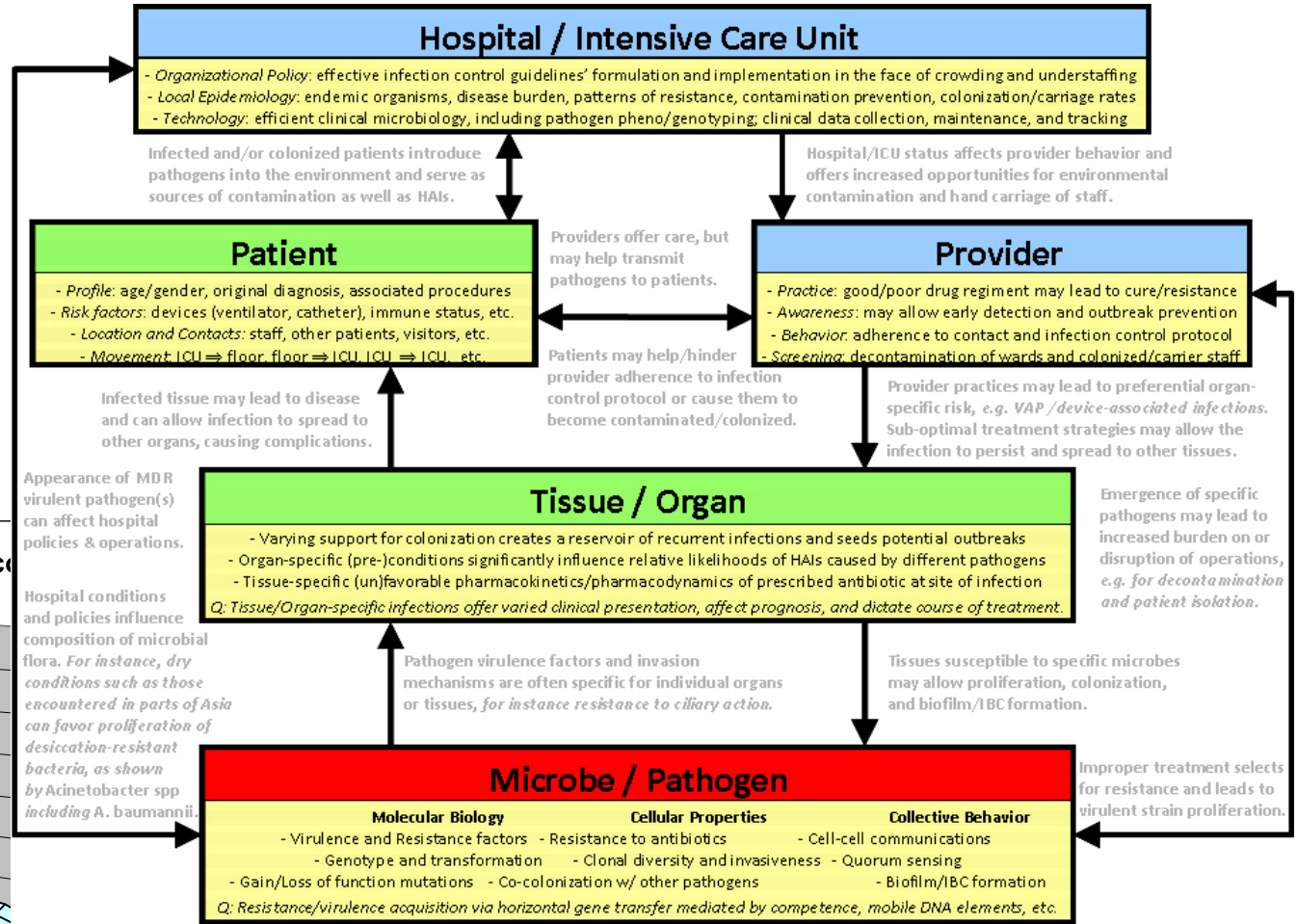
20,000,000 **inpatient orders**, outpatient orders
flow sheeted nursing documentation c VS

