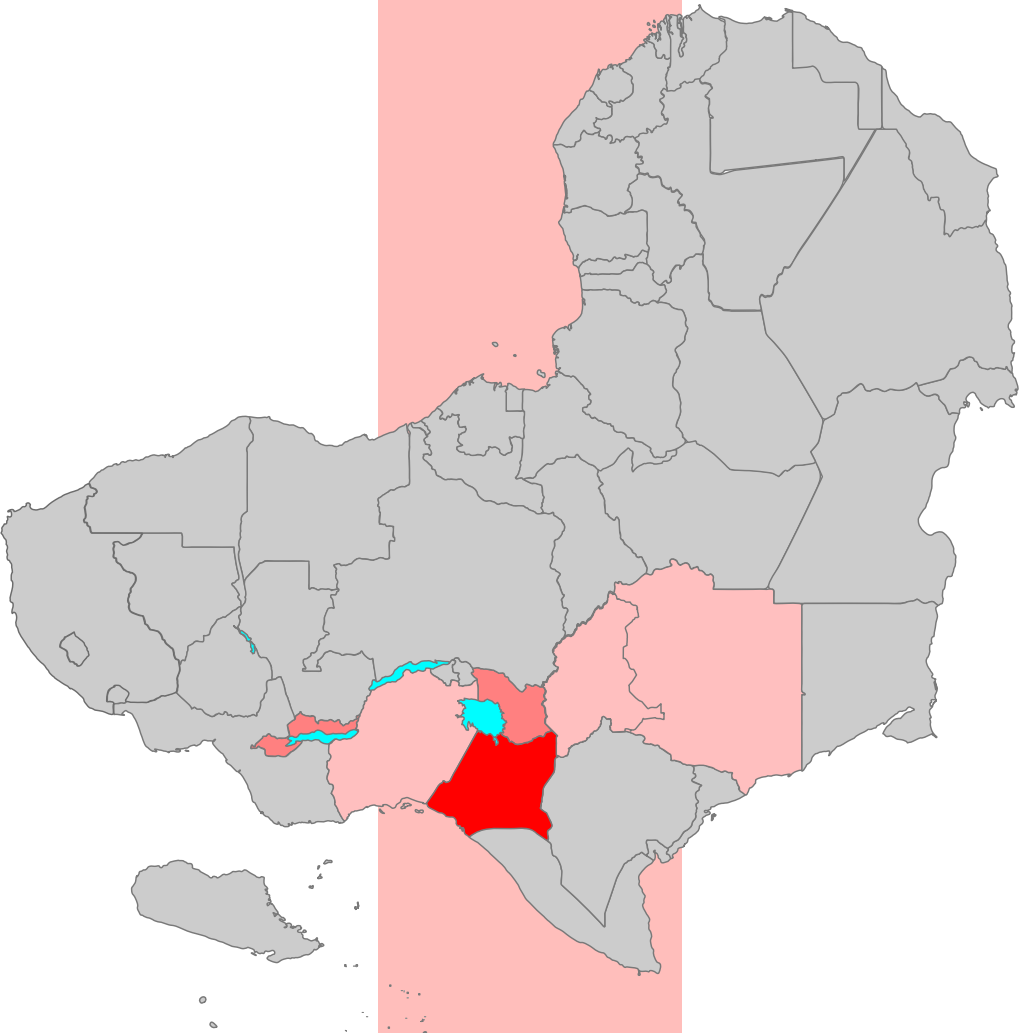high-quality healthcare, *everywhere!*

health-E-net

Pratap Kumar
CEO & Founder
pratap@health-e-net.org

Problem: Limited & poor data on primary care
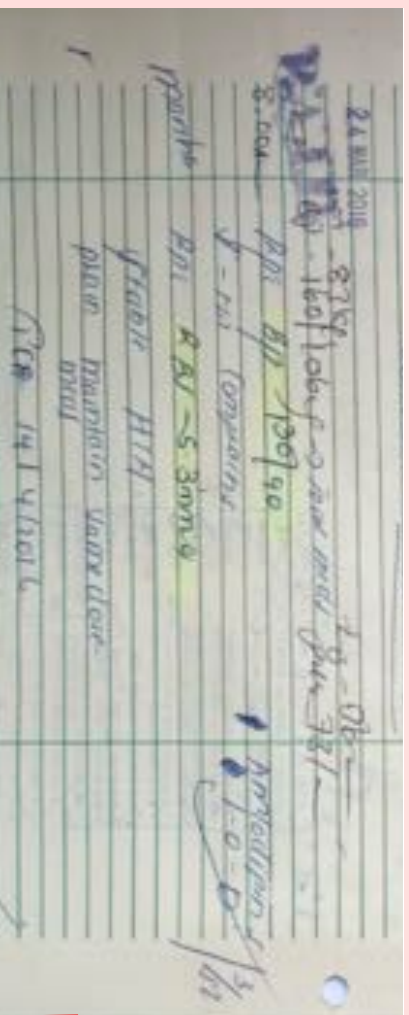

Data from paper documentation

(huge effort, limited, poor data)

Can't improve what you can't measure

Barrier to achieving SDG3

(global problem; $23b industry)

Solution: Smart, paper-based clinical documentation

