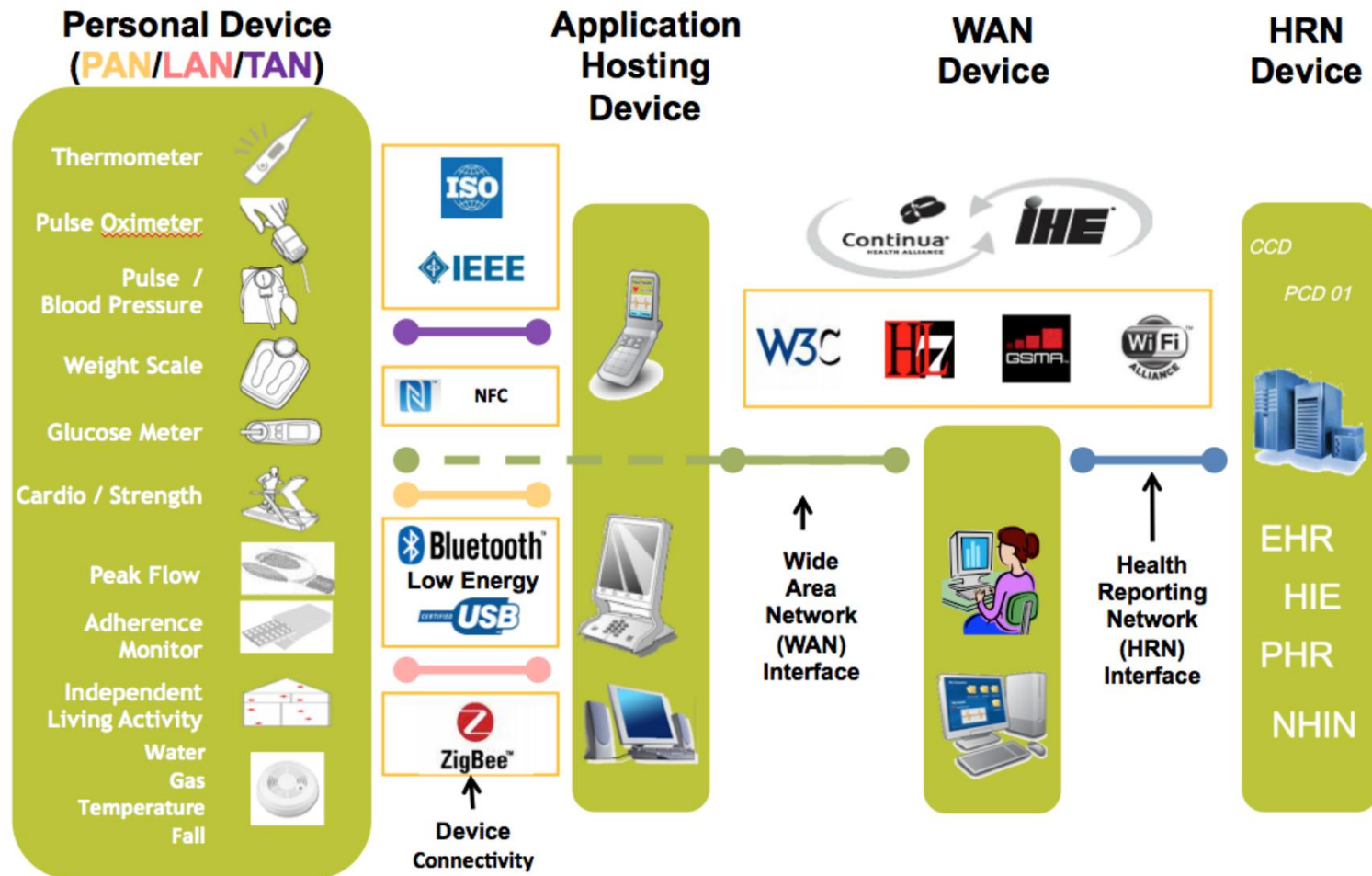# Personalised, remote patient health management

