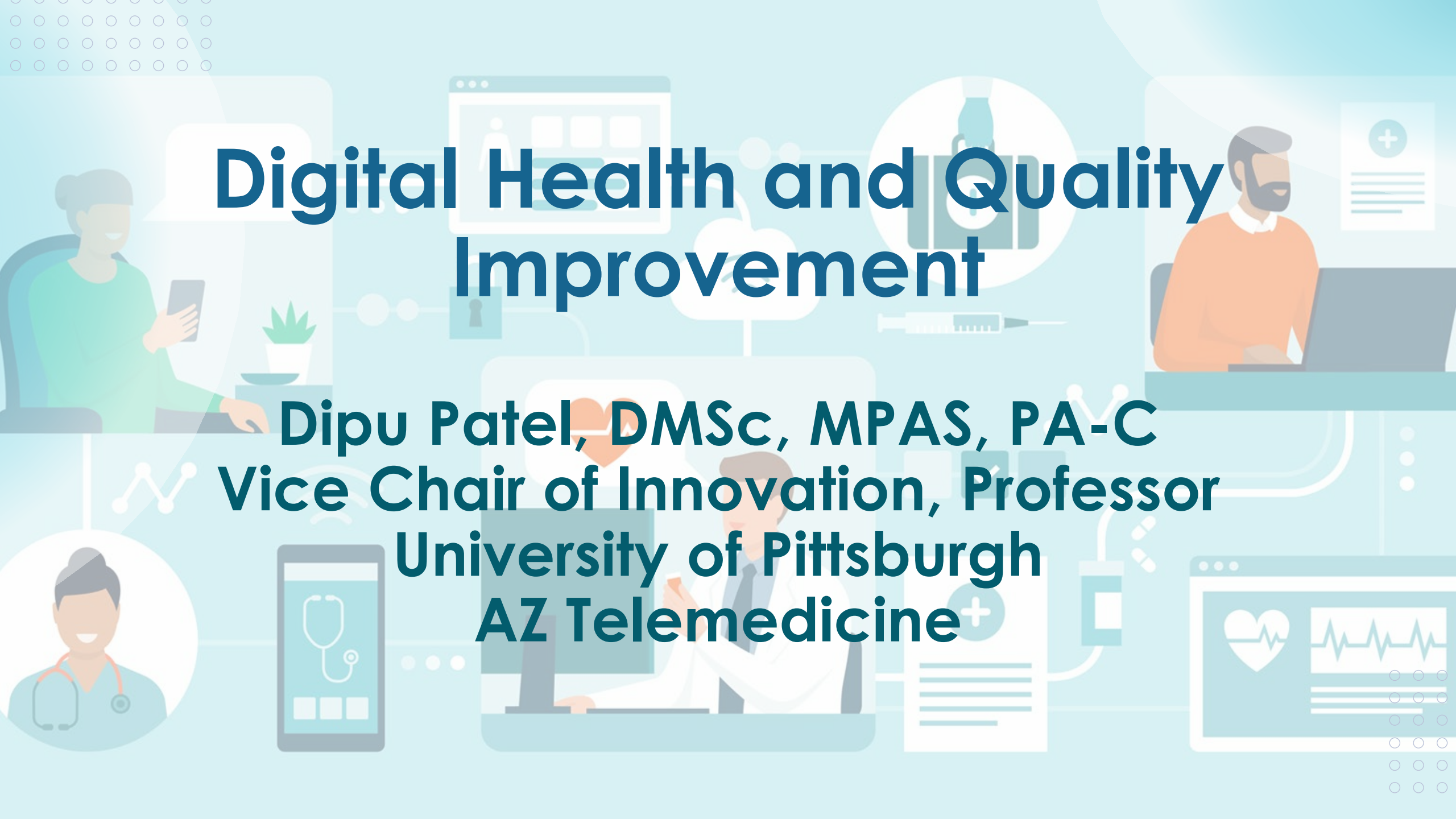


Digital Health and Quality Improvement

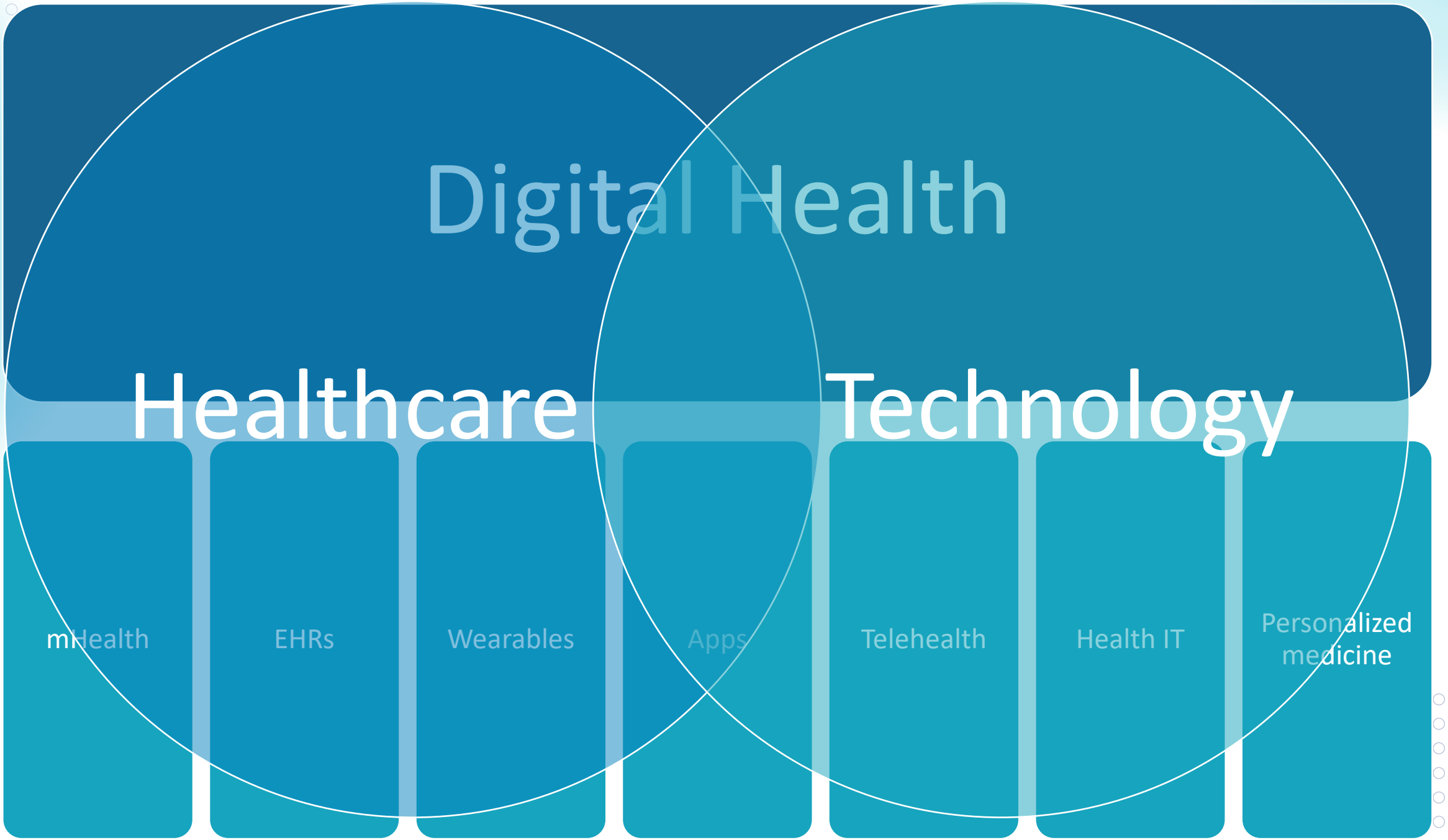
Dipu Patel, DMSc, MPAS, PA-C
Vice Chair of Innovation, Professor
University of Pittsburgh
AZ Telemedicine

Objectives

1. Understand the importance of digital health and quality improvement in transforming healthcare delivery.

2. List two challenges and opportunities presented by the intersection of digital health and quality improvement

3. Define the potential impact of digital health and quality improvement on healthcare outcomes and patient satisfaction


Digital Health
Healthcare
Technology
mHealth
EHRs
Wearables
Apps
Telehealth
Health IT
Personalized medicine