Use of templates
(structured, evidence-based checklists)

Print on demand
(using simple rubber stamps, or pre-printed)
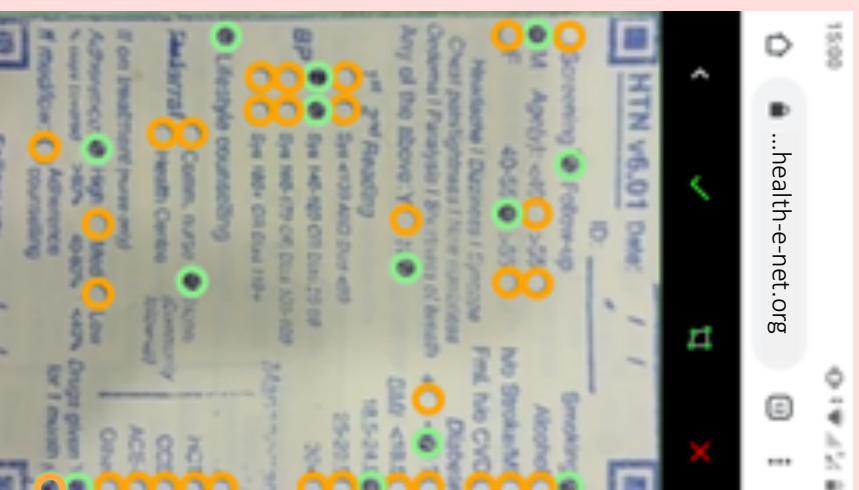
Maintain existing workflows
(minimal change management, training)

Digitise with minimal effort & cost
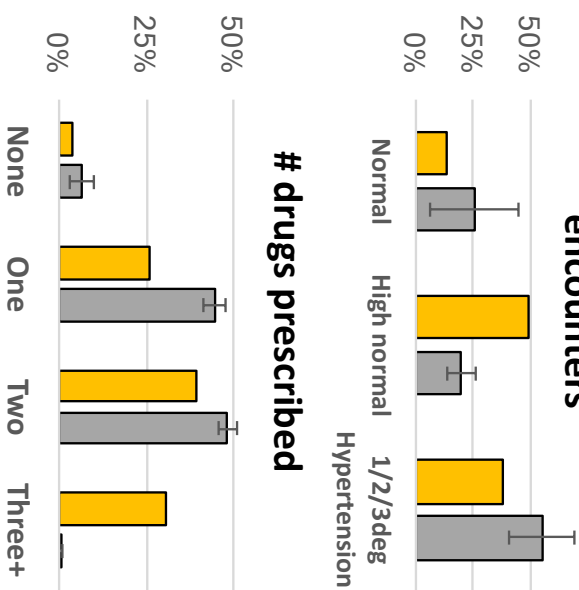*(using computer vision technology)*

*paper*EMR

(cross-platform, browser-based computer vision app)