Surveillance

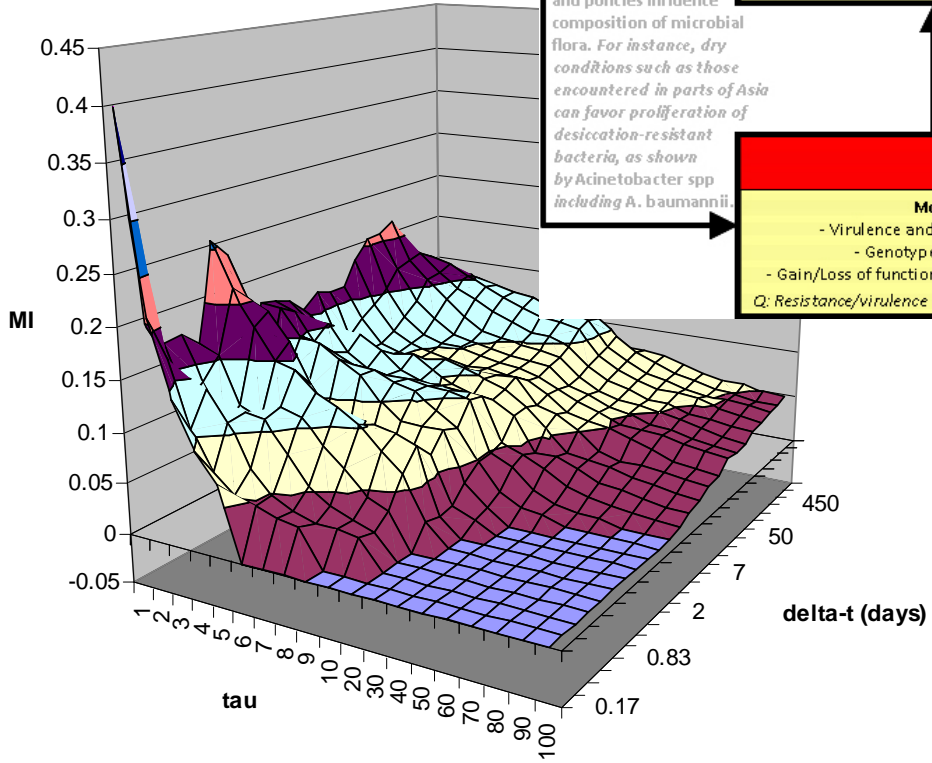
ILI proportion, 7-day running average



Modeling



Gluc



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**

The screenshot displays the homepage of GetHealthyHarlem.org. At the top, there is a navigation bar with categories: Fitness, Environment, Food, Spirit & Mind, Health Info, Around Harlem, and Help. A search bar is located on the right side of the header. Below the navigation, there is a large image of a group of people in a gym setting, possibly participating in a fitness class. To the right of this image, there is a section titled "Why Join the Site?" which lists benefits of registering, such as creating a profile, posting blogs, and accessing free resources. Below this, there is a "Check out our Newsletter" section and an "Active Site Members" section featuring profile pictures of users like admin, Laura, and aida_choimondeley Fabi. The main content area features two articles. The first article is titled "October is national breast cancer awareness month" and includes a pink ribbon icon and text about the significance of the month and available resources. The second article is titled "Find out where you can get a flu shot in NYC" and includes an illustration of a doctor examining a patient. Both articles have a "Read more" link and a "Login or register to post comments" option.