Ananda Sen Gupta
Founder & CEO
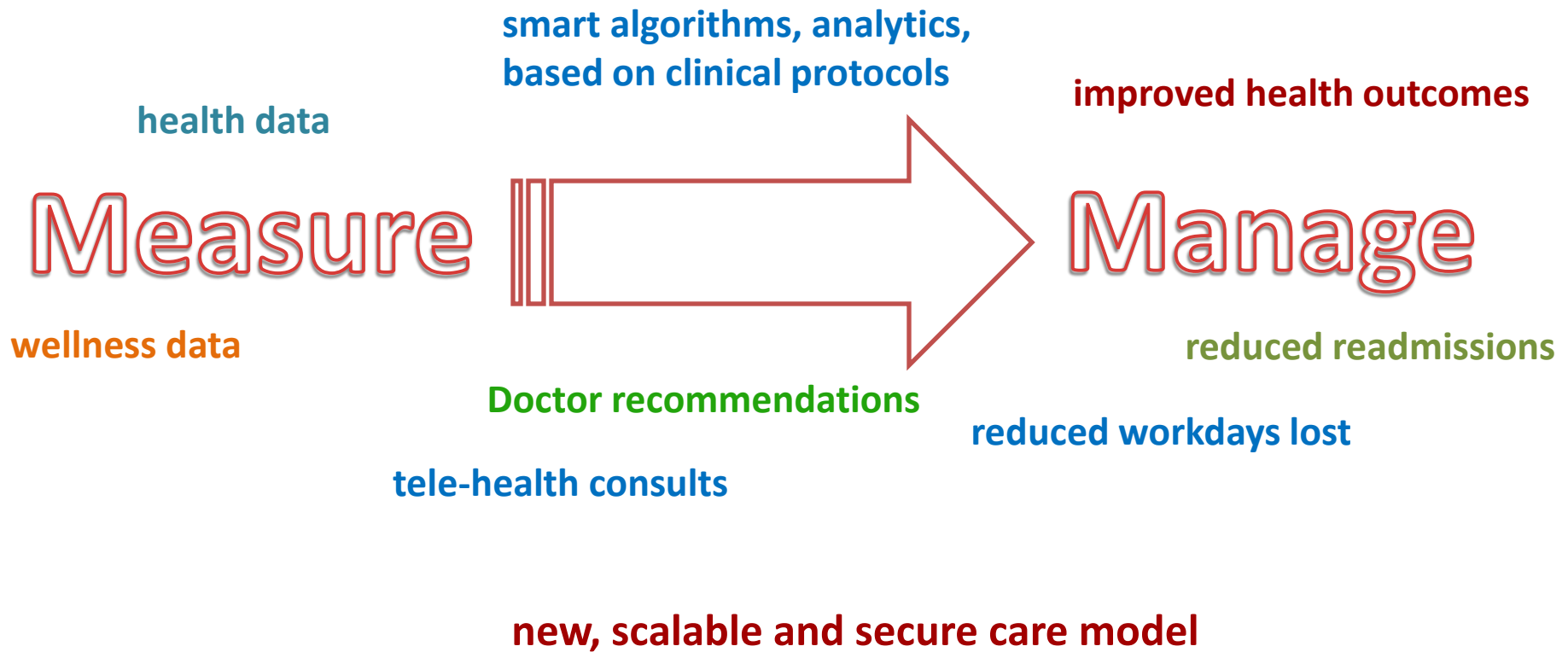Trackmybeat Healthcare