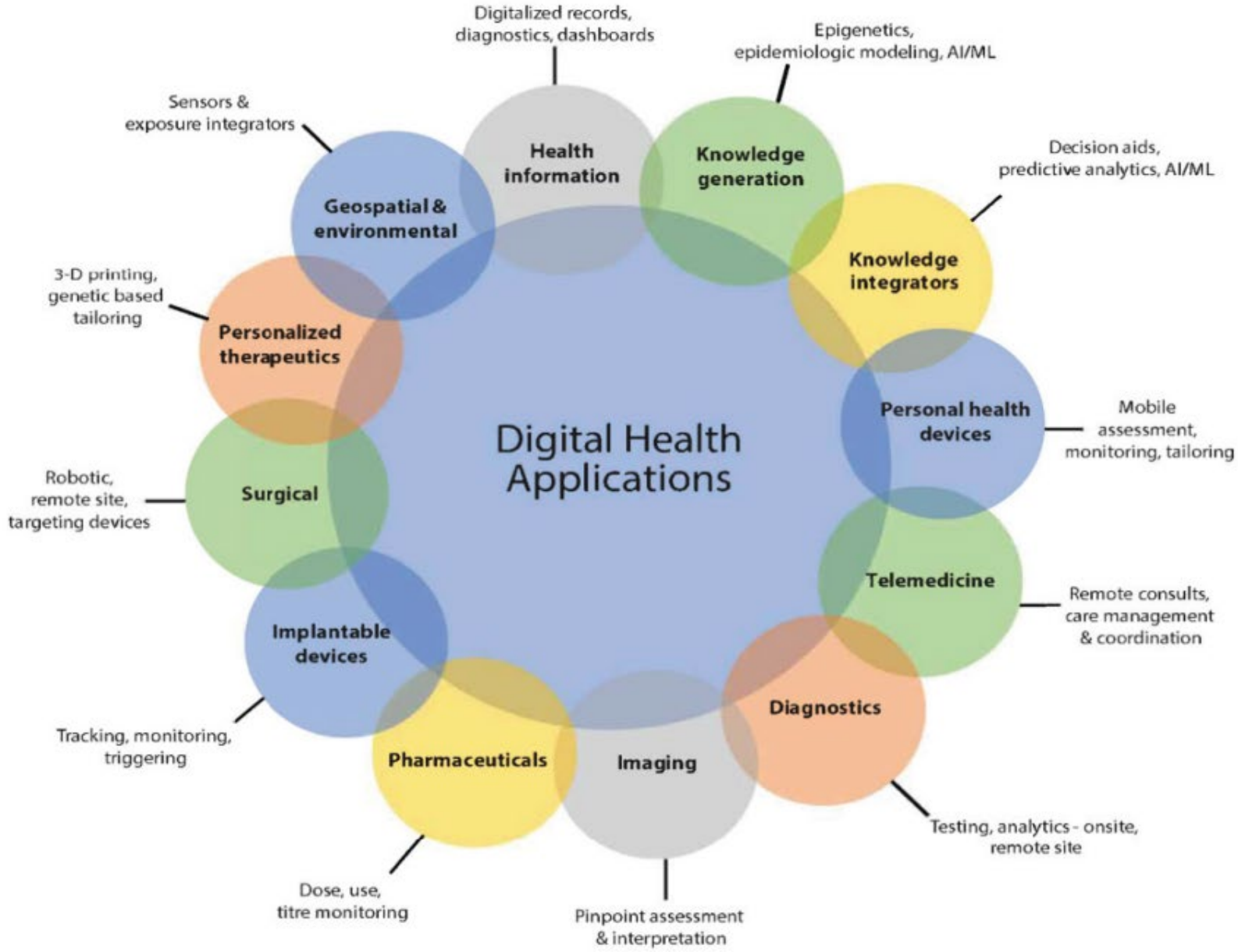
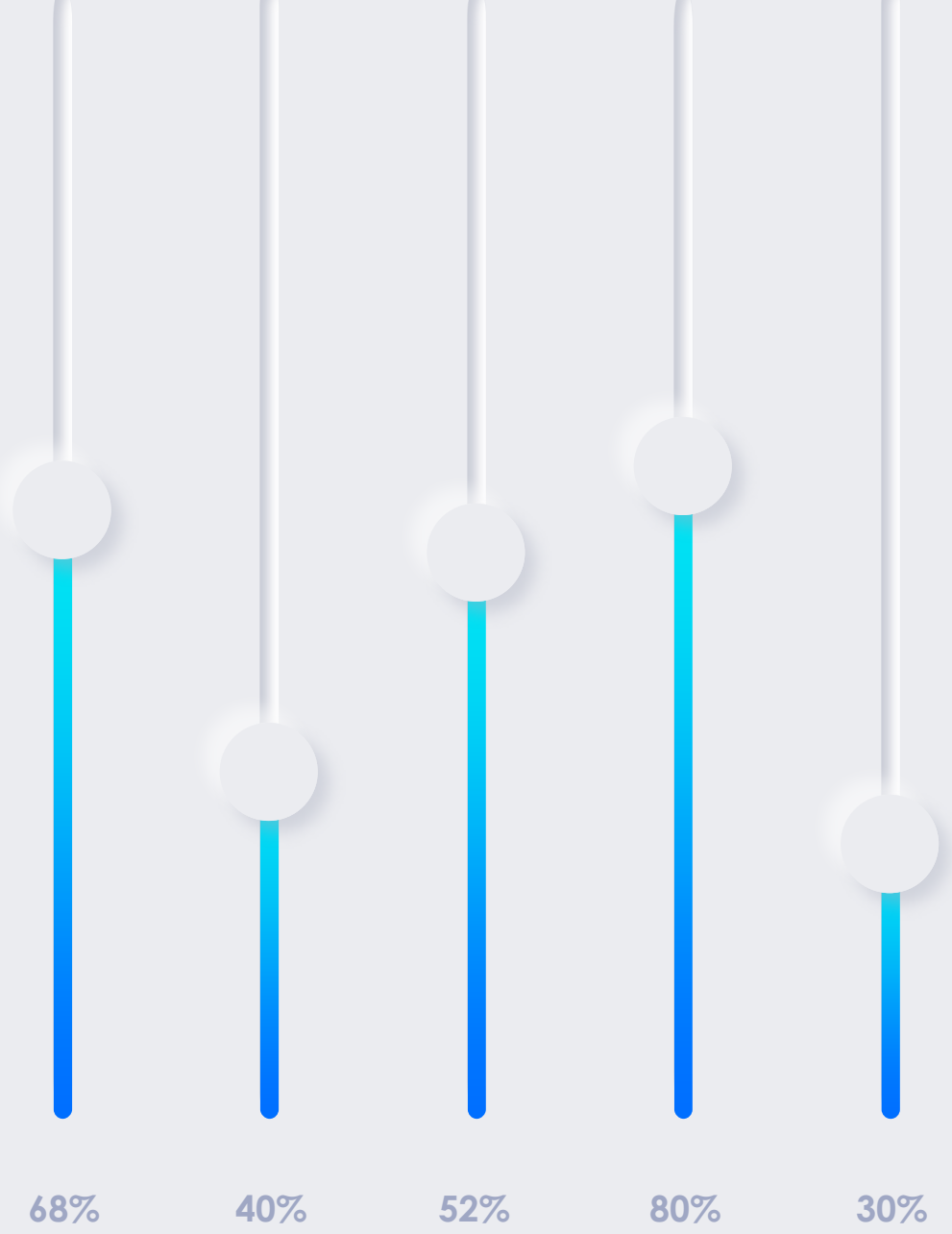