~10 seconds

Impact on NCD, infection management
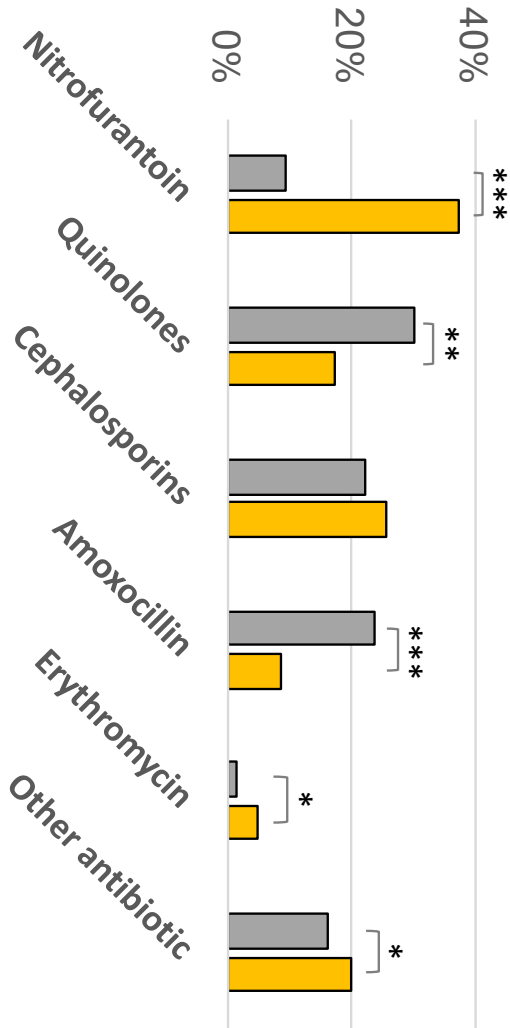
BP control in repeat encounters

- Normal
- High normal
- 1/2/3deg Hypertension

drugs prescribed

- None
- One
- Two
- Three+

Legend:
- Dedicated NCD clinic using PaperEMR (yellow)
- General outpatient clinic using PaperEMR (grey)

Kleczka et al. Int J Med Informatics 2018

Antibiotics used in UTI management

- Nitrofurantoin ***
- Quinolones **
- Cephalosporins
- Amoxocillin ***
- Erythromycin *
- Other antibiotic *

Legend:
- Pre-intervention (standard paper-based documentation) (grey)
- Post-intervention (PaperEMR + data feedback) (yellow)

Kleczka et al, BMJ Global Health 2019

Impact on maternal and newborn health

The mobile Safe Childbirth Checklist

Documenting every facility delivery in Migori County, Kenya

deliveries per facility

- PHC7 — 10.2%
- PHC6 — 8.1%
- PHC5 — 3.8%
- PHC4 — 4.5% — 44
- PHC3 — 21.1% — 207
- PHC2 — 23.7% — 232
- PHC1 — 28.7% — 281
- 37
- 79
- 100

Cesarean Section rate per facility

PHC2, PHC6, PHC3, PHC1, PHC4, PHC5, PHC8

(0% – 10% – 20% – 30%)
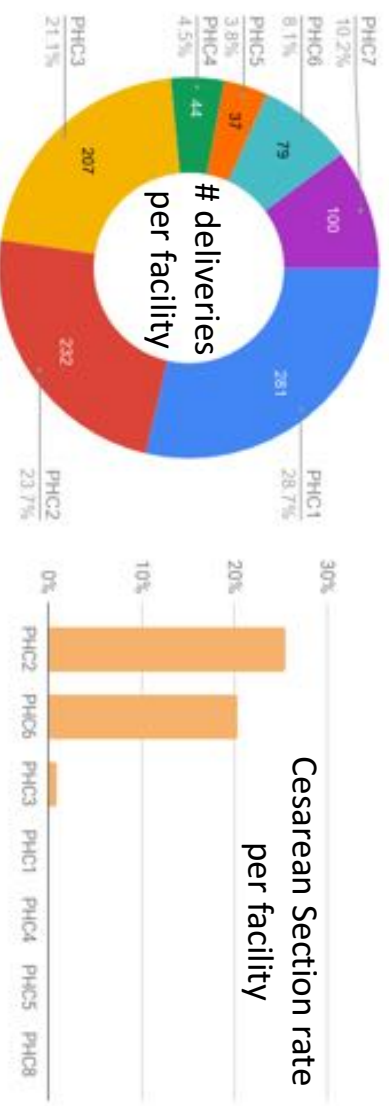
Potential impact on Covid-19

PaperEMR screening tool for Covid-19

- Rapid, large-scale, paper-based screening

(at facilities and at community-level)

- Digitisation using personal smartphones

(with minimal infrastructure roll-out/management)

