


COMMUNITY VITAL SIGNS

Incorporating Social Determinants of Health into Electronic Health Records to Promote Patient and Population Health

Michael Topmiller, PhD
HealthLandscape
American Academy of Family Physicians

Data! Fostering Health Innovation in Kentucky and Ohio
October 29, 2015

Visiting Your Doctor



- Registration
- Nurse
 - Weight
 - Blood Pressure & Pulse
 - Temperature
- Physician
 - Lab Tests
 - Action Plan

• Maybe 10 minutes spent with your doctor
• 525,960 total minutes in a year (more or less)

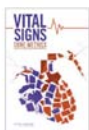
• Where are the *Community Vital Signs*?

Patient A	Patient B
<ul style="list-style-type: none"> • Clinical Vital Signs <ul style="list-style-type: none"> • Adult Male, Age 45 • BMI -> 31 • Diabetic <ul style="list-style-type: none"> • A1c -> 10.1 • Hypertensive (Stage 2) • Smoker • Community Vital Signs <ul style="list-style-type: none"> • Wealthy Suburb • Low Crime Rates • Access to Parks, Grocery Stores • Walking/Biking Paths • Low Unemployment 	<ul style="list-style-type: none"> • Clinical Vital Signs <ul style="list-style-type: none"> • Adult Male, Age 45 • BMI -> 31 • Diabetic <ul style="list-style-type: none"> • A1c -> 10.1 • Hypertensive (Stage 2) • Smoker • Community Vital Signs <ul style="list-style-type: none"> • Low-Income Neighborhood • High Crime Rates • Food Desert • No Sidewalks • Poor Quality Parks
<p>Would Community Vital Signs change how doctors treat patients?</p>	

Challenges: Selecting Community Vital Signs

- IOM Reports - Capturing Social and Behavioral Domains in Electronic Health Records: Phase 1 & Phase 2

Vital Signs
Core Metrics for Health
and Health Care Progress



- "Community Vital Signs": Incorporating geocoded social determinants into electronic records to promote patient and population health. Andrew W Bazemore, Erika K Cottrell, Rachel Gold, Lauren S Hughes, Robert L Phillips, Heather Angier, Timothy E Burdick, Mark A Carrozza, Jennifer E DeVoe. JAMIA July 2015

Challenges: Geography & Availability

Domain	Example of types of data	Geography
Neighborhood Socioeconomic Composition	Income, Poverty, Unemployment	County, ZCTA, census tract
Neighborhood Race/ Ethnic Composition	Black, White, Hispanic	County, ZCTA, census tract
Neighborhood Economic Conditions	Inequality, Uninsured	County, ZCTA, census tract
Environmental Exposures	Air pollution, water quality	County
Built Environment	Land use	County
Neighborhood resources	Population density	Census tract
	Access to parks, recreational facilities	County
	Access to healthy foods	Census tract

Geography: How do we define community/neighborhood?

Availability: What kinds of data are available?

Challenges: Community Vital Signs

- How to integrate Community-level data into the Clinical encounter?
 - Technical Requirements
 - Interoperability – EHRs
 - HIPAA
 - Evidence-based practices requirements
 - Translating community vital signs to action

HealthLandscape Community Vitals Signs API

The screenshot shows the HealthLandscape Geocoding API web interface on the left, which includes a search form and a 'Geocode' button. On the right, the JSON output of the API is displayed, showing a list of geocoded addresses with their corresponding coordinates and metadata.

```

{
  "results": [
    {
      "address": "1000 1st St, San Francisco, CA 94104",
      "lat": 37.7749,
      "lon": -122.4194,
      "score": 1000,
      "type": "Address"
    },
    {
      "address": "1000 2nd St, San Francisco, CA 94104",
      "lat": 37.7749,
      "lon": -122.4194,
      "score": 950,
      "type": "Address"
    },
    {
      "address": "1000 3rd St, San Francisco, CA 94104",
      "lat": 37.7749,
      "lon": -122.4194,
      "score": 900,
      "type": "Address"
    }
  ]
}
    
```

Ubuntu Linux, Nginx web server,
Python/Gunicorn WSGI server @ Amazon
AWS

What's Next? – Case Management

The screenshot displays a 'Community Viewer Summary Table' with columns for Neighborhood, County, and US, all showing a value of 16. Below the table is a map titled '16% Poverty' showing a geographic area with various colored markers and a legend. A sidebar on the left lists measures from 1 to 7, and a text box below the map contains a 'Brief narrative explaining the evidence connecting POVER'.

What's Next? – Clinical Encounter

Health Risk	H			
	M			
	L			
		L	M	H
		Neighborhood/Community Risk		

Patient A

Health Risk	H			
	M			
	L			
		L	M	H
		Neighborhood/Community Risk		

Patient B

Health Risk	H			
	M			
	L			
		L	M	H
		Neighborhood/Community Risk		

What's Next

- Amazon Machine Image
- OVA export / import
 - VMWare
 - Oracle VM Virtualbox
- For more information: info@HealthLandscape.org

Questions

Michael Topmiller, PhD
Health GIS Research Specialist
HealthLandscape
American Academy of Family Physicians
mtopmiller@aafp.org
