NON-TRADITIONAL DATA TASK FORCE WEARABLES AND DEVICES

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Speaker

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American Heart Association

AMERICAN HEART ASSOCIATION STRATEGY

Science Translation

Multi-disciplinary Professional Education Courses, Scientific Conferences & Events with reach to global audiences

Science Discovery

Strategically Focused Research Networks, My Research Legacy, Heart & Stroke Registry, Scientific Statements and Guidelines, Scientific Journals

Diagnosis or Acute Event

Patient Education at Point of Care (Patient TV), Quality & Systems Improvement programs

At Home

Multi-Media Campaigns, Educational tools – print and digital, Support Network, Self-Management Platforms, Heart & Stroke Registry, Community Programs, Volunteer Navigators

Care Transitions

Educational tools – print and digital, Support Network, CHTI AHA Inside Models, Self-Management Platforms

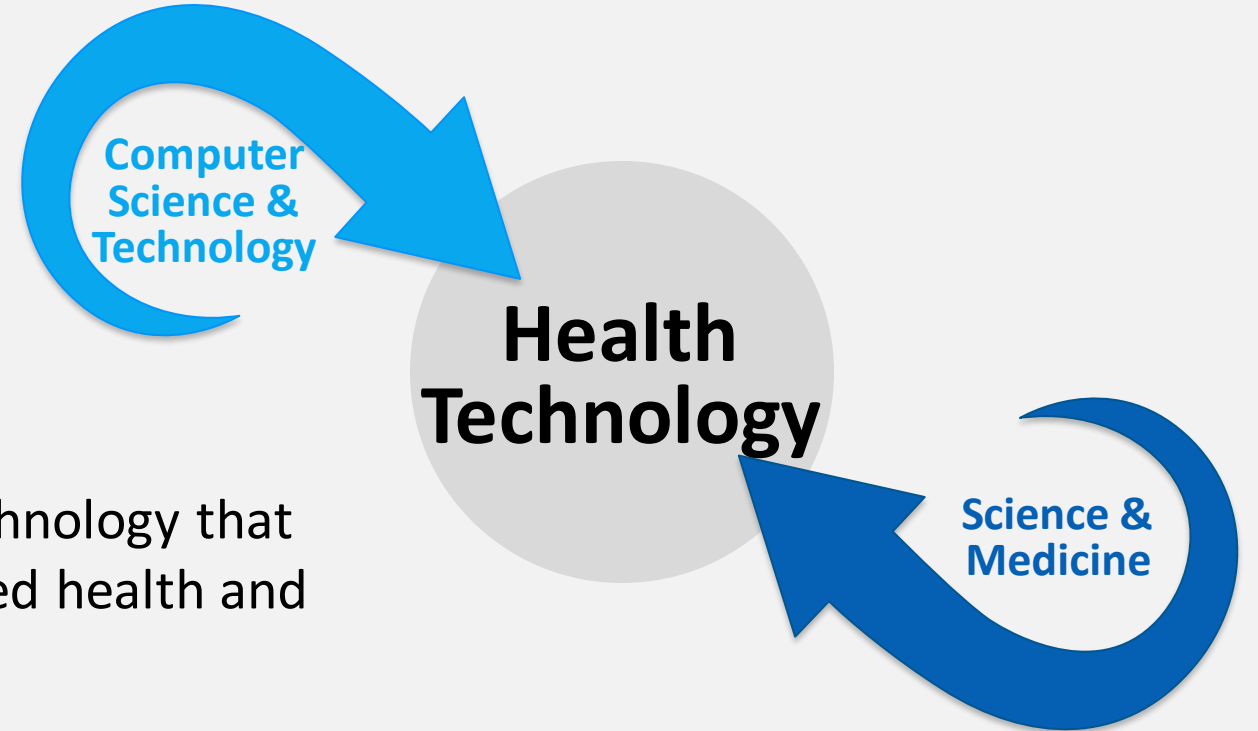# AHA and health tech

Convener

Science. Content. Brand.