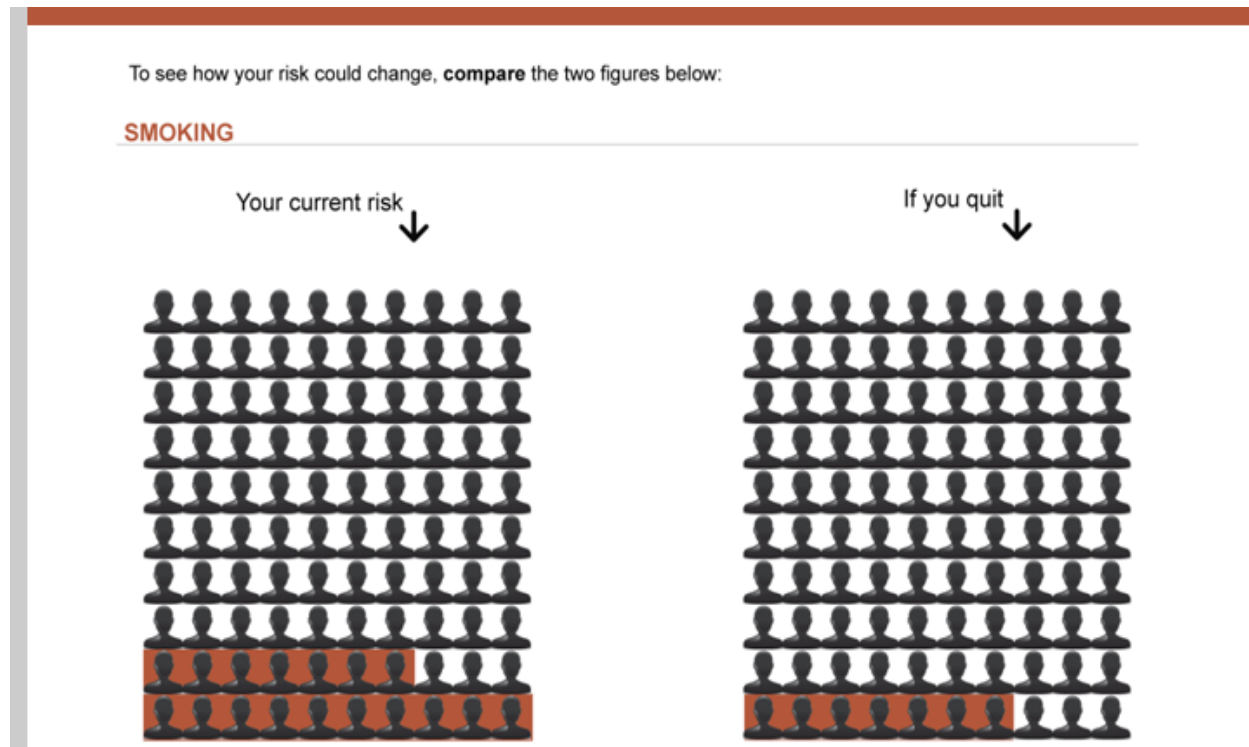
Tailored Behavioral Interventions

Tailored Lifestyle Conversions (TLC)

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

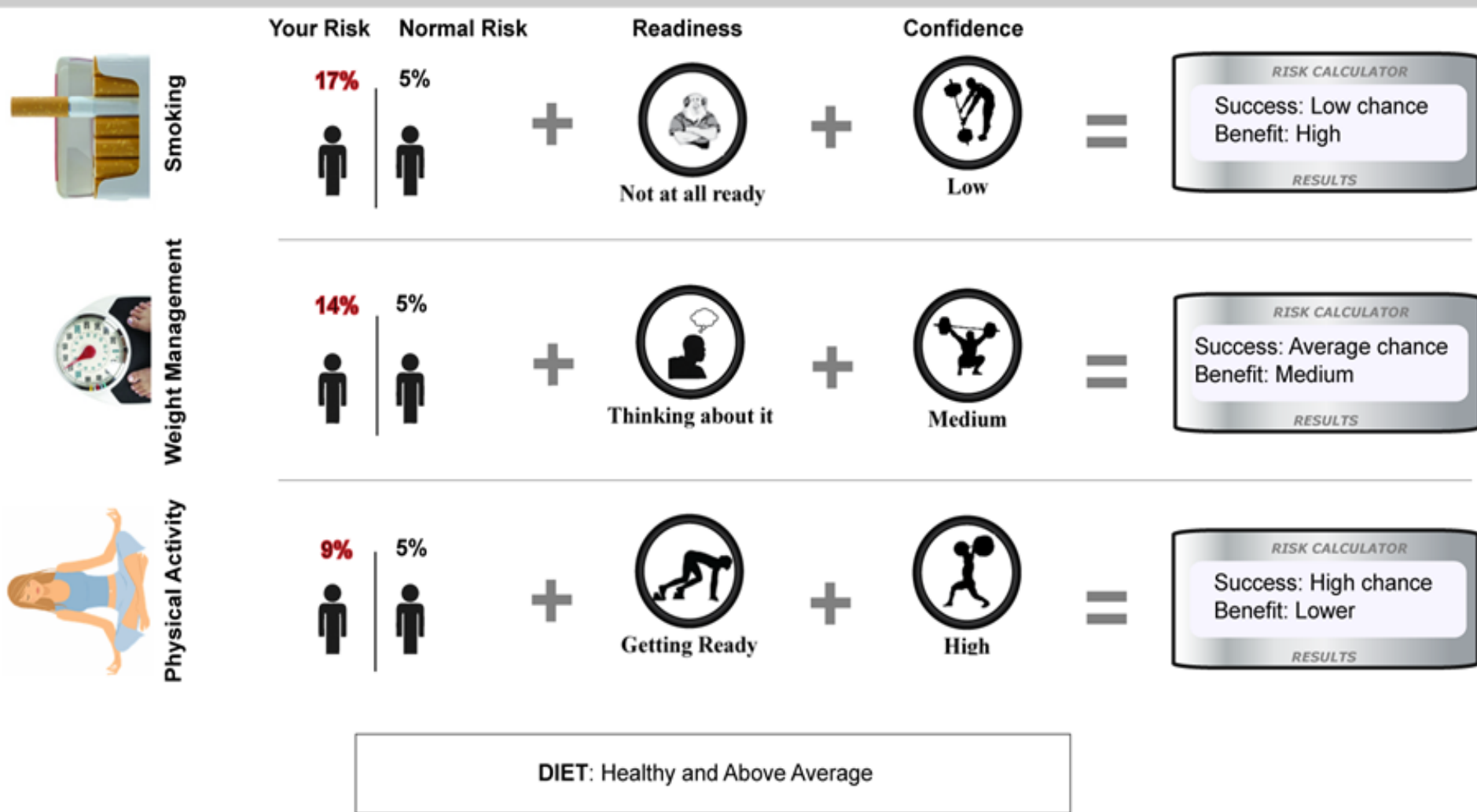
Tailored TLC Report

Sample behavioral risk graphic:



Tailored TLC Report

Sample patient decision support:



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

Physical Activity



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

Chance of Success & Benefit of Behavior Change

- Success: Average chance
- Benefit: Medium

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

Weight Management



- Healthy!
- BMI = 23

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.