Architecture of IoT for Health

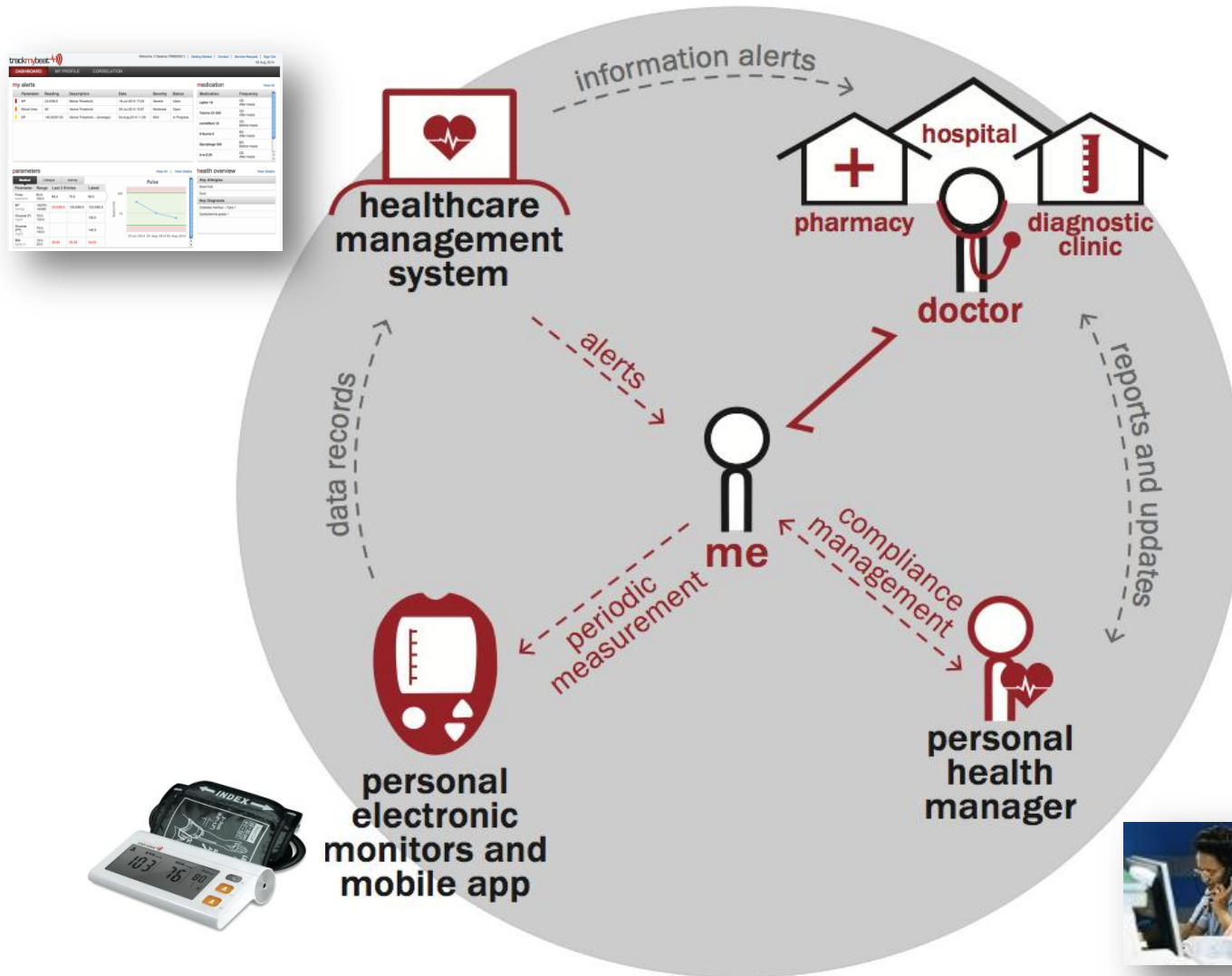[Source: ITU-T Technical Paper HSTP-H810, July 2014]