- Linkage to testing, notification, contact tracing

(SMS alerts to patients, providers & health managers)

- Integrated telemedicine, referral management

(supports next steps in Covid-19 response)

The Competition

Approach	Pros	Cons	
Status quo (paper-based documentation)	- Easy to continue - No training needed	- No/limited digital data - Transcription costs	
Electronic Medical Record (EMR) systems	- Digital data - Multiple vendors	- Infrastructure - Training, workflow change - Clinician/patient interaction - GIGO	
Bespoke M&E solutions	- Digital data - Customised solutions	- Infrastructure - Training, workflow change - Customisation effort - Procurement, lock-in	

The Achievements

2017
- Research project
- 10 slum clinics
- 3,000+ records

2018
- GE grant
- Ops in Uganda
- Innovation prize
- IJMI publication

2019
- BMJ GH publication
- County contract
- Pvt. Sector, Malawi
- 500+ records/month

2020
- 10+ clients; 150+ sites
- County sales through iNGO partnerships
- Pvt. Sector (insurance)

2023
- 100+ clients; 1000+ sites
- 10+ counties in Kenya
- 5+ countries
- 20,000+ records/day

The Model

Facilities & users
- Personal device
- Paper forms/stamps

Tools

Data
- Web portal, raw data, DHIS2
- Accessed on mobile devices

Customers

- Research org. Pvt sector, ...
- NGO/ Partner to Govt.
- Local Govt.

Funders

- Research Fund, Firm, ...
- DFI (USAID)
- Local/ National Govt.

Service delivery (healthcare, claims, supplies)

Free tools (documentation, digitisation)

Data subscription, Reports ($10-100/facility/m (? per data point)

Implementer (social impact, business intel)

Social/ (social impact, business intel)

Commercial mandate

Indicator 1
90%
n=543

Indicator 2
10 %
n=61

Problem: Few, poorly distributed physicians in Africa

≤2 doctors per 10,000 people in 37 countries in Africa
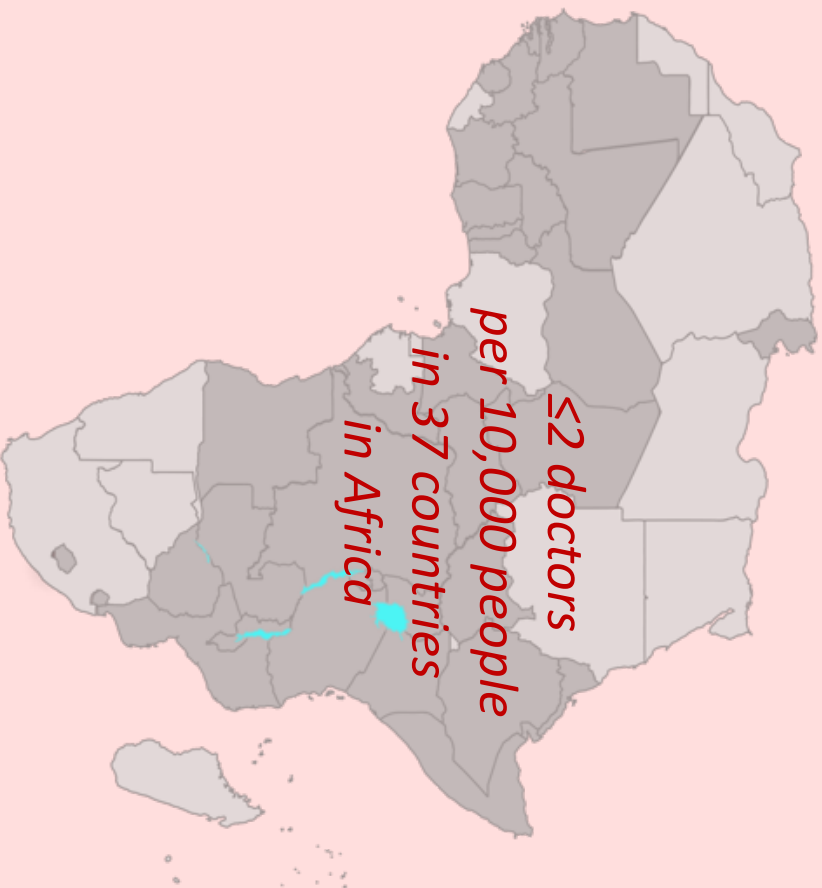
Leading to inefficient referral:

Poor information transfer
(facilities not prepared to receive referrals)

50-70% current referrals avoidable *
(by supporting frontline nurses in PHCs)

*Health-E-Net data from Turkana County, Kenya
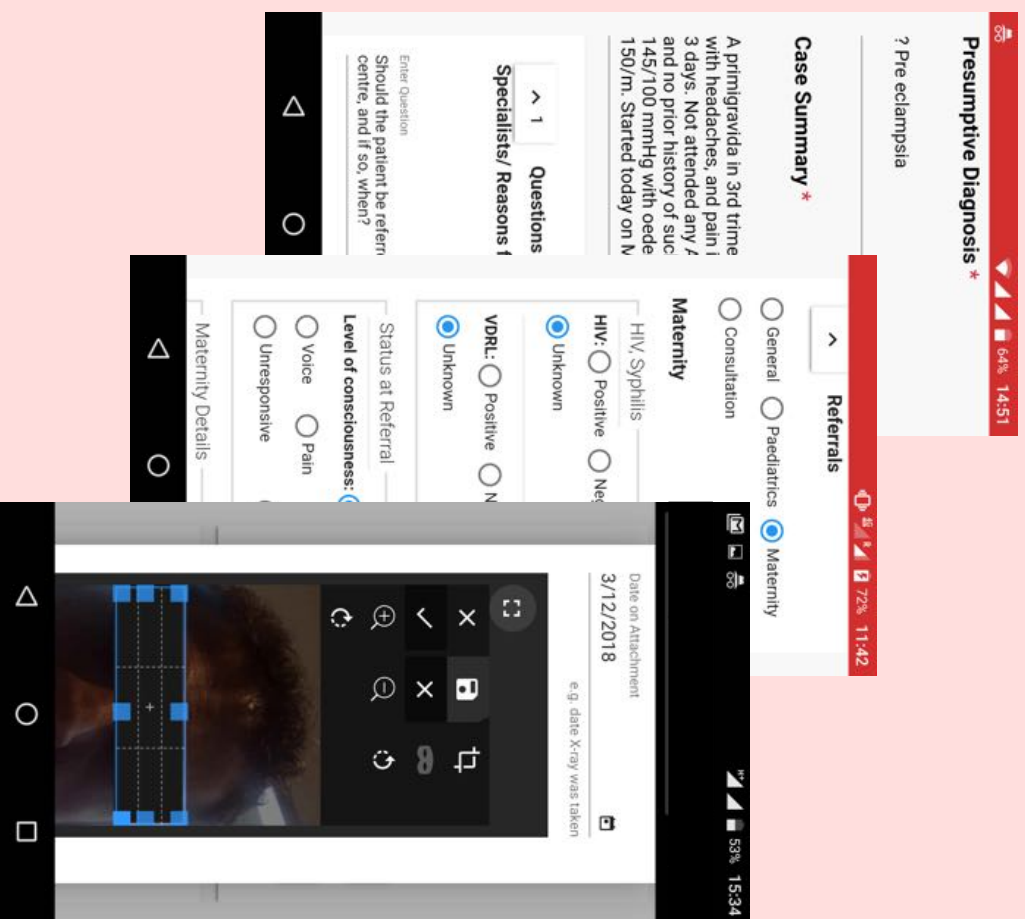
Our approach:

Combining Tele-consultations
+ Referral Management

Effective information capture
(structured + unstructured data, images, scans)

+

Effective information sharing
(fast, actionable, targeted, confidential)

Gabriel Tele-consultations + Referral Management

Minimizing infrastructure need
(bring-your-own-device 'BYOD' model)

Maximizing simplicity
(minimal training, intuitive workflows)

Diversifying use cases
(support for mobile imaging, radiology)