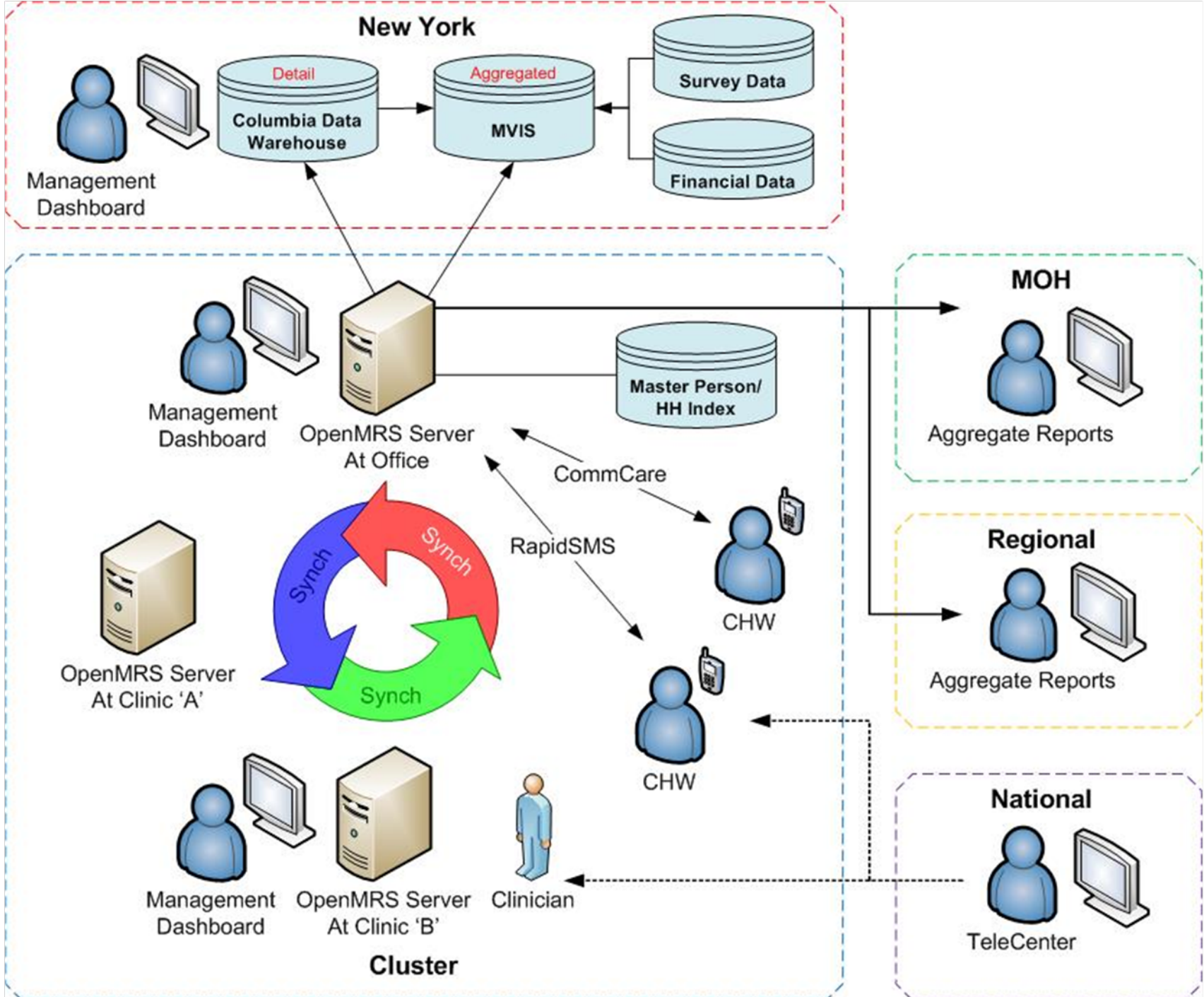
Andrew Kanter

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. Ruhiira, Uganda



| Monthly Serial Number | Registration number | | New Patient | | | | Seen within 4 weeks of appointment | Treatment / Advice | Service fee/ Card charge |
|-----------------------|---------------------|---------|-------------|-----------|-------|-----|------------------------------------|--------------------|--------------------------|
| | new | Revisit | Name | Address | Age | Sex | | | |
| 567 | 7145 | - | [REDACTED] | Mukwapala | 9 1/2 | F | Malaria | 32 | Sph stand penicilins |
| 568 | 7146 | | [REDACTED] | Mtawoni | 24 | F | URT | 8 | Cotrim II bid |
| 569 | 7147 | | [REDACTED] | ongq | 25 | F | TIV | 31 | Flagyl + stand. |
| 570 | 7148 | | [REDACTED] | Saviti | 20 | M | Sore throat | 11 | DCW + bid |
| 571 | 7149 | | [REDACTED] | Majawa | 32 | M | Wounds | 36 | Abx and + Dd. |
| 572 | 7150 | | [REDACTED] | Mukwapala | 1 | M | URT | 8 | Cotrim bid penicilins |
| 573 | 7151 | | [REDACTED] | Mukwapala | 3 | F | Conjunct | 23 | TEO Reflow to Zct |
| 574 | 7152 | | [REDACTED] | Mwamadi | 20 | F | Dyspep | 46 | Magnesium + penicilins |
| 575 | 7153 | | [REDACTED] | Mwamadi | 29 | F | U n / I | 8 | Calm + bid + spiro + bid |