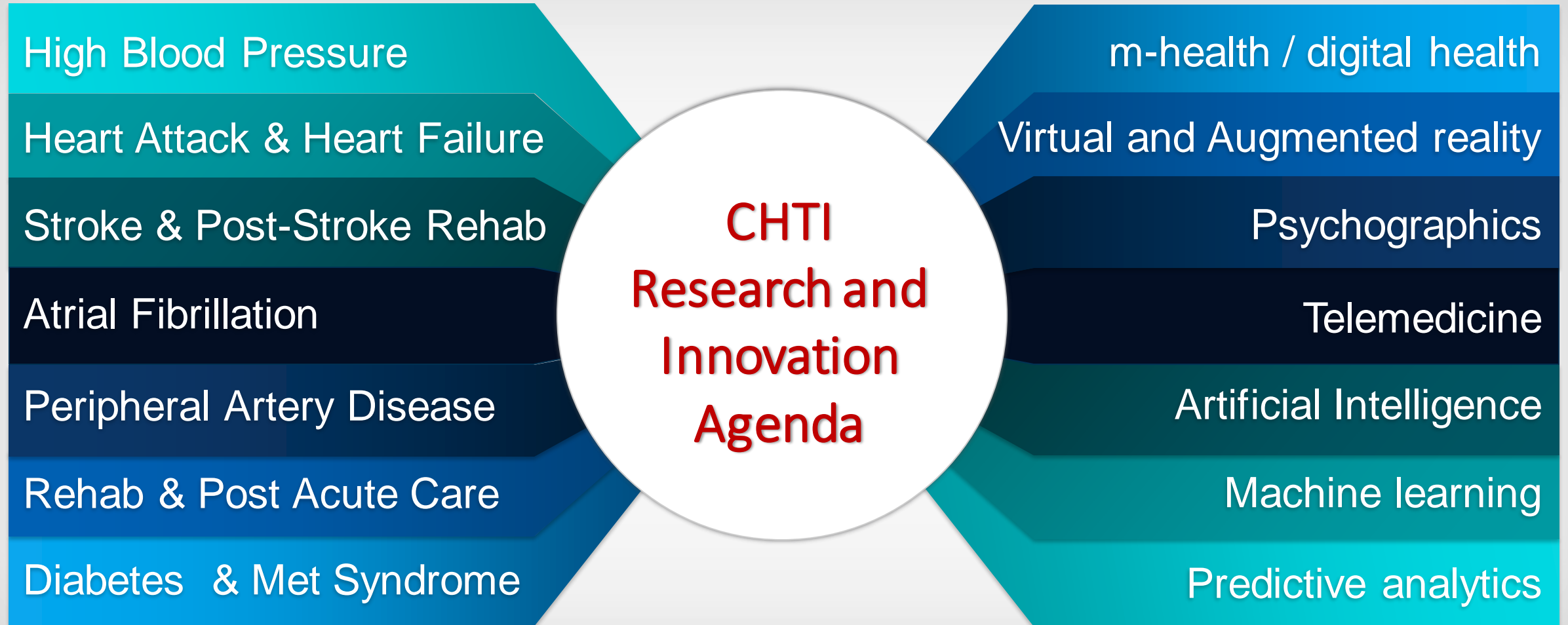Innovator

ROLE OF THE INNOVATION

**MANY INNOVATIONS HAPPEN
AT THE CONFLUENCE OF DISCIPLINES.**

There have been many innovations in computer science and technology and there have been many in science and medicine. Health technology is at the confluence of these two fields.

Innovation provides a forum for developing technology that will lead to greater adoption leading to improved health and better outcomes.