GabrielTRM – Impact in Turkana

Increased equity in access, lower costs

Turkana Referrals in 2017/18 - by Age, Sex
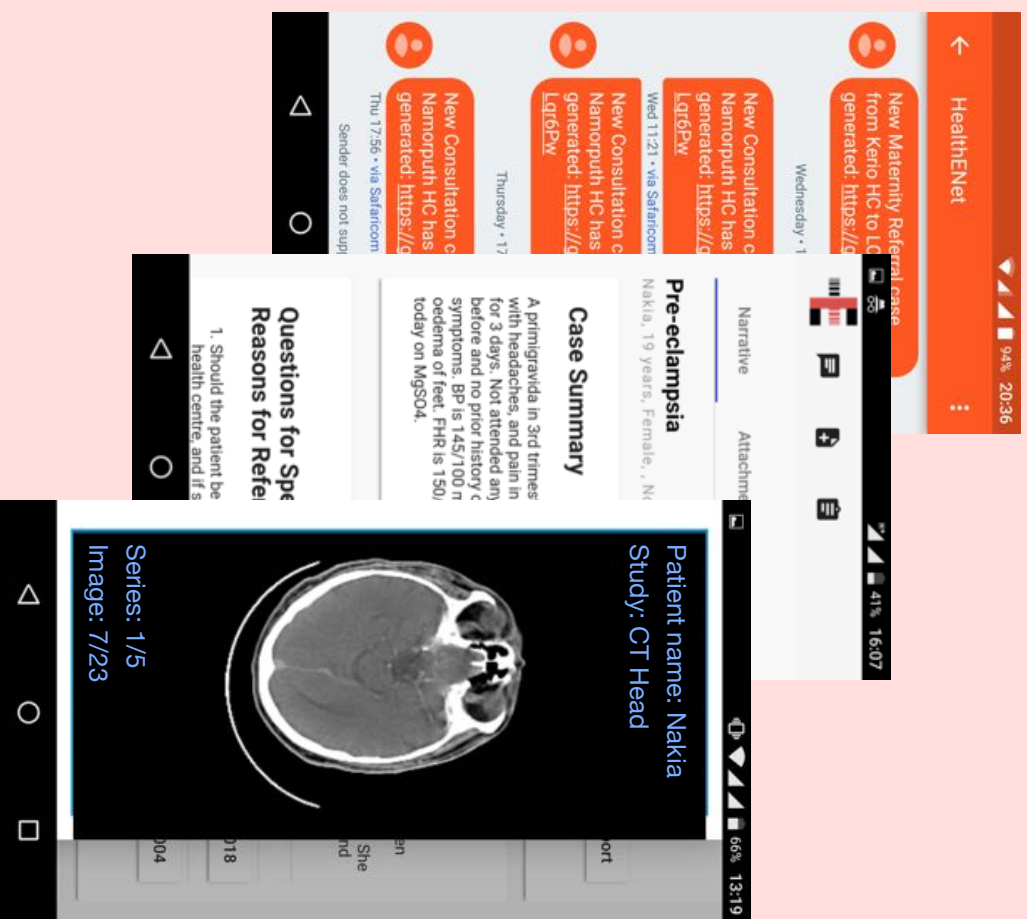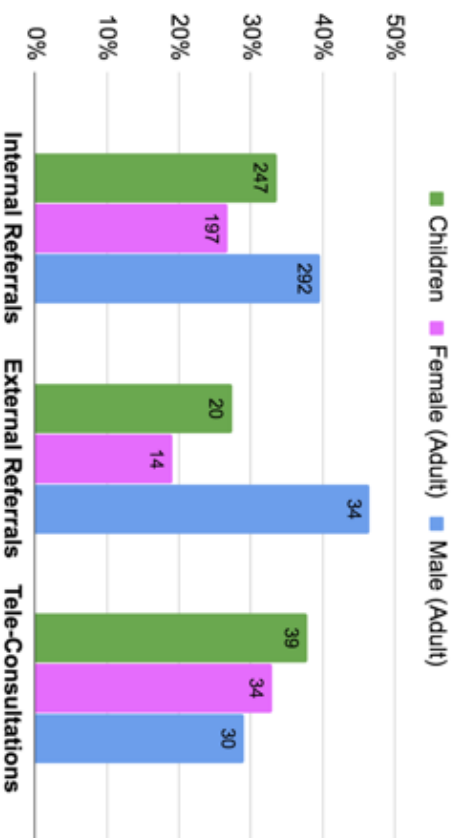
Legend: Children | Female (Adult) | Male (Adult)

Category	Children	Female (Adult)	Male (Adult)
Internal Referrals	247	197	292
External Referrals	20	14	34
Tele-Consultations	39	34	30

