

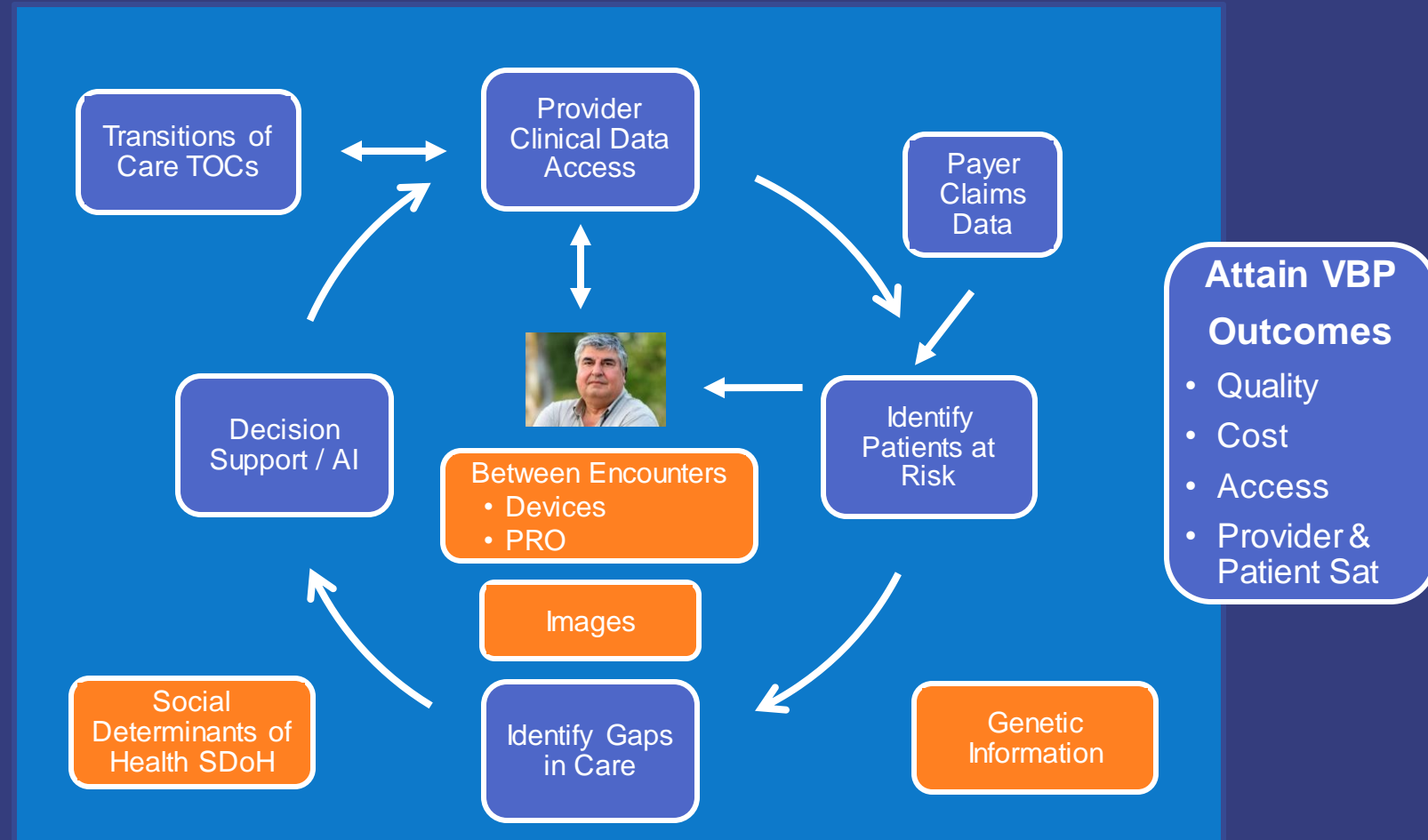


Data Analytics Task Force: Non-Traditional Sources of Data *Devices & Wearables*

August 29, 2019



Framework for Non-Traditional Healthcare Data



Definitions: Devices & Wearables

- **Clinical health devices/wearables:**
 - prescribed by physicians to help patients monitor their vitals; accuracy $\geq 90-95\%$; when FDA approved, can be used by healthcare professionals to support diagnoses and treatment plans
- **Fitness wearables:**
 - used by healthy individuals to track activity levels; accuracy $\sim 70-80\%$ they should not be used to diagnose or manage health conditions
- **Distinction:** According to the FDA, the distinction is their intended use
 - If it is intended for clinical use to improve chronic illness or specific ailments, then it is not “low-risk”, it is a medical grade wearable device.
 - If the device is “encouraging a general state of health or healthy activity,” then it is a fitness and lifestyle device.



