# M-Health for Vulnerable Populations
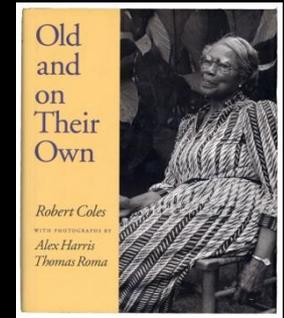
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Objectives

- **At the completion of this presentation, participants will be able to:**
  - Identify the balance between NCD (non-communicable disease) and ID (Infectious Disease) prevention efforts in the developing world
  - Project the potential impact of NCD in Central America on emerging economies and the US healthcare system
  - Describe the pros and cons of mHealth in low resource areas & challenges of digital connectivity in LMIC (political, technical, financial)
  - Debate the concept of a "digital ecosystem for health" in LMIC (low and middle income countries).
  - Assess the impact of mHealth efforts at the grass-roots community level with field workers.

Geography is Irrelevant
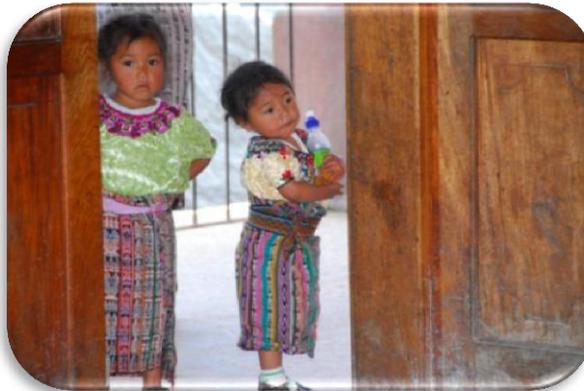
Balancing: NCDs & ID

- Today 20-25% burden global disease from lifestyle & behavior – rocketing in LMIC[1]

- 4/5 of worlds pop'ln in developing regions – where NCDs & MVA are quickly replacing ID & malnutrition – now leading cause of death. [1]

- By 2020 – NCDs will be 7 of 10 deaths worldwide[1]

- CVD - principal cause of death in the developing world, accounting for twice as many deaths as TB, malaria, and HIV combined[2]

1. http://www.who.int/trade/glossary/story050/en/
2. http://www.who.int/mediacentre/factsheets/fs317/en/index.html

First – Orientation Guatemala – Geopolitical Boundaries

Impact – Why Should the US Care?