Healthcare IT is about *Healthcare*!

- The largest challenge is that doctors are averse to the use of technology
  - Doctors do not want to spend time learning to use information technology, unclear about RoI
  - Patients want to look for compassion in the Doctor's eyes and not see him typing into the system
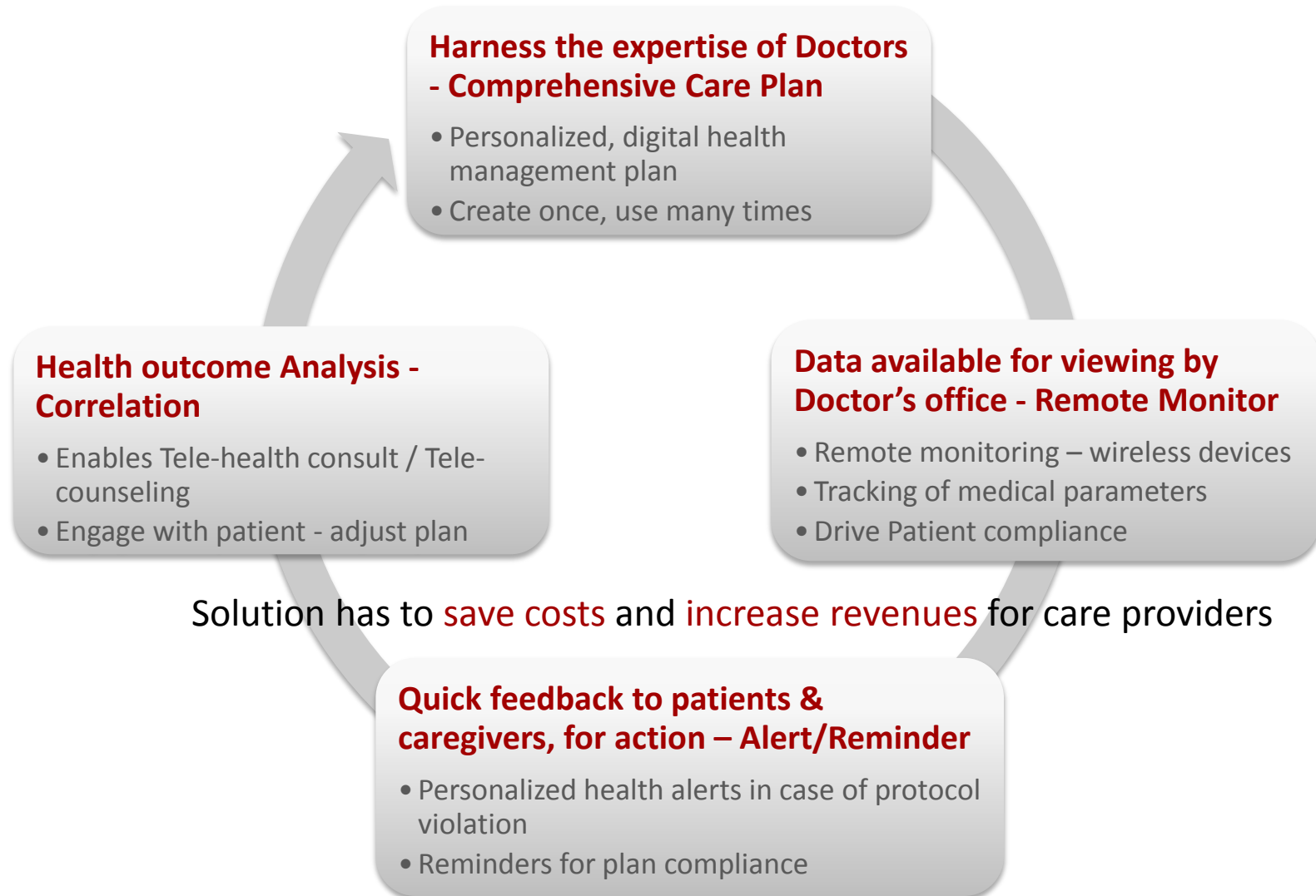- The focus needs to be firmly on improving patient health outcomes!