| 576 | 7154 | | [REDACTED] | Thandwe | 7 | F | Malaria | 32 | spirital + penicilins |
| 577 | 7155 | | [REDACTED] | U | 35 | M | U n / I | 8 | Acid + bid |
| 578 | 7156 | | [REDACTED] | U | | F | Aneurysm | 15 | AS + bid |
| 579 | 7157 | | [REDACTED] | Gandi | 23 | F | Dyspep | 49 | Magnesium + spiro + bid |
| 580 | 7158 | | [REDACTED] | KDulla | 30 | M | U n / I | 8 | DCW + bid + penicilins |
| 581 | 7159 | | [REDACTED] | a Dulla | 16 | M | Malaria | 32 | spirital + AS + bid |
| 582 | 7160 | | [REDACTED] | Mallalla | 27 | M | U n / I | 8 | Acid + bid + AS + bid |
| 583 | 7161 | | [REDACTED] | Etamun | 18 | F | U n / I | 8 | Calm + bid + AS + bid |
| 584 | 7162 | | [REDACTED] | ga Gandi | 1 | M | U n / I | 11 | Calm + bid |
| 585 | 7163 | | [REDACTED] | Thandwe | 6 | F | Dyspep | 49 | Magnesium + spiro + bid |
| 586 | 7164 | | [REDACTED] | Ganjilly | 1 | M | U n / I | 11 | Calm + bid + spiro + bid |



Common Multilingual Structured Data Dictionary



Millennium Global Village-Net Terminology Service Bureau

[Change Password](#)

[Logout](#)

[Preferences](#)

[Translate Concepts](#)

[Translate Phrases](#)

[Manage Concept Translations](#)

[Manage Phrase Translations](#)

Filter Concepts by 123 concept(s) Only without translation

Search:

1, 2, 3, 4, 5, 6, 7

Previous, [Next](#)