Definitions: Patient Generated Health Data (PGHD)

- ONC defines PGHD as health-related data created/recorded by or from patients outside clinical setting to address a health concern*
- To date, PGHD such as activity, biometrics, symptoms, medication effects, and patient response, has been collected in a clinical setting or through clinical in-home devices for remote monitoring
- Proliferation of consumer technologies (i.e. wearable devices, online questionnaires, and mobile apps) has increased types, frequency and amount of PGHD available



Definitions: PROs, PROMs, & PREMs

- **Patient-Reported Outcomes (PROs):**
 - PROs provide reports from patients about their own health, quality of life, or functional status associated with the health care or treatment they have received
- **Patient-Reported Outcome Measures (PROMs):**
 - PROMs are tools and/or instruments used to report PROs.
- **Patient-Reported Experiences Measures (PREMs):**
 - Patient report experiences through use of PREMs, such as satisfaction scales, providing insight into the patients' experience with their care or a health service

* Source – US National Library of Medicine, NIH



Definitions: Remote Patient Monitoring (RPM)

- Type of homecare telehealth that allows patients to use mobile devices and technology to gather PGHD and send it to healthcare professionals
- Once collected, patient data is sent to providers via dedicated telehealth computer or software application that can be installed on a computer, smartphone or tablet
- Frequently used for patients with chronic diseases and frail elderly
- RPM can notify providers of issues & help track high-risk patients between visits



Applications of Devices & Wearables

Clinical Conditions & Vitals

Conditions:

Used to monitor patients between encounters with conditions including:

- Diabetes
- Cardio-Pulmonary disease
 - CHF
 - Myocardial Infarction
 - COPD/Asthma
 - Hypertension
- Oncology
- Kidney disease
- Neurological disorders
- Transplant patients
- Others

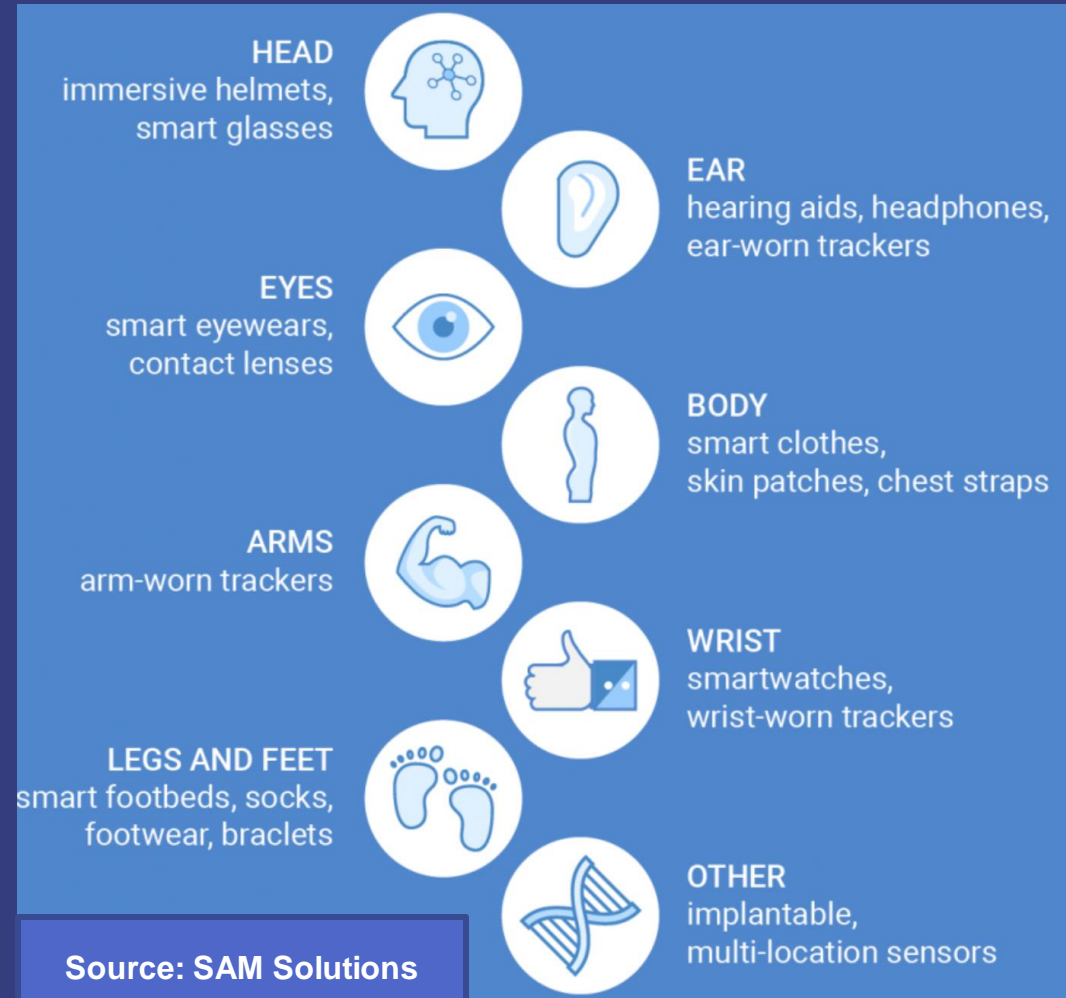
Vitals:

- Heart Rate / Pulse
- Blood Pressure
- Glucose Levels
- Sleep
- Respiration
- Blood Oxygen (pulse-ox)
- Activity
- Blood Flow
- Perspiration
- Temp (Body & Skin)



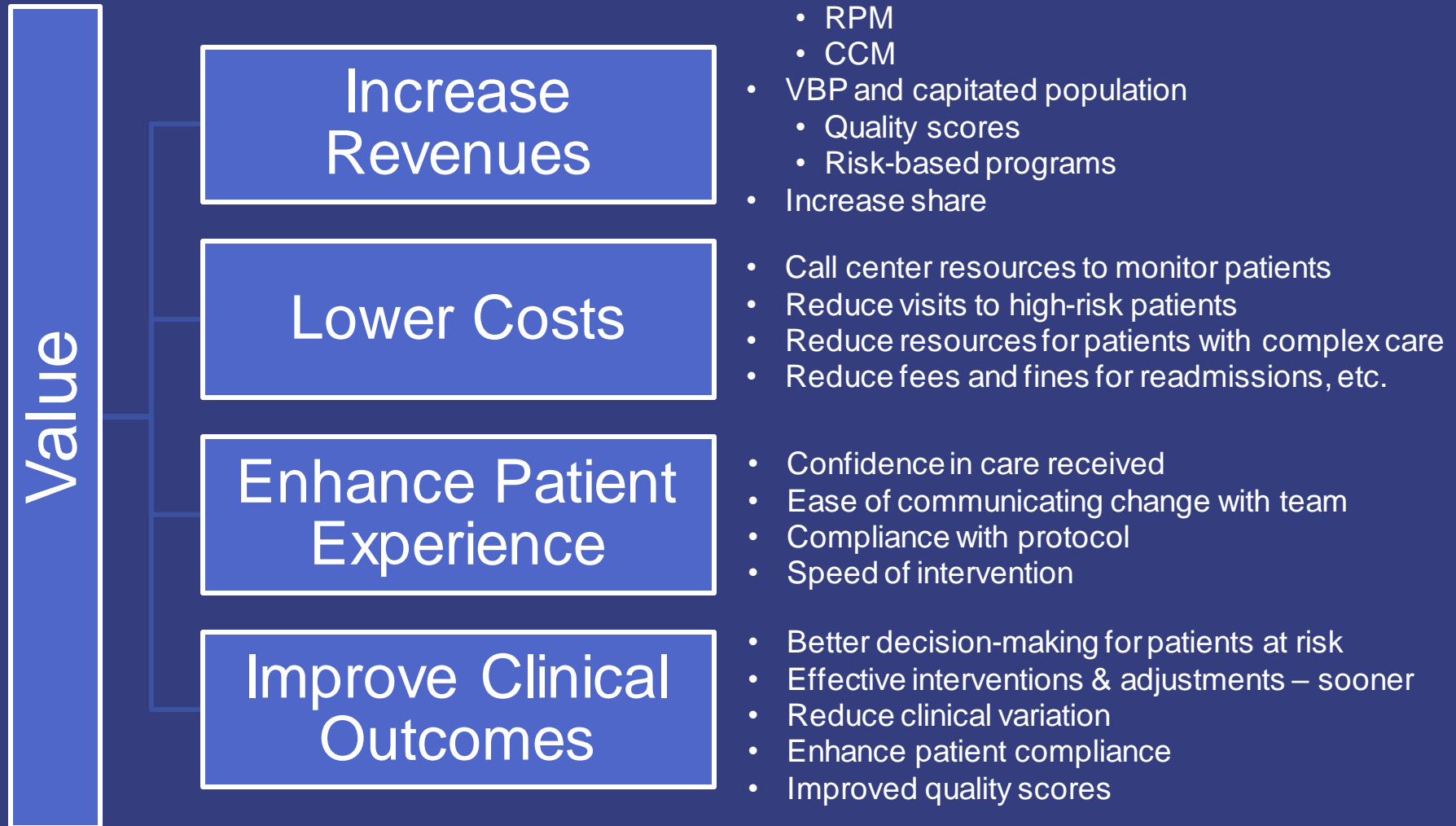
Applications of Wearables

Types of Devices



Value of Devices & Wearables

Business & Clinical Impact - ROI



Value of Devices & Wearables

Challenges Attaining Value

Devices

- Difficult to remain current
- Different connection approaches
- Device management / BYOD?
- Multiple vitals – and devices

Data - Needle in haystack syndrome

- Volume of data overwhelming
- Not validated
- Not normalized
- Relevant patients / events / actions

Workflow

- Order, dispatch, train, use data
- Integration: EMR, Telehealth, other
- Communicating with patients

Regulatory / Policy

- Reimbursement
- Risk of network vulnerability
- Patient consent
- Data as part of medical record



Trends – Devices & Wearables

- Multi-vital devices emerging to streamline provisioning, use and data collection
- Reimbursement for RPM and Chronic Care Management (CCM) materializing, likely to drive an increase in devices, initiatives & utilization
- Innovation emerging to address usability and value
 - Apple Health Kit allows health systems to collate & access data from multiple devices