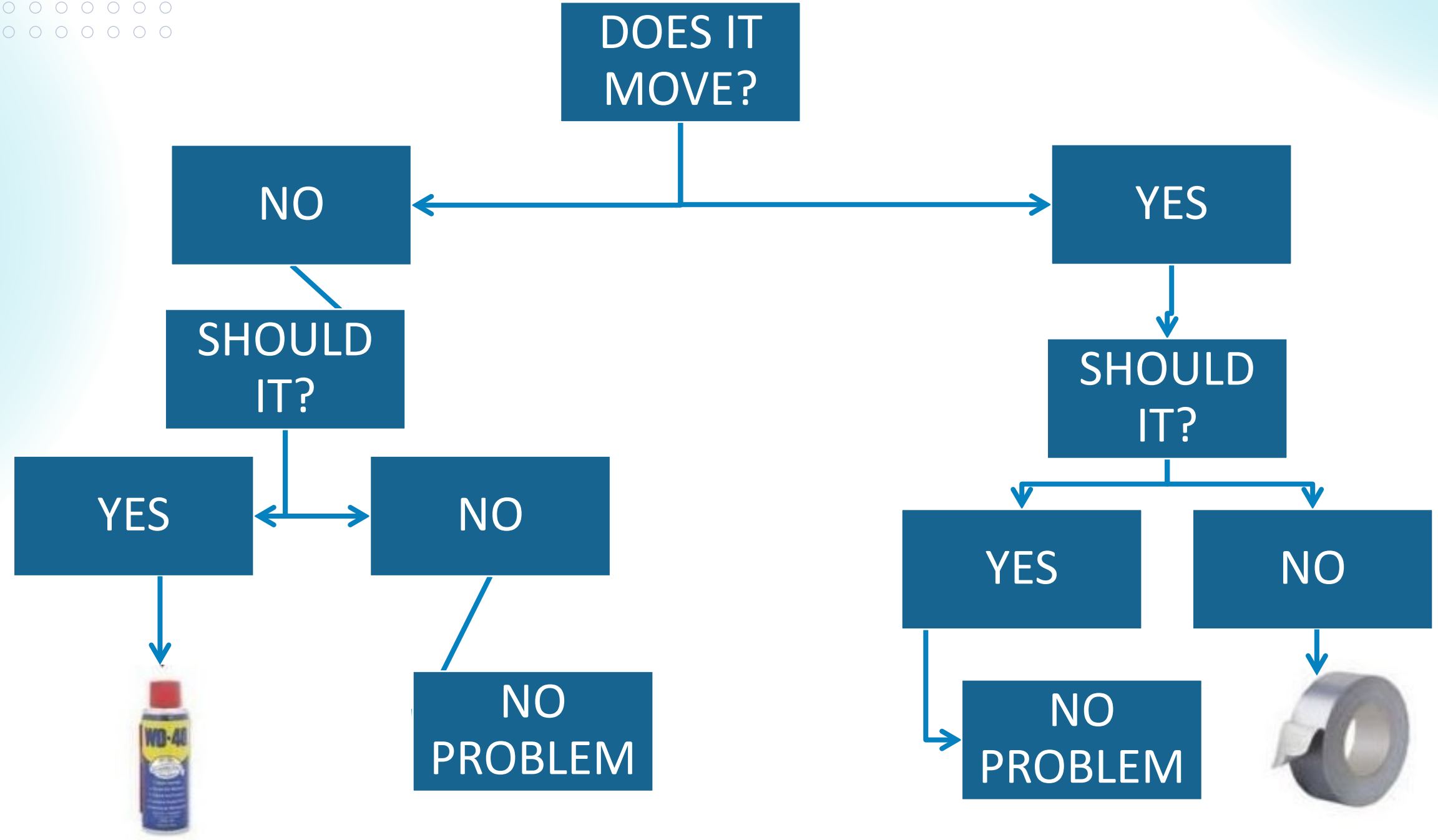
FIGURE 1 | Evolving Applications of Digital Technology in Health and Health Care
SOURCE: National Academy of Medicine. 2019. *Digital Health Action Collaborative, NAM Leadership Consortium: Collaboration for a Value & Science-Driven Health System.*