Axis: 0% 10% 20% 30% 40% 50%

2017 Savings from nREM

Legend: Actual | Potential

Ksh491,600 (Actual) — Ksh3,361,200 (Potential)
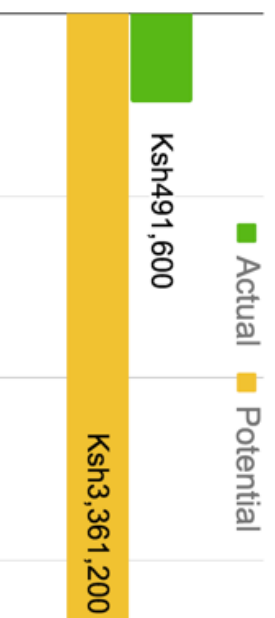
- Increased equity in access
  - >100 patients managed remotely in Turkana
  - Increased access to care for women & children

- Savings of ~KSh 0.5m in first year in Turkana
  - Potential savings of >KSh 3m per year
  - Savings only based on avoided transportation
  - Does not include avoided clinical & OOP costs
  - Despite long strikes by doctors & nurses

GabrielTRM – Impact in Turkana

Increased capacity & quality of primary care
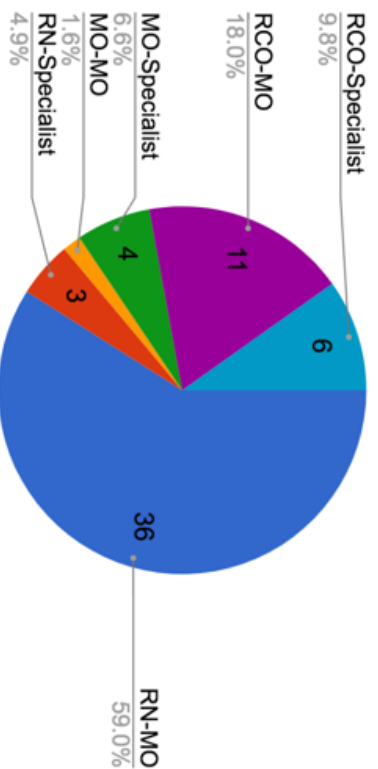
"I'm confident that my client will always get the right management. That is a benefit [as] it motivates you when you are treating someone ..."

— Nurse, Turkana County

"I love that you can actually respond in five minutes, when you get in, you read, the response will take you five minutes - so that's a good thing."
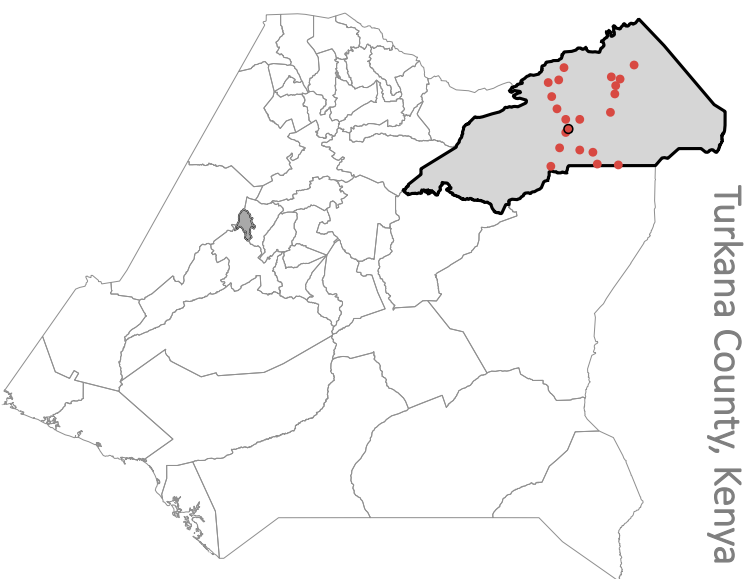
— Specialist, Nairobi

"I think I saved a life"