Computer Science & Technology

Health Technology

Science & Medicine

Health and Tech Topics and Interest Areas

High Blood Pressure

Heart Attack & Heart Failure

Stroke & Post-Stroke Rehab

Atrial Fibrillation

Peripheral Artery Disease

Rehab & Post Acute Care

Diabetes & Met Syndrome

CHTI Research and Innovation Agenda

m-health / digital health

Virtual and Augmented reality

Psychographics

Telemedicine

Artificial Intelligence

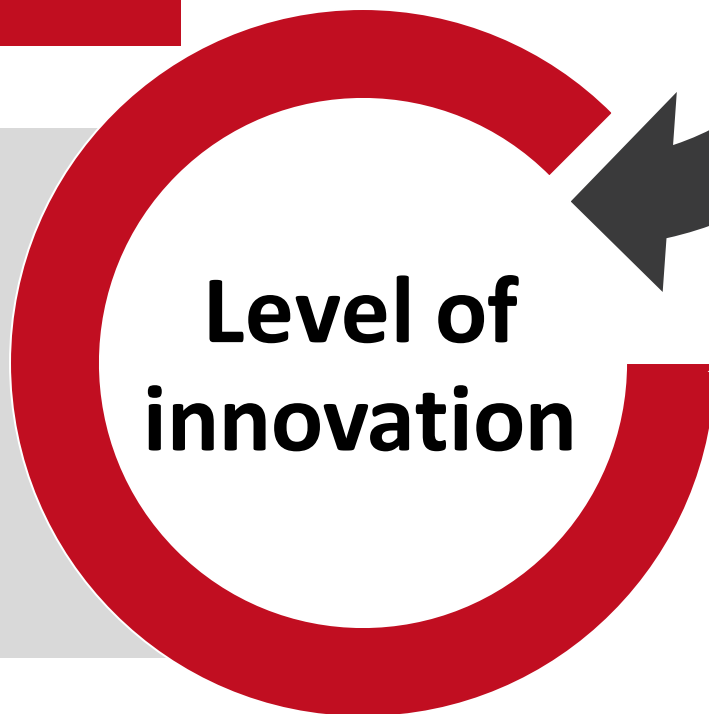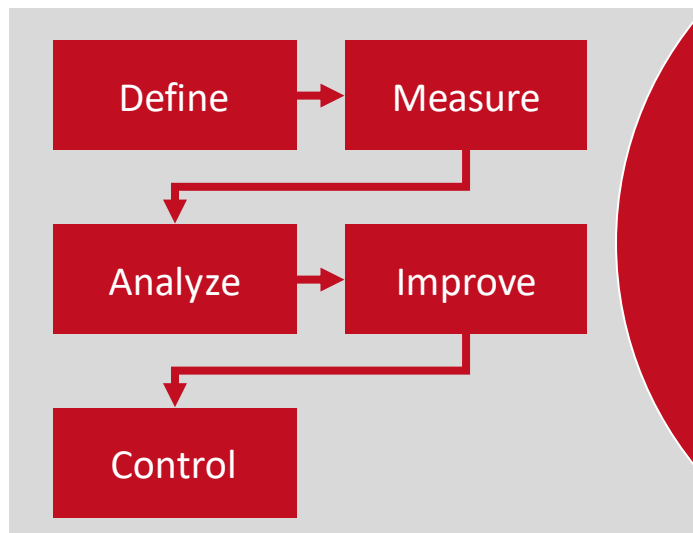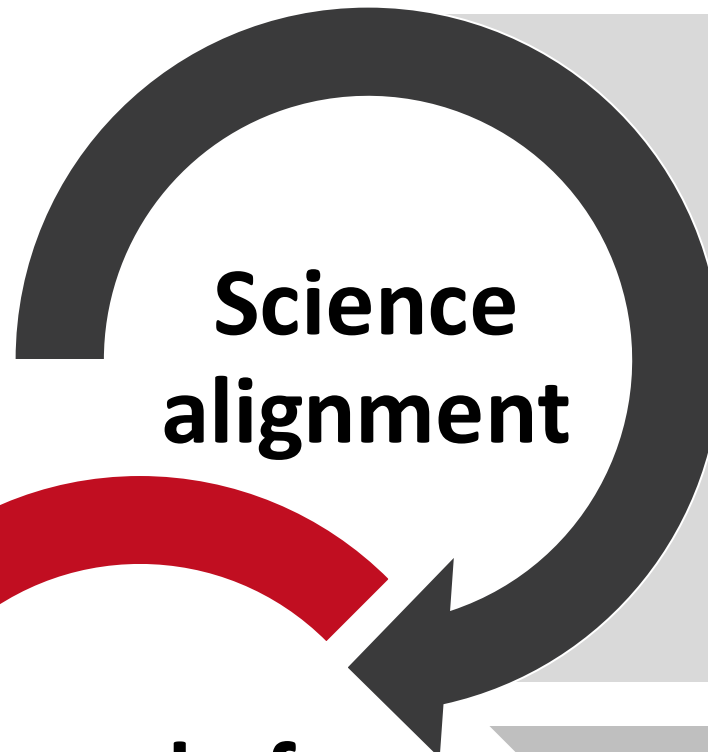Machine learning