Digital Health Use:

Current(ish) State

1. Likely to choose provider with online appointments booking
2. Plan to adopt augmented intelligence
3. Acquire health information using chat bots
4. Use of virtual visits
5. Use of remote monitoring devices




DOES IT MOVE?
NO
YES
SHOULD IT?
SHOULD IT?
YES
NO
YES
NO
NO PROBLEM
NO PROBLEM
WD-40

Quality Improvement Questions

01

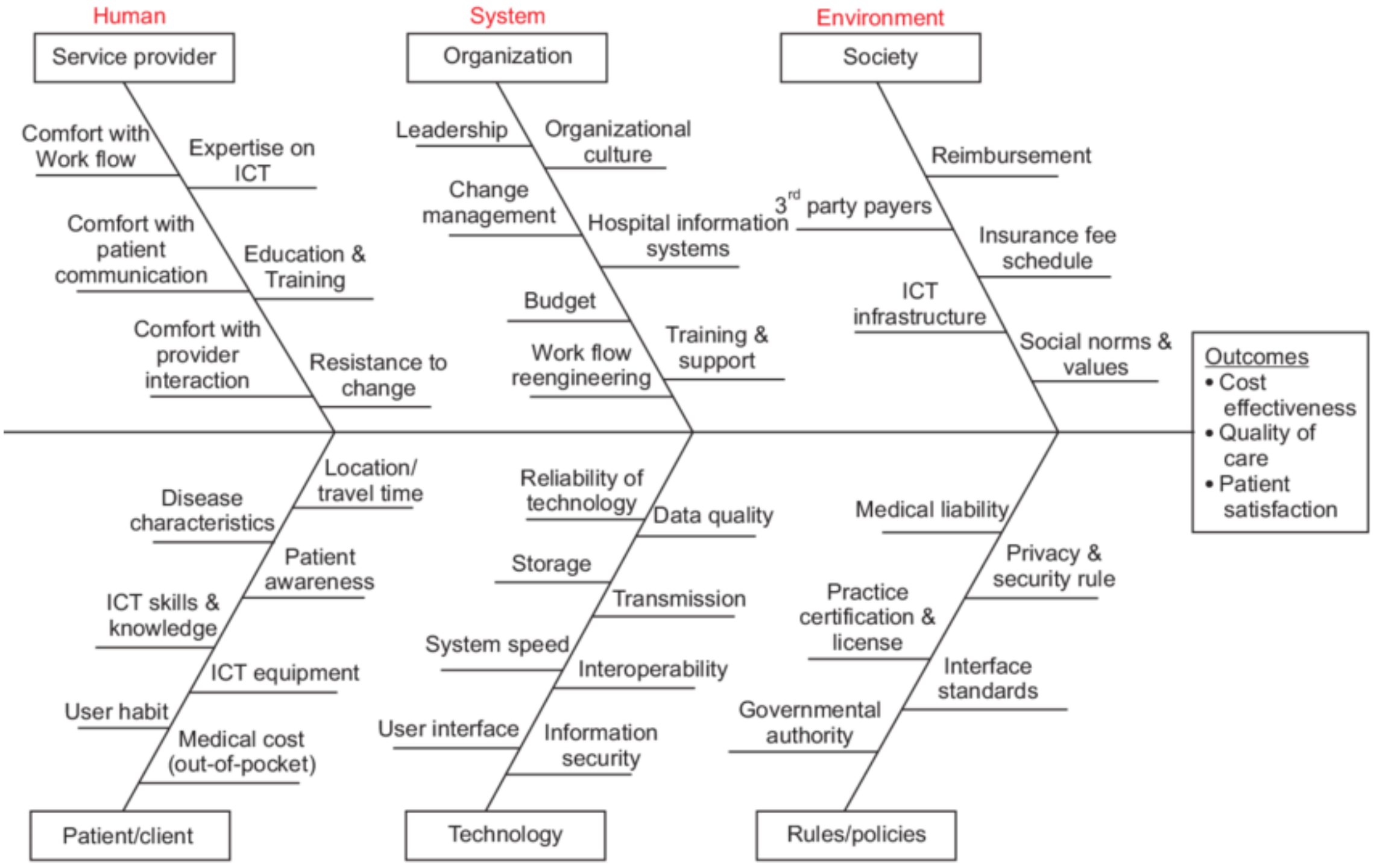
Are we doing the right things to manage health and health care?