Bridging the gap

smart algorithms, analytics, based on clinical protocols

health data

improved health outcomes

Measure → **Manage**

wellness data

reduced readmissions

Doctor recommendations

reduced workdays lost

tele-health consults

new, scalable and secure care model

Patient-centric Service Model

A structured approach

Harness the expertise of Doctors - Comprehensive Care Plan

- Personalized, digital health management plan
- Create once, use many times

Health outcome Analysis - Correlation

- Enables Tele-health consult / Tele-counseling
- Engage with patient - adjust plan

Data available for viewing by Doctor's office - Remote Monitor

- Remote monitoring – wireless devices
- Tracking of medical parameters
- Drive Patient compliance

Solution has to save costs and increase revenues for care providers

Quick feedback to patients & caregivers, for action – Alert/Reminder

- Personalized health alerts in case of protocol violation
- Reminders for plan compliance

Template driven Care Plan

Personal Information

Name: Haley Patrick   Age: 27   Gender: Female

Contact No. +1-6654582680

Key Diagnosis:

Doctor Information

Name: Alex Parish (Registration No. AST002401)

Contact No. : +1 7191899191

Medical parameters to be monitored

Parameter	Frequency	Next date	Comments
BP	1 per day	12-Mar-2016	Test BP
Pulse	1 per week	16-Mar-2016	Test Pulse
HbA1c	1 per week	24-Mar-2016	Test Blood Sugar

Other Investigations

Investigation	Frequency	Next scheduled	Comments
Pathology	1 per day	12-Mar-2016	R & M test
Cardiology tests	1 per day	14-Mar-2016	Echocardiogram

Doctor Interaction

Doctor's name	Kind of review	Date of review	Instructions
John Legend	Alternative medicine	12-Mar-2016	Alternate Meds
Adam Hash	Endocrinology	20-Apr-2016	For Hypothalamic disorders
Henier Green	General Physician	12-Mar-2016	General Health Check Up

Care Manager Interaction

Care Manager's name	Kind of review	Date of review	Instructions
Ross Gellar	Home sugars reviewed	12-Mar-2016	Review home sugar
Ross Gellar	Lipid control reviewed, ordered if due	23-Mar-2016	Control lipid

Lifestyle parameters

Parameter	Target / Unit	Frequency	Instructions
Alcohol Intake	1.0 unit	2 per day	Limit Alcohol intake
Waist Hip Ratio (WHR)	0.75 ratio	1 per week	Check Waist to Hip

Activity parameters

Parameter	Target / Unit	Frequency	Instru
Cycling	5.0 km	1 per day	
Jogging/Running	3.0 km	1 per day	

Medicine details

Medicine	Strength	Frequency	Instructions	Brand	Start Date	End Date
Brufane	500	OD	After meals		12-Mar-2016	04-Mar-2024
Calcium Sandoz	500	OD	After meals		17-Mar-2016	15-Mar-2017

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Created through a standard template

This can be stand alone or received from EMR, and appended to

Leads to Action Plans

Care Manager Task Plan

Summary	Alerts	**Task View**

Search Task Details

Task Type	Patient Name	Age	**Filter**	Clear

Task Date	Task Type	Task Detail	Patient Name	DOB	Primary Physician	Care Program
18-Mar-2016	Schedule Appointment	Dr Mistry	William Johnson	23-Jan-1978	Dr. P. Foreman	Diabetes Care Program
18-Mar-2016	Monitor Patient Progress	Review CarePlan	Jacob Moore	24-Aug-1974	Dr. D. House	Cardiac Care Program
18-Mar-2016	Approve Medication	Prescription Profile	John Smith	05-Jan-1977	Dr. M. Wilson	Diabetes Care Program
18-Mar-2016	Patient Counselling	Foot Care	James Walker	29-Apr-1982	Dr. P. Foreman	Diabetes Care Program

> This can be fed back to the EMR appending to the tasks

Patient's Daily Plan

Key Diagnosis	Allergies

Export Calendar

August 2015

today < >

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15

Medical Parameter

Other Investigations

Lifestyle Parameter Details

▼ Activity Parameter Details

Parameter Name	Target Value	Frequency	Comment
Pranayama	30.0 min	1	
Walking	3.0 km or 45.0 min	3	

> Patient receives daily reminder set as per the plan. This can be by text, email or in App messages

Patient data captured in App

The parameter list is auto configured based on the patient's care plan, can be updated remotely as needed

Patient data captured from devices

blood pressure monitor **weighing machine** **glucometer** **pedometer**

Solution is pre-integrated, and can be connected to any device.