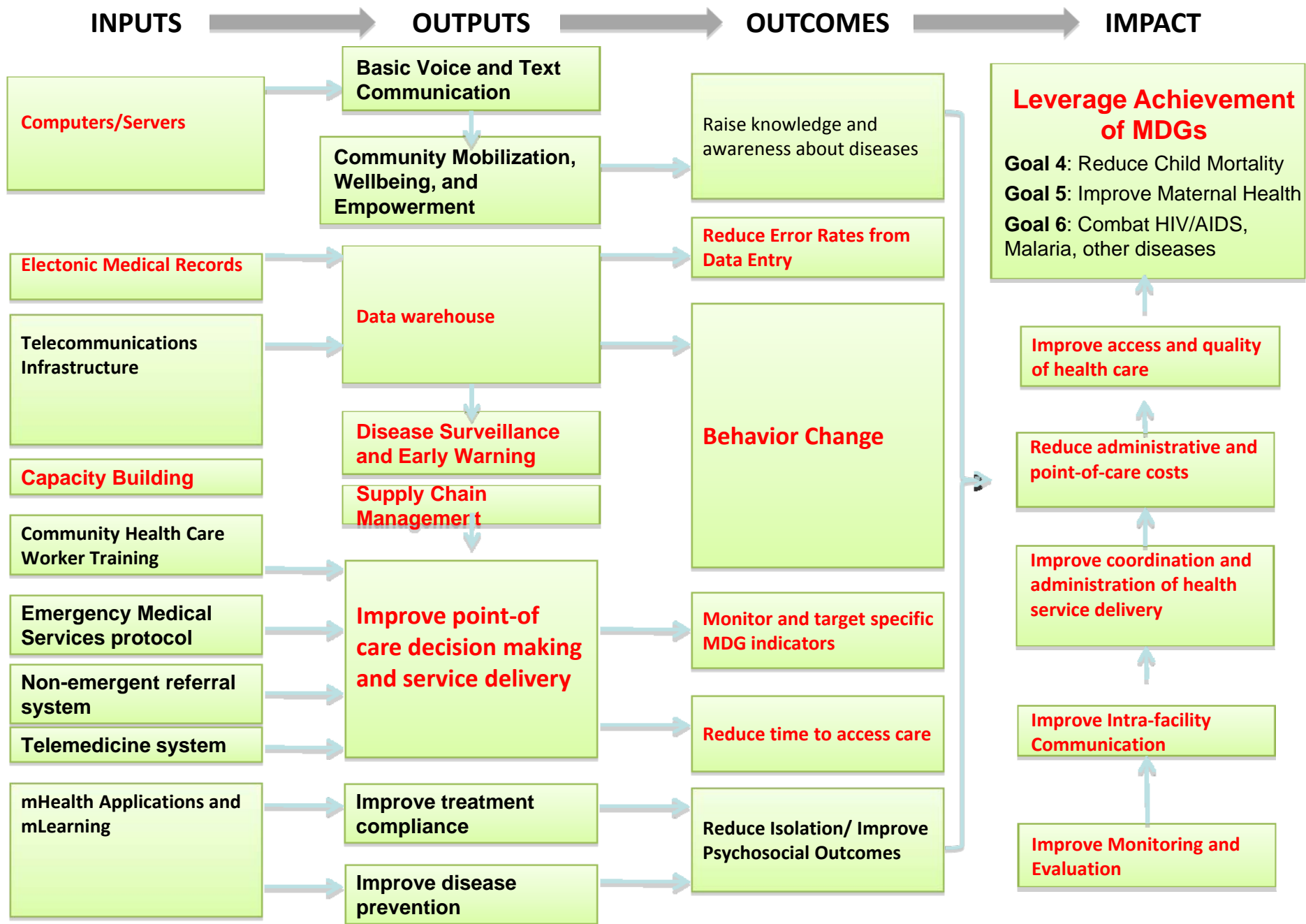
| | |
|--|--------------------------------------|
| ACUTE BACTERIAL PNEUMONIA | PNEUMONIE AIGÛE PRÉSUMÉE BACTÉRIENNE |
| ACUTE DIARRHEA | DIARRHÉE AIGÛE |
| ACUTE TYPE A VIRAL HEPATITIS | HEPATITE VIRALE AIGÛE A |
| AIDS MENINGOENCEPHALITIS | ENCÉPHALOPATHIE PRÉSUMÉE DUE AU VIH |
| ALCOHOL ABUSE | ABUS D'ALCOOL |
| ANEMIA | ANÉMIE |
| ASTHMA | ASTHME |
| BACILLARY DYSENTERY | DYSENTERIE BACILLAIRE |
| BACTERIAL MENINGITIS | MÉNINGITE BACTERIENNE |
| CANDIDIASIS OF MOUTH | CANDIDOSE BUCCO-PHARYNGÉE |
| CANDIDIASIS OF THE ESOPHAGUS | CANDIDOSE ŒSOPHAGE |
| CANDIDIASIS, ORAL | CANDIDOSE, BUCCO-PHARYNGÉE |
| CARDIOVASCULAR DISEASE | MALADIES CARDIO-VASCULAIRES |
| CEREBRAL MALARIA | MALARIA CÉLÉBRAL |
| CHRONIC DIARRHEA | DIARRHÉE CHRONIQUE (>=1 MOIS) |

Names and synonyms

| Language | Translation | Preferred by language |
|-------------|---|-------------------------------------|
| English | Acute Diarrhea | <input checked="" type="checkbox"/> |
| | Acute Diarrhoea | |
| Kiswahili | - | |
| Kinyarwanda | - | |
| Portuguese | diarrhea agudo | <input checked="" type="checkbox"/> |
| French | <input type="text" value="DIARRHÉE AIGÛE"/> | <input type="radio"/> |
| | <input type="text"/> | <input type="radio"/> |

Short Names and Abbreviations

| | |
|-------------|---|
| English | - |
| Kiswahili | - |
| Kinyarwanda | - |
| Portuguese | - |