 - Enterprise platforms enhancing workflow, economies of scale, BYOD, signal to noise ratio
 - Integration with EMR, Case/Care Management, Pop Health, CRM
 - Artificial Intelligence / Machine learning
- Links to other patient engagement tools & strategies emerging (OpenNotes, portal, telehealth, education, med compliance, etc.)



Links to More Resources

Resources:

- [12 Things about IoT Analytics every Technology CEO Needs to Know](#)
- [Fitbit Research Library](#)
- [eHI Whitepaper: The Return on Investment of PGHD and Remote Patient Monitoring](#)
- [eHI Whitepaper: Sharing Data with Entities Not Covered by HIPAA](#)
- [Presentation: Uncover Beliefs About Patient-Generated Health Data](#)
- [Deloitte Article: How the IoT and PGHD can unlock health care value](#)
- [Law Blog: New Reimbursement for Remote Patient Monitoring and Telemedicine](#)
- [UHC - Navigate4Me](#)
- [Pittsburgh Health Data Alliance – Predicting Readmissions](#)
- [Cedars-Sinai Medical Center, Center for Outcomes Research and Education \(CS-CORE\)](#)
- [MGMA Article: Integrating Data from “Wearables” into EHRs](#)
- [NPJ Digital Medicine Article: Best Practices for Analyzing Large-Scale Health Data from Wearables and Smartphone Apps](#)