Health Monitoring

- Data can be captured from

  - EMR's (integration required in back end)

  - Connected devices, wearables (wireless interface)

  - Activity information (direct data entry or web interface)

- Specific parameters will be tracked over time based on the Health Management Plan

- All activity and communication with patients is safe and secure, with standards that support a HIPAA compliant medical practice.

- We only use industry-standard datacenter security practices, and technical protocols, including SSL and HTTPS encryption. Thus we help mitigate the risk that texting patients or using insecure third-party apps.

Monitoring as per Plan

Impact analysis of Plan

Individual Accountable Care
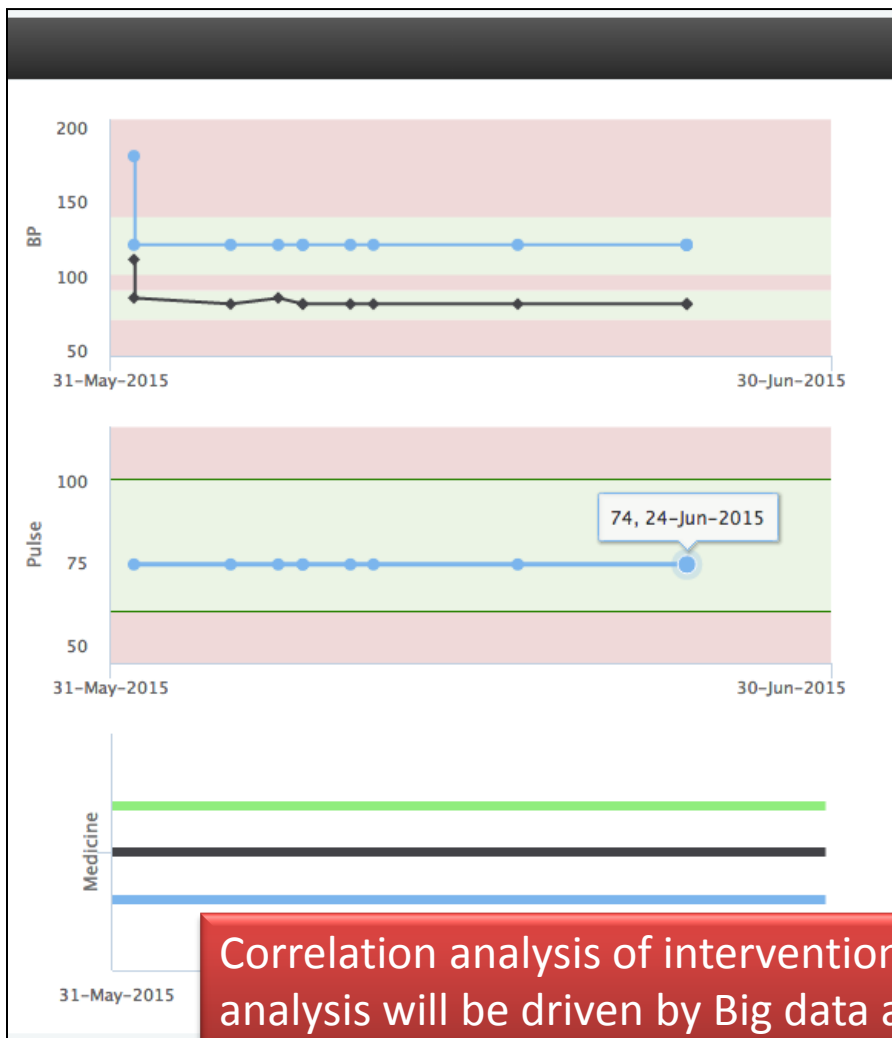
Patient Population View
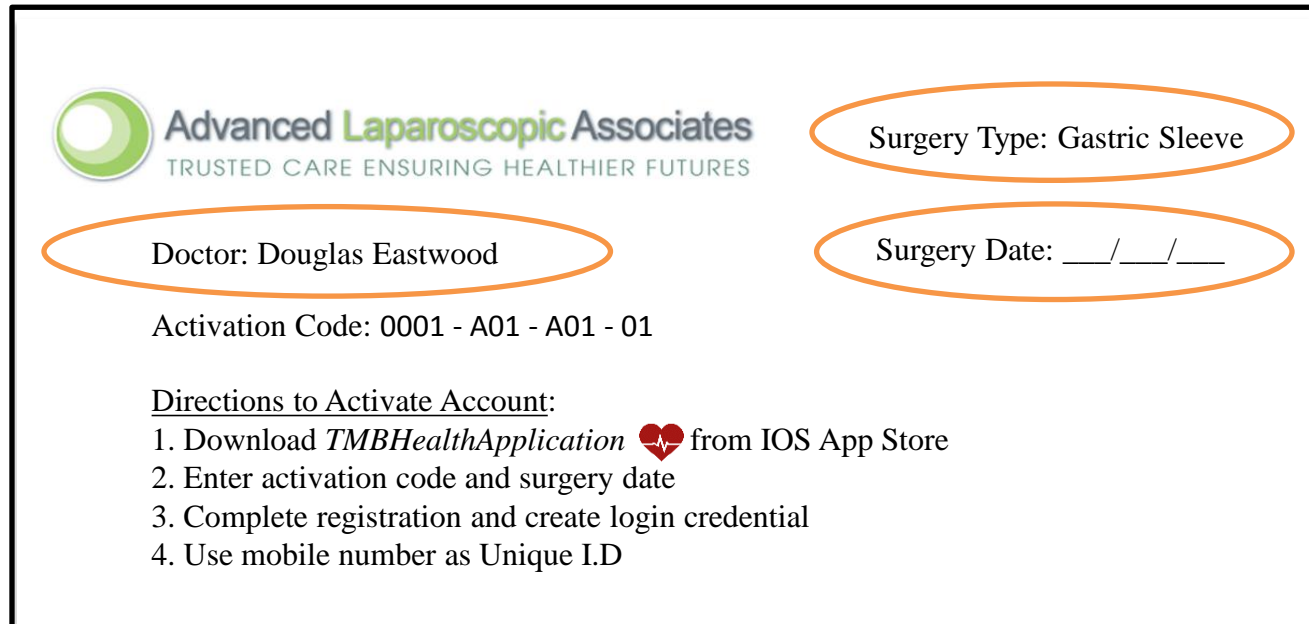