Jacqueline Merrill

Public Health Systems Research

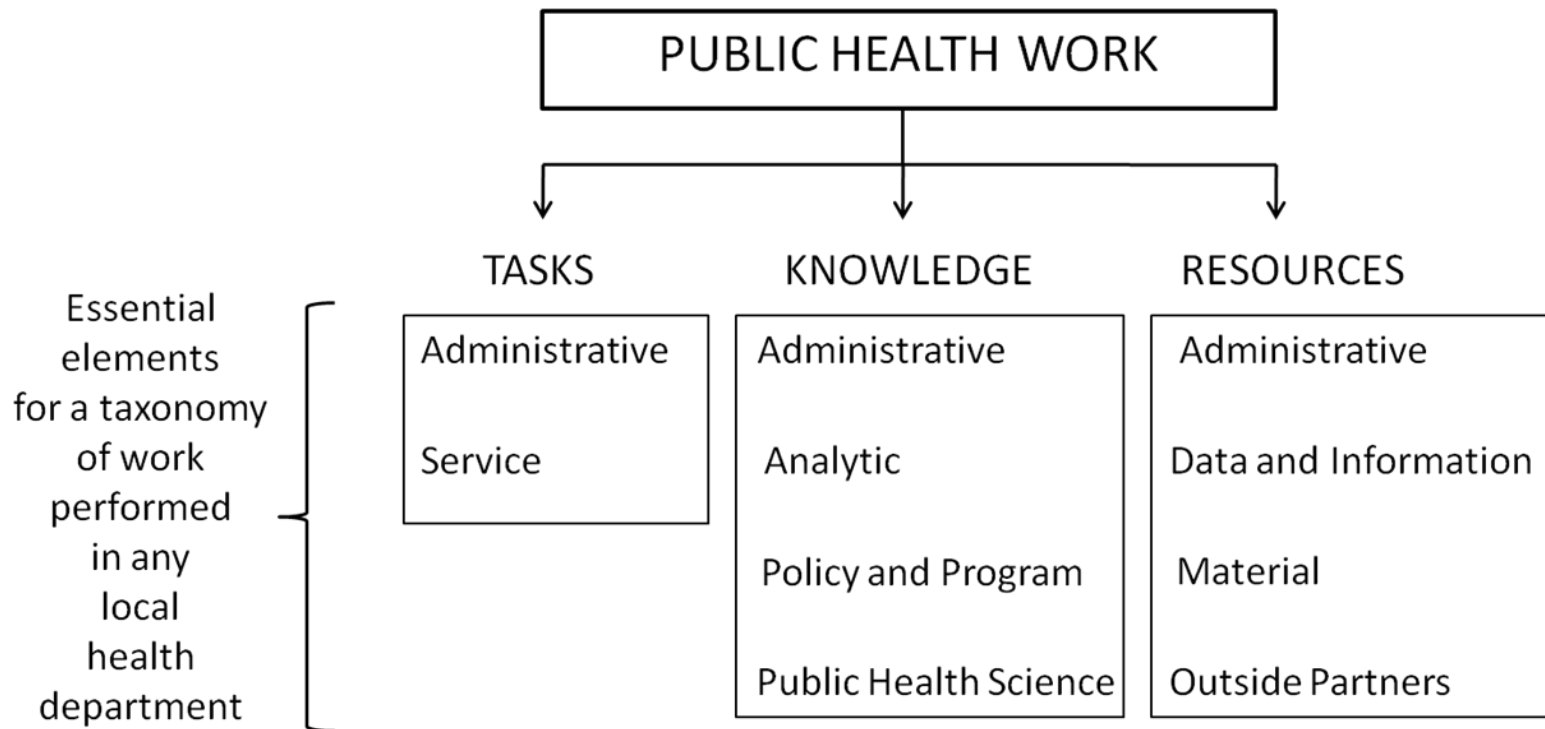
Infrastructure and capacity development

- 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

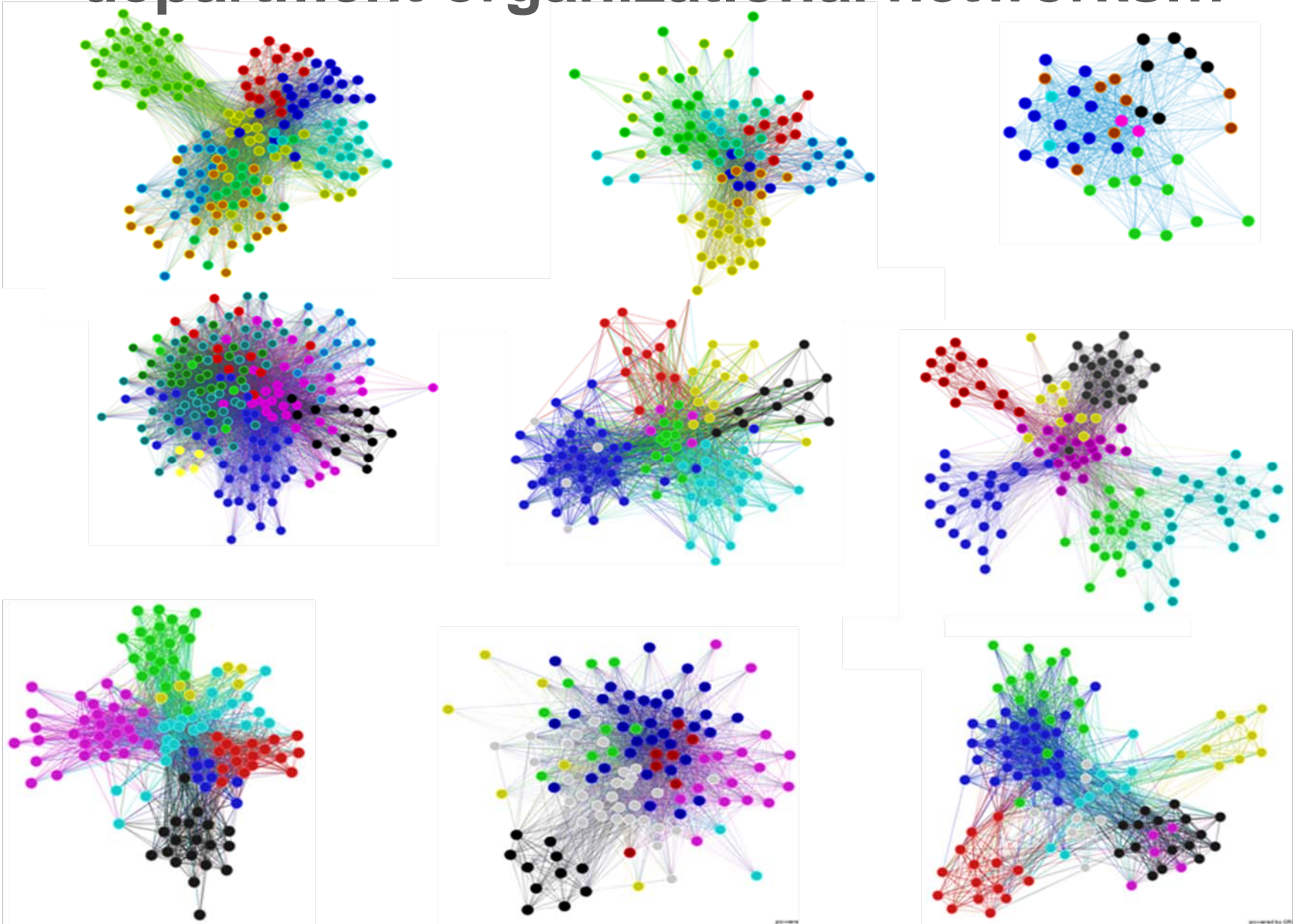
Knowledge Management to produce standard data: Taxonomy Development



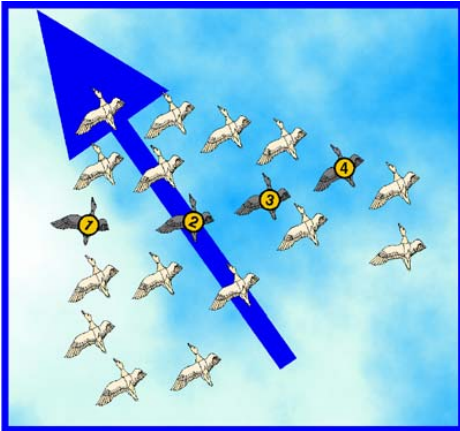
Evidence-based management decisions

Optimize **common elements** across systems