WAITING.
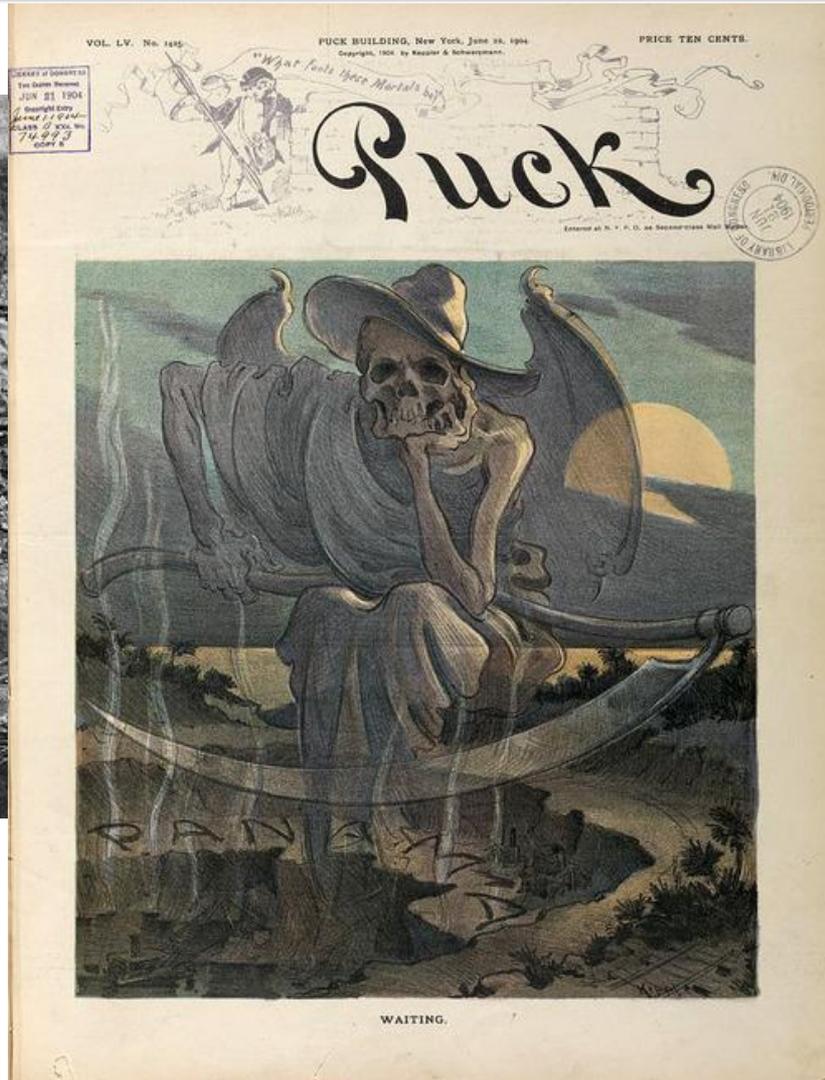
Impact on US Healthcare

- By 2020, Hispanic ethnicities will comprise 30% of US population.
- "10% escalation CVD within the next 20 years with a 3-fold direct cost increase, directly attributed to an aging society and the growth of CVD-prone Hispanic populations in the US"

Value of Primordial and Primary Prevention for Cardiovascular Disease: A Policy Statement from the American Heart Association. Circulation, (2011), 124:967-990.

Guatemala Society & Health

- 131 out of 187 (UN Human Development Index)
- Mixed society– varying levels of poverty
- Indigenous
    - Marked childhood malnutrition
    - Stunting and anemia
    - High obesity & HTN
    - Primarily in Western Guatemala
    - Severe poverty
    - Marginalized

The Most Vulnerable Ones

- Indigenous Mayans
- Similar to US Native American treatment
- Non-Spanish speaking (Tzu'tzuhil)
- 84% illiteracy rate
- Influence of Western lifestyles, Chinese/American goods and tuk-tuks
- 60% increase CVD in last decade
- "Starving with a Full Stomach"

The Healthcare System

- Health Centers
  - Health Posts
  - Auxiliary nurses
  - 8th grade education
  - 9 months training in healthcare by MOH
  - Case load is 1500 to 2000 per AN
  - No training in chronic diseases
  - Low med availability
  - NO injectable insulin

The Promise - mHealth

- **92% of all Guatemalans have (and use) a cell phone**
- Widespread digital connectivity
- Using cellular technology to:

  - Educate health workers
  - Connect with patients
  - Collect, organize, store, & manipulate data
  - Coordinate care – patients/communities/regions
  - Turn data to information
  - Influence behaviors

Ok Informaticians – What Are the Challenges?

- Money to support project? YES
- Connectivity? not so much
    - But what about electrical power??
- Illiteracy? You betcha
- Corruption in Telecom? Absolutely
- Standards? Always
- Compliance? Maybe
- Local IT Workforce? Definitely
- **Interoperability and avoiding "one-offs" –** CRITICAL & a "BHAG"