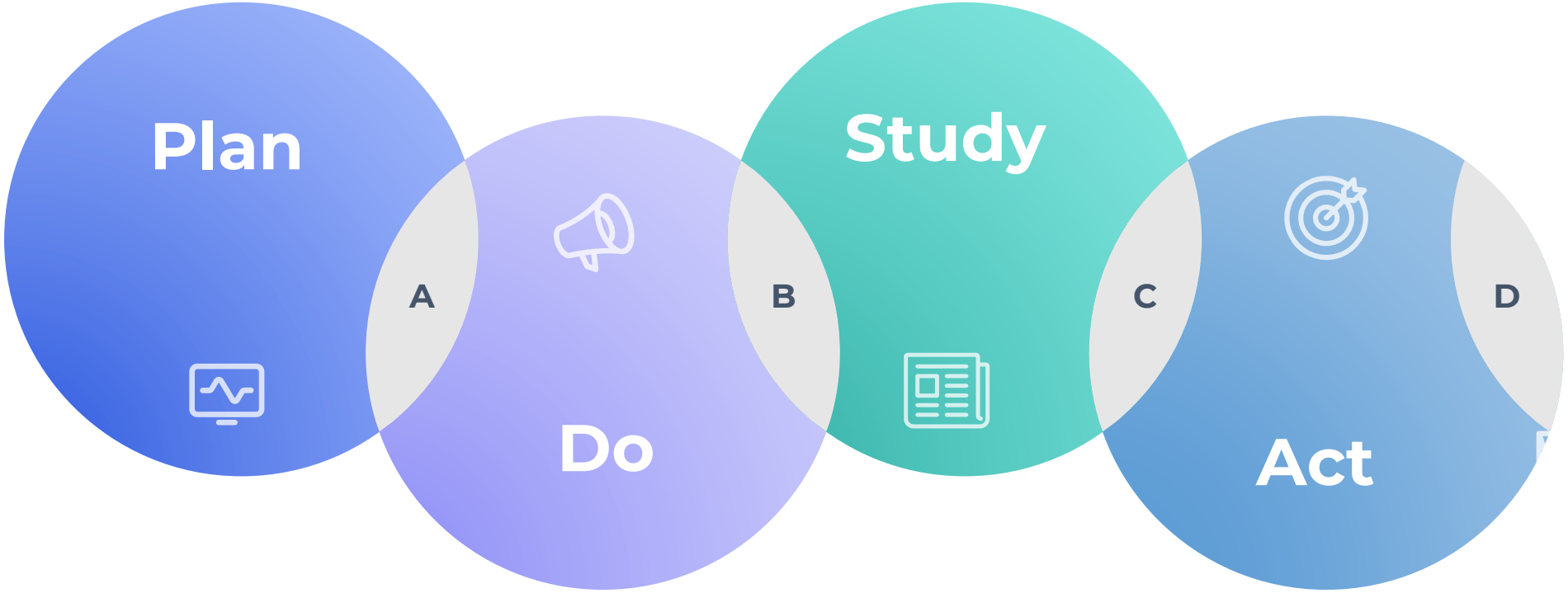
02

Are we getting the outcomes we want?

03

If not, what do we need to change?