Predictive analytics

EARLY PERSPECTIVE ON PROPOSED TECHNOLOGY

Science-based
Levels of science:
1. Science based approach
2. Promising data
3. Demonstration of health impact
4. Published in peer-reviewed journal
5. Best practice
6. Integrated into guideline

Science alignment

Leadership	→	Strategic Planning
Customer Focus	→	Knowledge Management
Workforce	→	Process
Results		

Level of innovation

Define → Measure
Analyze → Improve
Control

Approach → Deployment → Learning → Integration

Categories for Health Technology

Data   Wearable   App   Software

HEALTH TECH SOLUTION CATEGORIES	EXAMPLES
Data systems	Interoperability
Apps	Best practices
Wearables	Afib/arrhythmia detection devices
Software as a medical device	Combined solutions (RPM/AI/ML)

American Heart Association®

AHA Inside

- Translate AHA guidelines and statements that impact Heart and Stroke patients into **evidence-based CarePlans**

- Provide a directory of proven AHA guidelines and content designed to **significantly increase adherence and engagement**

- Empower health care providers, patients and caregivers with trusted CarePlan solutions that are **scalable in addressing the needs of complex care patient populations**

American Heart Association®

Improving health outcomes with personalized, engaging tools/content

Using a research-based personalized experience helps patients create durable behavior change.

AHA INSIDE

AHA INSIDE: IMPROVING HEALTH OUTCOMES WITH PERSONALIZED, ENGAGING TOOLS/CONTENT

USING A RESEARCH-BASED PERSONALIZED EXPERIENCE HELPS PATIENTS CREATE DURABLE BEHAVIOR CHANGE.

- **Translating** the AHA guidelines in easy to understand steps to promote self-care

- **Accessing** patients education resources, developed by the AHA, designed to improve knowledge, health literacy, and behaviors, leading to improved outcomes

- **Connecting** patients to the healthcare providers, caregivers, and other patients

- **Sharing** patient reported measures with healthcare providers

AHA's Life's Simple 7™
the seven most important predictors of heart health

Get Active

Eat Better

Reduce Blood Sugar

Stop Smoking

Control Cholesterol

Control Blood Pressure

Manage Weight

https://www.youtube.com/watch?v=-XhJKe-i3ok

AHA Scientific Statement

Current Science on Consumer Use of Mobile Health for Cardiovascular Disease Prevention
A Scientific Statement From the American Heart Association

Lora E. Burke, PhD, MPH, FAHA, Chair; Jun Ma, MD, PhD, FAHA;
Kristen M.J. Azar, MSN/MPH, BSN, RN; Gary G. Bennett, PhD; Eric D. Peterson, MD;
Yaguang Zheng, PhD, MSN, RN; William Riley, PhD; Janna Stephens, BSN, PhD(c), RN;
Svati H. Shah, MD, MHS; Brian Suffoletto, MD, MS; Tanya N. Turan, MD, FAHA;
Bonnie Spring, PhD, FAHA; Julia Steinberger, MD, MS, FAHA; Charlene C. Quinn, PhD, RN;
on behalf of the American Heart Association Publications Committee of the Council on Epidemiology
and Prevention, Behavior Change Committee of the Council on Cardiometabolic Health, Council
on Cardiovascular and Stroke Nursing, Council on Functional Genomics and Translational Biology,
Council on Quality of Care and Outcomes Research, and Stroke Council