Correlation analysis of intervention vs outcome, as well as Population Health analysis will be driven by Big data analytics

US deployment - compliance

- Activation card given to patients in perioperative period

Advanced Laparoscopic Associates
TRUSTED CARE ENSURING HEALTHIER FUTURES

Surgery Type: Gastric Sleeve

Doctor: Douglas Eastwood

Surgery Date: ___/___/___

Activation Code: 0001 - A01 - A01 - 01

Directions to Activate Account:
1. Download *TMBHealthApplication* ❤ from IOS App Store
2. Enter activation code and surgery date
3. Complete registration and create login credential
4. Use mobile number as Unique I.D

- Based on activation code, Health Plan is auto-generated
- Mobile App gets configured with applicable parameters
- Patient calendar gets auto generated with reminder system

Monitoring and Reminders
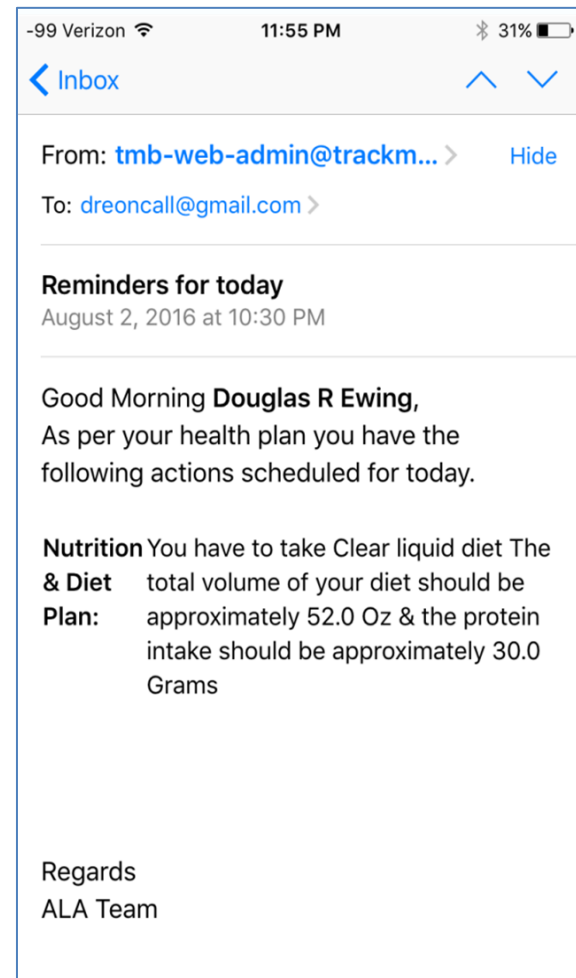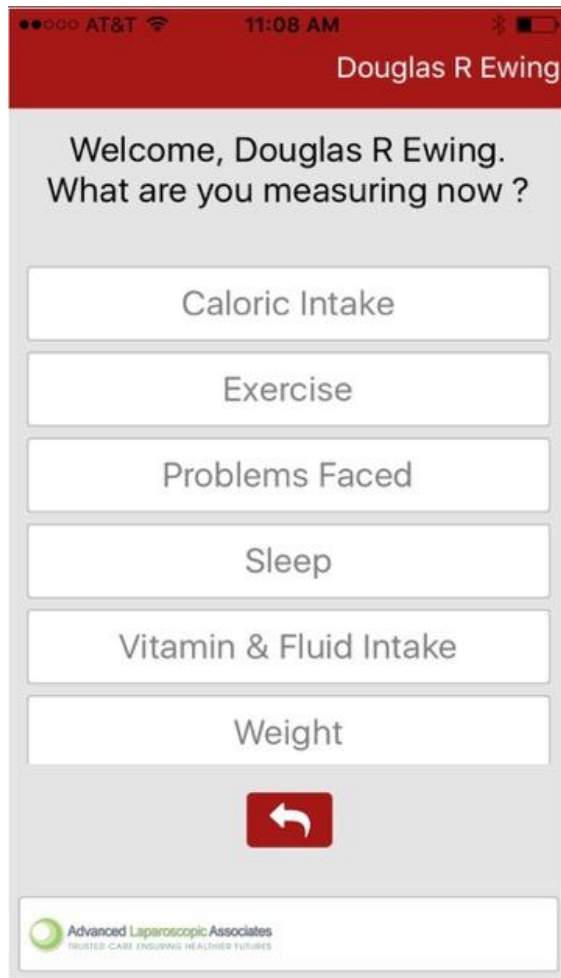
- Based on information from monitoring, and expected outcomes, doctor offers advice, and adjusts Health Plan

Rural Health deployment

Flowchart of Dnet-Infolady-Lifechord-Track My Beat Telemedicine Service

Step 2

Accept package

Offer package

Package payment

Step 1

Step 14A: Decline Advice for Consultation: Confirmation of Patient Disagreement to Consult

Step 14B: Confirmation of Patient Agreement for Consultation+ Appointment Requisition

Step 7: Accept/ Reject/Revert for change

Step 6B: verify

Step 8A: Health record

Central Database

Paramedic

Normal health record

End

infolady

User info

Client

Step 11: Sync

Doctor

Step 6A: Upload/Sync

Analyze

Step 3: Data Entry

Step 13C: Suggestion/ Agreement for Consultation

Step 4: Additional info

Alert

Step 12A: Auto notification

Abnormal

Infolady App

Step 5: Sync

TMB App

Prescription App

Step 8B: Health record

He

Health record collection

Step 10: Accep

Ste

Infolady

Empowering communities through women infopreneurship.

Step 16: Video Call/Voice Call betwe

Rural Health worker function

- Local Health worker offers following services:
  - Registers patient
  - Takes health readings with connected devices
  - Organizes diagnostic tests and captures data
  - Makes appointment with remote doctor
  - Organizes Skype call
  - Prints prescription
  - Dispenses medication