Human
Service provider
Comfort with Work flow
Expertise on ICT
Comfort with patient communication
Education & Training
Comfort with provider interaction
Resistance to change
Location/ travel time
Disease characteristics
Patient awareness
ICT skills & knowledge
ICT equipment
User habit
Medical cost (out-of-pocket)
Patient/client
System
Organization
Leadership
Organizational culture
Change management
Hospital information systems
Budget
Training & support
Work flow reengineering
Reliability of technology
Data quality
Storage
Transmission
System speed
Interoperability
User interface
Information security
Technology
Environment
Society
Reimbursement
3rd party payers
Insurance fee schedule
ICT infrastructure
Social norms & values
Medical liability
Privacy & security rule
Practice certification & license
Interface standards
Governmental authority
Rules/policies
Outcomes
• Cost effectiveness
• Quality of care
• Patient satisfaction



A

What?
Why?
Who?
When?
Where?
How?

B

Specific
Measurable
Achievable
Relevant
Time

C

Analyze
Evaluate
Assess

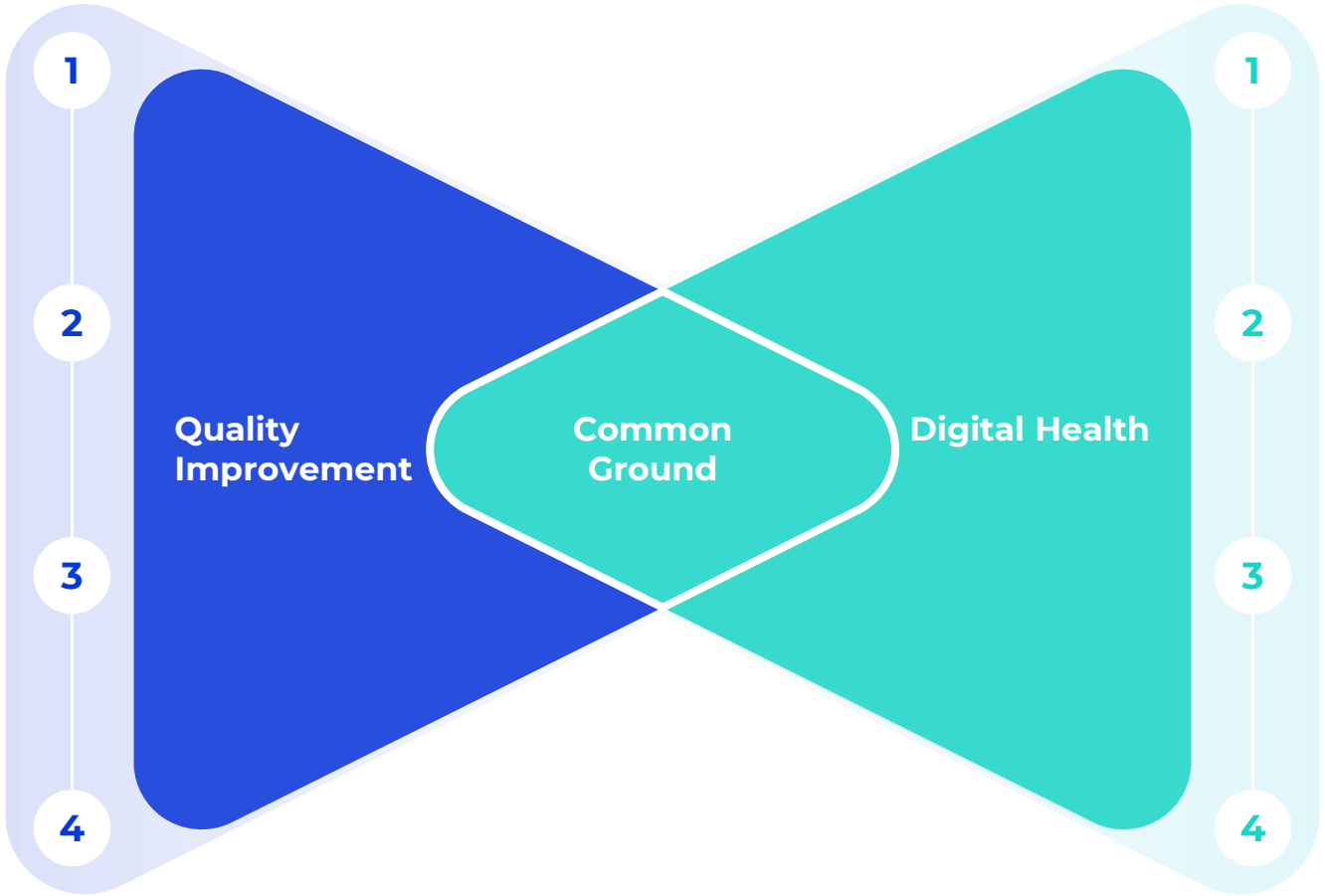
D

Adopt
Adapt
Abandon

PDSA Examples

PLAN	GAP	DO	STUDY	ACT
Increase pneumococcal vaccination rates in elderly patients	A consistent process for identifying appropriate patients for pneumococcal vaccine does not exist	Work with EHR to build a flag	Correct vs incorrect identification of patients in EHR	Reinforce and reevaluate