Although mortality for cardiovascular disease (CVD) has declined for several decades, heart disease and stroke continue to be the leading causes of death, disability, and high healthcare costs. Unhealthy behaviors related to CVD risk (eg, smoking, sedentary lifestyle, and unhealthful eating habits) remain highly prevalent. The high rates of overweight, obesity, and type 2 diabetes mellitus (T2DM); the persistent presence of uncontrolled hypertension; lipid levels not at target; and the ≈18% of adults who continue to smoke cigarettes pose formidable challenges for achieving improved cardiovascular health.[1,2] It is apparent that the performance of healthful behaviors related to the management of CVD risk factors has become an increasingly important facet of the prevention and

improved cardiovascular health, <1% of adults in the United States follow a healthful eating plan, only 32% have a normal body mass index, and >30% have not reached the target levels for lipids or BP. National Health and Nutrition Examination Survey (NHANES) data revealed that people who met ≥6 of the cardiovascular health metrics had a significantly better risk profile (hazard ratio for all-cause mortality, 0.49) compared with individuals who had achieved only 1 metric or none.[2] The studies reviewed in this statement targeted these behaviors (ie, smoking, physical activity, healthful eating, and maintaining a healthful weight) and cardiovascular health indicators (ie, blood glucose, lipids, BP, body mass index) as the primary outcomes in the clinical trials testing mobile health (mHealth)

Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke
A Scientific Statement for Healthcare Professionals From the American Heart Association

Barbara Riegel, PhD, RN, FAHA, Chair; Debra K. Moser, PhD, RN, FAHA, Vice Chair; Harleah G. Buck, PhD, RN, FAHA;
Victoria Vaughan Dickson, PhD, RN, FAHA; Sandra B. Dunbar, PhD, RN, FAHA; Christopher S. Lee, PhD, RN, FAHA; Terry A. Lennie, PhD, RN, FAHA;
JoAnn Lindenfeld, MD, FAHA; Judith E. Mitchell, MD, FAHA; Diane J. Treat-Jacobson, PhD, RN, FAHA; David E. Webber, PhD; on behalf of the
American Heart Association Council on Cardiovascular and Stroke Nursing; Council on Peripheral Vascular Disease; and Council on Quality of
Care and Outcomes Research

Abstract—Self-care is defined as a naturalistic decision-making process addressing both the prevention and management of chronic illness, with core elements of self-care maintenance, self-care monitoring, and self-care management. In this scientific statement, we describe the importance of self-care in the American Heart Association mission and vision of building healthier lives, free of cardiovascular diseases and stroke. The evidence supporting specific self-care behaviors such as diet and exercise, barriers to self-care, and the effectiveness of self-care in improving outcomes is reviewed, as is the evidence supporting various individual, family-based, and community-based approaches to improving self-care. Although there are many nuances to the relationships between self-care and outcomes, there is strong evidence that self-care is effective in achieving the goals of the treatment plan and cannot be ignored. As such, greater emphasis should be placed on self-care in evidence-based guidelines. (*J Am Heart Assoc.* 2017;6:e006997. DOI: 10.1161/JAHA.117.006997.)