— Medical officer, Turkana County

Tele-consultations by cadre - 2017

RCO-Specialist
9.8%

RCO-MO
18.0%

MO-Specialist
6.6%

MO-MO
1.6%

RN-Specialist
4.9%

RN-MO
59.0%

11

6

4

3

36

Current implementation & Pipeline

Turkana County, Kenya

2016-18	• Implemented in 22 PHCs in Turkana
	• Funded by a DFID grant (County Innovation Challenge Fund)
	• Developed, tested & deployed the mobile-first platform
	• Poster presented in HSR2018
2018-19	• Maternal referrals in Migori & Laikipia counties in Kenya – Proposal submitted
	• SonoMobile – Expanding the GabrielTRM platform to deliver nurse-led point-of-care obstetric ultrasound scans
2020	• Manuscript under review in PLOS One
	• Jacaranda Health – Partnership expanding referral management across multiple counties in Kenya

Health-E-Net – Overview

Est: 2012
Ops: 2014

HQ: Kenya
Ops: KE,
UG,MW,TZ

Size: 8
Turnover:
$164,000

Pratap Kumar
CEO, Founder

- Physician with PhD in Neuroinformatics, MSc in Health Economics
- >10 years experience combining cutting-edge tech with clinical workflows & business models
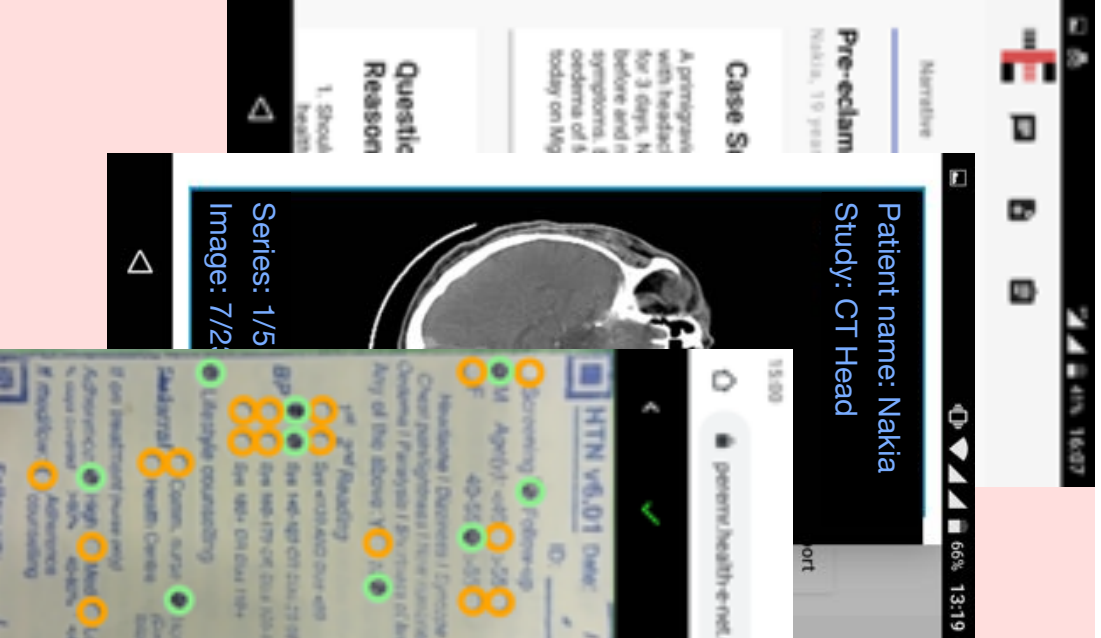
Mark Carey
IT mentor,
Strategy advisor

- Former Director of a London-based IT SME (insurance)
- >7 years experience advising start-ups in Africa
- Mentors Health-E-Net's tech dev team, oversees finances

Kenneth Gathuru
Lead developer

- Artist and developer
- >7 years developing tech, working with Kenya's deaf community
- Applies design and technical skills to creative problem solving

Meghan Kumar
Co-founder

- PhD in economics of Quality Improvement in CHW programs
- Worked in US, Europe, Africa Asia; fluent Mandarin speaker
- Supports Health-E-Net's global partnerships

Patient name: Nakia
Study: CT Head

Series: 1/5
Image: 7/2

Pre-eclam
Nakia, 19 yea

Case St

Questi
Reason

1. Shoul
rea

HTN v6.01 Date:

Grand Challenges Canada
Grands Défis Canada

County Innovation
Challenge Fund
Transforming Maternal & Newborn Health

ukaid
from the British people

villgro
kenya

UNITE FOR SIGHT

Miller Center
for Social Entrepreneurship

world
friends

ITALIAN AGENCY
FOR DEVELOPMENT
COOPERATION