eHealth in LMIC - CommCare

- Case Management System

eHealth in LMIC - MOTECH

- SMS "engine" with intelligence

eHealth in LMIC - OpenMRS

- Open source medical record system

http://openmrs.org/
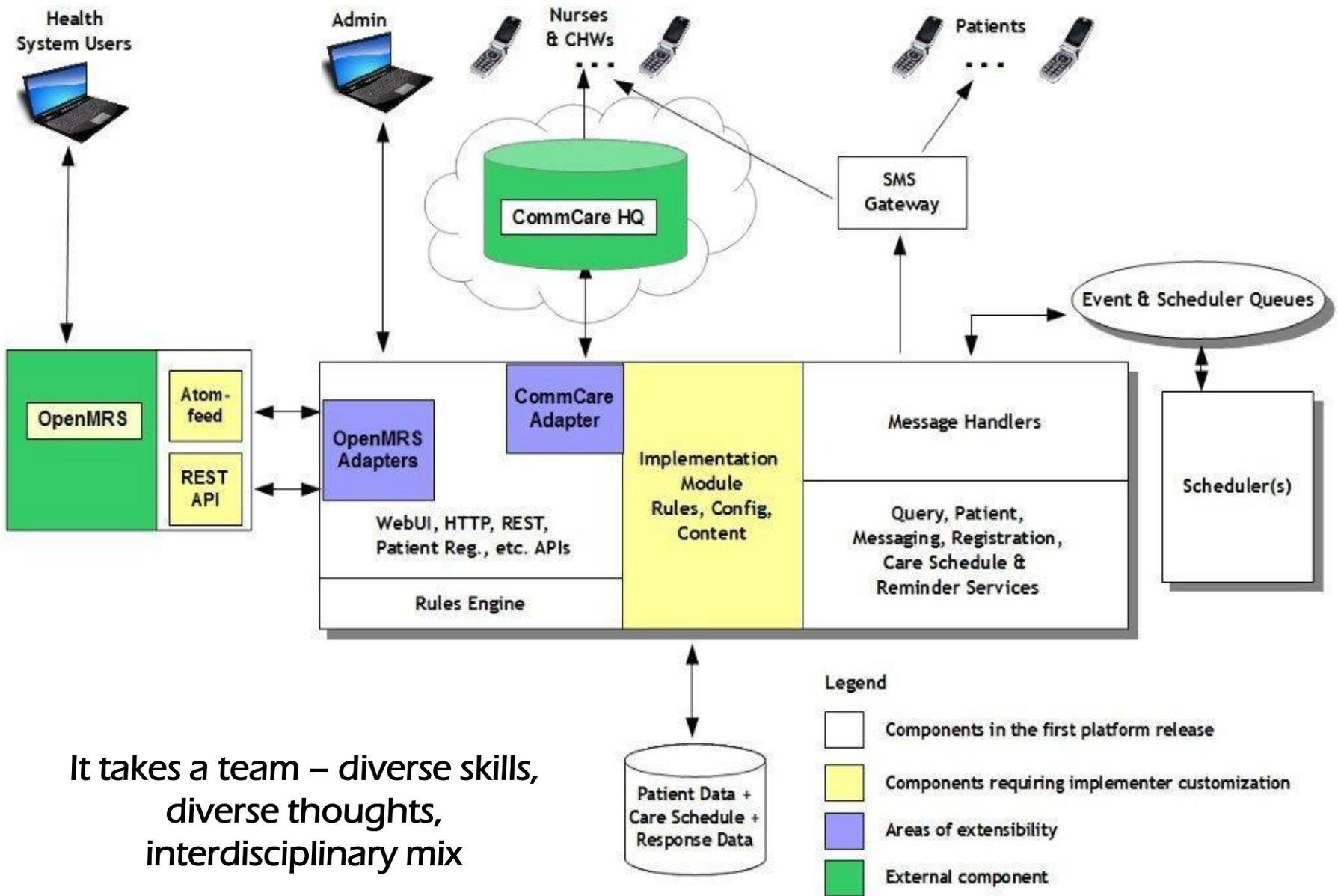
It takes a team – diverse skills, diverse thoughts, interdisciplinary mix

The "Ecosystem" – connecting silos to form a system

Guatemala – or Anywhere?

- mHealth in Guatemala
  - Train the ANs – via Android tablets
    - 2 weekend immersions with local SON – chronic disease, health promotion, behavior modification
    - Ongoing remedial sessions weekly (case studies) in community
    - Risk stratifier – more efficient use of scare resources
    - CHWs equipped with smart phones – data collection.
  - Connect Health Posts and Health Centers with smart phones - referrals
  - Connect ANs with patients – SMS'ing for Health
  - Creating a digital ECOSYSTEM
  - Empowering field workers & patients/families/communities

Systems-Level Thinking

From Silos to Systems: An Overview of eHealth's Transformative Power

Rockefeller Foundation Report

Making the eHealth Connection:

Global Partnerships, Local Solutions

Bellagio Center Conference Series

http://www.rockefellerfoundation.org/uploads/files/e331d255-059f-4fc6-b814-5938f8ee017e-rf.silos_1-13.pdf

Conclusion

- The need is great & ICT is the "killer app"
- NCDs are stealthy grim reapers
- Geography is irrelevant – disparity is everywhere
- mHealth/eHealth – Health & Healthcare "Off the Mainframe"
- It is about data libre, empowerment, & social good

GRACIAS
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