Key Words: AHA Scientific Statements • cardiovascular disease • prevention • self-care • stroke

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Imagine a world in which cardiovascular disease (CVD) is not the No. 1 cause of death decade after decade because self-care is pushed to the top of the hierarchy of best practices to managing health. Now, imagine the more

crisis[5] because self-care has been ignored. The latter scenario is the reality we are facing as fragmented, episodic, acute care remains a major focus of the healthcare system, whereas primordial and primary disease prevention fostered by optimal

CarePlan Engine

TRANSLATION OF AHA GUIDELINES AND SCIENTIFIC STATEMENTS INTO ACTIONABLE STEPS FOR PATIENTS TO BUILD THE KNOWLEDGE AND SKILLS THEY NEED TO MANAGE THEIR HEALTH, AND ARE OPTIMIZED FOR DIGITAL TOOLS
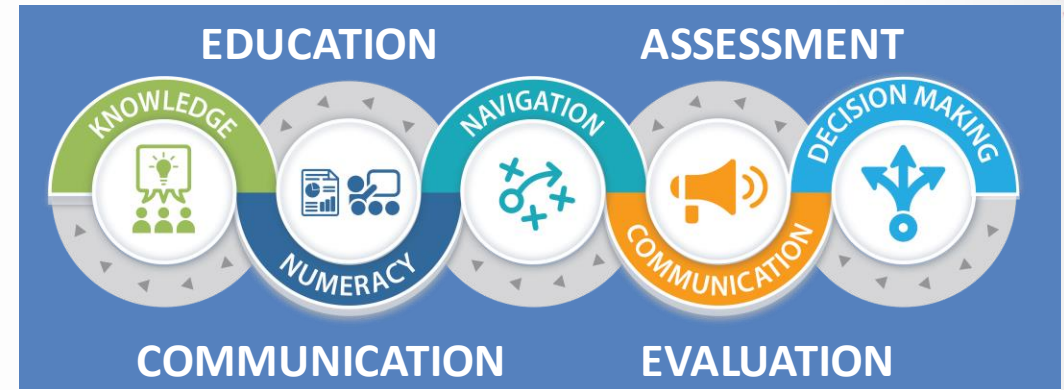
LS7 + MEDS + MENTAL HEALTH

Condition pathways
- Heart failure
- CAD
- Cardiac rehab
- Stroke
- Afib
- High blood pressure
- Cardiometabolic
- Diabetes
- Life's Simple 7
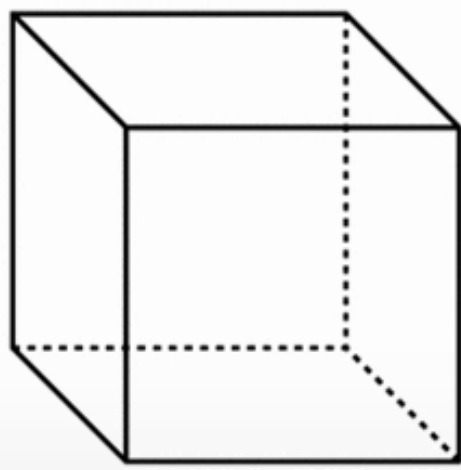
Psychographic Segments
- Self achiever
- Direction taker
- Balance seeker
- Willful endure
- Priority juggler

EDUCATION ASSESSMENT

KNOWLEDGE NUMERACY NAVIGATION COMMUNICATION DECISION MAKING

COMMUNICATION EVALUATION

AHA Inside
Mobile friendly content management system
  - Over 2000 content assets. API enabled

Health Message

Self Achiever Balance Seeker Direction Taker Priority Juggler Willful Endurers

EVOLVING CAREPLANS

SDOH	MEDICAL	BEHAVIORAL	PERSONALITY	DIGITAL

Physical activity   **Blood pressure**

Nutrition   **Glucose**

Smoking   **Medication adherence**

Weight

Cholesterol   **Mental health**

Heart failure   **Afib**   **HBP**

Cardiac rehab/CAD   **Cardiometabolic**   **Childhood obesity**

Stroke   **Diabetes**   **Life's Simple 7**

MEASURES
Process measures
Clinical measures
Outcome measures
Healthy life expectancy