Connected device readings

blood pressure monitor
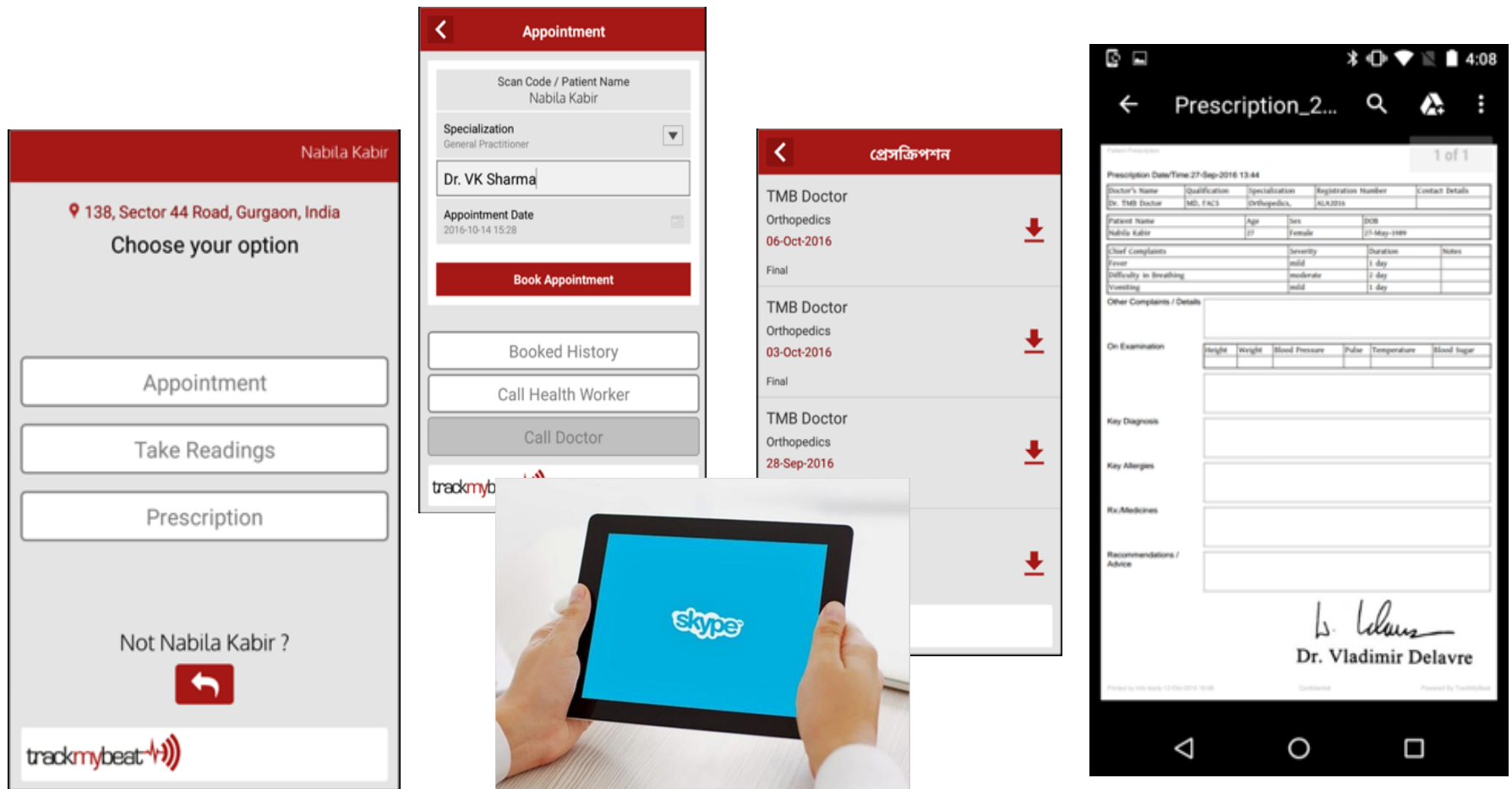
weighing machine

glucometer

Hb meter

Telehealth with remote prescription - Health worker Mobile App

THANK YOU

Contact: ananda.sengupta@trackmybeat.com

Meet the team

A company built on strong ethics and deep expertise in technology and healthcare

We have watched for many years the apathy of the medical system and the clear lack of incentives to keep people healthy, and our loved ones being affected by that.

With many years in the communications and health industry, we have now devised *a better way to track and communicate healthcare information* - so that any medical professional, health worker or caregiver can take action to help people achieve health and wellness. The approach supplements doctor care, and scales easily.

Ananda Sen Gupta
CEO & Founder

+ 20 years in communications technology, health IT

+ Start-up experience: executive team of DTI, acquired by Agilent

+ Executive roles in multiple organizations

Dr. Vishwakirti Sharma
Co-founder

+ Clinical program management and product development

+ Experience at large healthcare practices in India

Charles (Chuck) Parker
Business Development Lead

+ Former Executive Director of Continua Health Alliance.

+ 25 years experience in healthcare technology, policy, regulation, strategic design of evaluation and measurement strategies.

+ Led national programs for practice transformation.

iit delhi

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Meet the Advisors

Dr. George Smoot
Chief Scientific Advisor

+ ***Nobel Laureate in Physics 2006***
+ Director, Paris Center for
  Cosmological Physics,
  University of Sorbonne Paris
+ Professor, Physics Department,
  University of California,
  Berkeley

Rajendra P Gupta
Advisor

+ Advisor to the Union Minister,
  Health & Family Welfare,
  Government of India
+ Board Member, International
  Society for Telemedicine &
  eHealth (ISfTeH)
+ Advisor, Vital Health (Mayo
  Clinic & Noaber Foundation
  Joint Venture)
+ Former Member, World
  Economic Forum's Global
  Agenda Council - Digital Health
+ Former Board Member , Care
  Continuum Alliance, USA

Biju Nair
Board Member

+ CEO of HYLA Mobile, USA
+ A telecommunications
  industry leader
+ recognized entrepreneur –
  with several start up
  creations and successful exits
  (Sapience acquired by
  Synchronoss, PCTel acquired
  by Smith Micro).

Dr. Atul Adya
Technology Advisor

+ Architect, large-scale
  distributed systems, Google.
+ Previously, Architect in
  Microsoft in the Windows
  Live Core division and
  Architect in the Data
  Programmability team of
  the SQL Server;