What we found comparing local health department organizational networks...



Health Information Exchange for PH

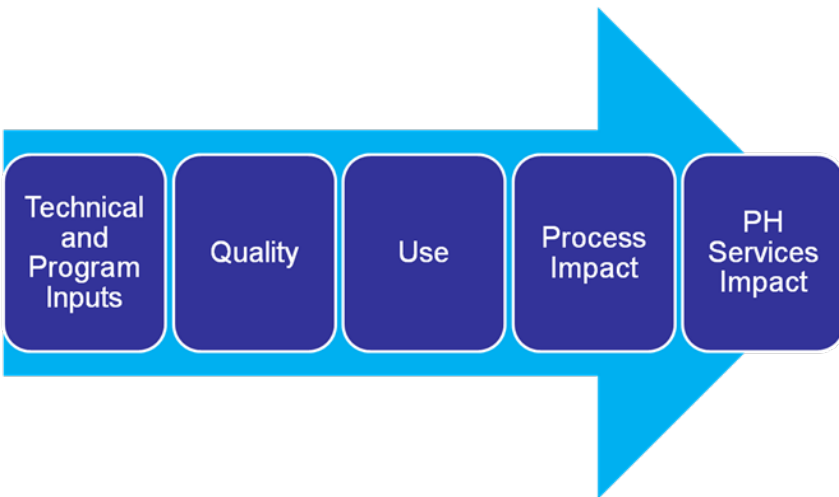


Homophily & Proximity in EHR implementation

- Multi level data sets and SEM

Impact of HIE for PH

- Comparative case study





Biomedical Informatics

discovery and impact

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▶ ▶

▶ ▶ ▶ ▶