AI-MODEL EXAMPLE

PERSONAL
- Name
- ID

DEMOGRAPHICS
- Year of Birth
- Gender
- Race
- Ethnicity
- Zip Code

SOCIAL
- Income
- Education
- Insurance
- Literacy

CULTURAL
- Religion
- Language
- Ancestry

MEDICAL
- PCF
- Specialist(s)
- Diagnosis
- Procedures
- Symptoms

TREATMENT
- Medications
- OTCs
- Therapy
- Rehab

GENETICS
- Phenotype
- Genotype

BIOMETRIC
- Blood Pressure
- Glucose
- Weight
- Heart Rate

BEHAVIORAL
- Smoking
- Tobacco
- Physical Activity
- Nutrition
- Sleep

MENTAL HEALTH
- Stress
- Depression
- Anxiety
- Relationships
- Mood

LEARNING STYLE
- Phenotype
- Genotype

MOTIVATION
- Readiness for change
- Self-efficacy
- Trust
- Proactive/ Reactive
- Compliance

DIGITAL
- Digital Access
- Human Access

STRATEGY
- Face-to-Face
- Digital
- Mixed

SIGNATURE:

- African-American
- Female
- Insured but low-income
- Likes to read
- Religious (Baptist)
- Diagnosed with hypertension
- Taking an ACE inhibitor
- Family history of stroke
- Family-oriented
- Social
- Takes BP readings at home
- Likes fried food, No active, BMI: 32

- Uses the internet/email
- Prefers choices
- Proactive
- Trust issues with doctor
- Not confident
- Wants to feel better
- Likes structure
- Feels stressed

STRATEGY:

- Focus on family health
- Begin preparing low sodium meals for family
- Will receive a weekly email with choices for preparing low sodium meals
- Email will contain links to articles on healthy living, and low sodium, lo calorie choices
- Will begin participating in a social group at her church

16

Include

Fruits and vegetables
Whole grains
Beans and legumes
Nuts and seeds
Fish
Skinless poultry
Low fat, and fat free dairy
Healthier fats, and non tropical oils

PhysicalActivity3

To get started

Take your resting heart rate and blood pressure

Care Plan video

Step-by-Step Tools

A **blood pressure test** measures the amount of pressure exerted on your artery walls by the blood flowing throughout your body. This measurement is represented by two numbers, **systolic** and **diastolic**.

Whenever you have your blood pressure taken, the top number is systolic and the bottom number is diastolic:

Systolic $\frac{120}{80}$ Diastolic mm Hg

The measurement above would be read "120 over 80 millimeters of mercury."

Personalized CarePlan

ANSWERS by heart | Lifestyle + Risk Reduction High Blood Pressure | American Heart Association life is why™

What Is High Blood Pressure?

Blood pressure is the force of blood pushing against blood vessel walls. It is measured in millimeters of mercury (mm Hg).

High blood pressure (HBP) means the pressure in your arteries is higher than it should be. Another name for high blood

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89

Identify a specific challenge that's important to you

GettingStarted

Healthy Heart Quiz

American Heart Association | American Stroke Association
life is why™

Physical Activity Heart Health Quiz

How much physical activity is enough? Can you prevent heart disease by being physically active? Find out.

Press "Continue" to begin.

CONTINUE →

Exercise and Physical Activity Plan

Intensity=How hard

Monitor your breathing

Use the "talk test" to monitor your intensity
If you cannot hold a conversation, you are going too fast

Phone 1:

●●●●● Carrier LTE 12:10 100%

American Heart Association®

Assessment

Are you experiencing any of the following?
☐ Chest pain, or pain in your jaw, shoulder or arm
☐ New or worsening shortness of breath
☐ Dizziness or lightheadedness or loss of consciousness
☐ Pain in your legs when you walk
☐ Extreme fatigue
☐ Dry or frequent hacking cough
☐ Increased swelling of legs, feet and ankles
☐ Discomfort or swelling in the abdomen
☐ Trouble sleeping

N E X T

Phone 2:

●●●●● Carrier LTE 12:10 100%

American Heart Association®

117 / 76 mm Hg

Read as "117 over 76 millimeters of mercury"
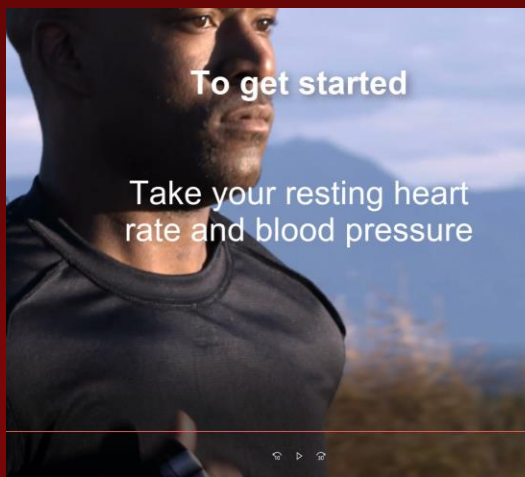
1:12   -2:08

Message Title
Message Description

Phone 3:

●●●●● Carrier LTE 12:10 100%

American Heart Association®

Cardiac Rehab - Messages

To get started
Take your resting heart rate and blood pressure
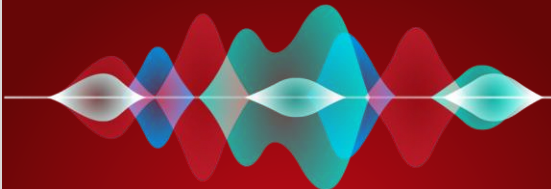
Getting Started – Physical activity

Phone 4:

●●●●● Carrier LTE 12:10 100%

American Heart Association®

Cardiac Rehab - Messages

1:12   -2:08

Message Title
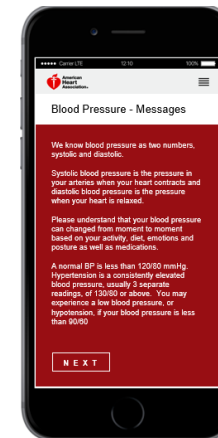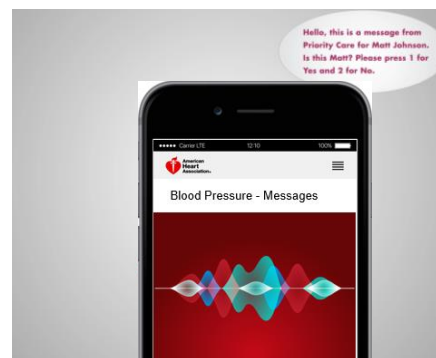Message Description

ONE SIZE FITS "ONE"

Health Message

| Self Achiever | Balance Seeker | Direction Taker | Priority Juggler | Willful Endurers |

Connecting

How are you feeling today?
- ❑ Great
- ❑ Good
- ❑ OK
- ❑ Fair
- ❑ Not so good

Not so good

Are you?
- ❑ Experiencing symptoms
- ❑ Feeling stressed
- ❑ Something else

Experiencing symptoms

NEXT

Assessment

Are you experiencing any of the following?
- ❑ Chest pain, or pain in your jaw, shoulder or arm
- ❑ New or worsening shortness of breath
- ❑ Dizziness or lightheadedness or loss of consciousness
- ❑ Pain in your legs when you walk
- ❑ Extreme fatigue
- ❑ Dry or frequent hacking cough
- ❑ Increased swelling of legs, feet and ankles
- ❑ Discomfort or swelling in the abdomen
- ❑ Trouble sleeping

NEXT

Connecting

Extreme fatigue

Is this?
- ❑ New
- ❑ Worsening

New

Have you discussed this with your doctor?

Yes, I have an appointment scheduled for tomorrow to discuss my medications

NEXT

ISSUES RELATED TO THE USE OF WEARABLES AND DEVICES

VALIDITY AND RELIABILITY OF THE MEASURES

      DO PATIENTS/CONSUMERS UNDERSTAND THE INFORMATION (HEALTH LITERACY)

      DO CLINICIANS TRUST AND ACT ON THE INFORMATION

PATIENT GENERATED DATA

      OBJECTIVE DATA

      SUBJECTIVE DATA

REPORTING BIAS

CONTEXTUAL FACTORS

American Heart Association®