Increase depression screening in patients with chronic pain or SUD	Patient surveys revealed that they felt uncomfortable completing a depression assessment in the waiting room	Implement pre-visit planning process	Number of patients identified in pre-visit planning	Expand to other areas
Decrease the amount of clinician time spent on documentation after clinic hours	Providers are documenting many elements of the patient visit that could be completed by other support staff	Conduct screening in exam room	Increased number of immunizations received by elderly patients	Refine
		Train rooming staff to conduct PHQ2 or PHQ9	%screening completed WR vs ER	
		Share responsibilities during rooming process	Patient feedback	
		Train MAs or nurses to document the visit	#MAs or nurses trained	
			Decrease in after hours documentation	

Quality Improvement and Digital Health



Patient Safety

Clinical Outcomes

Patient Experience

Mutual Value

EHR Clinical Decision Support Tools

Digital Outcome Measures

Patient Portal and Community

Appointment and Medication Reminders

Leverage Quality Measures

Commit to a patient-centered approach in quality measure and value-based incentives programs to ensure that quality and safety measures address healthcare equity.

Meaningful Measures

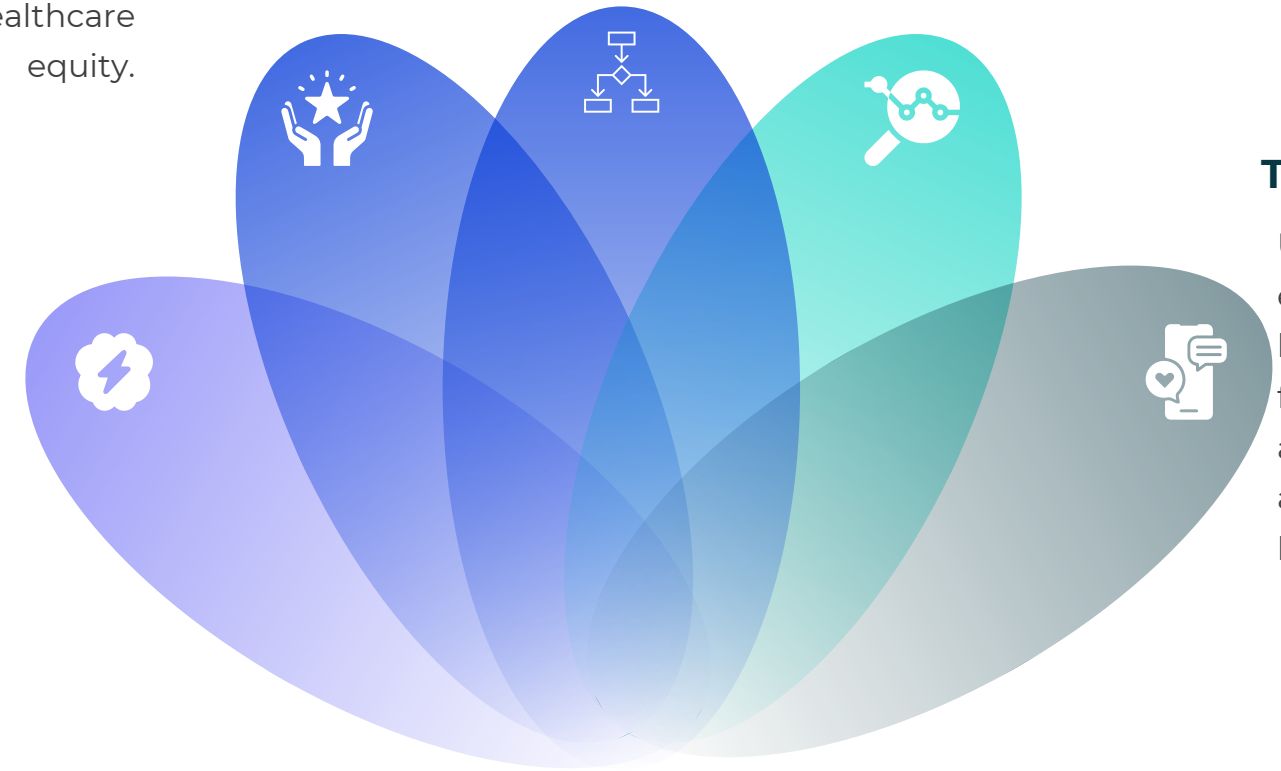
Align measures across CMS, federal programs, and private payers to reduce the number and burden of measures.

Drive Outcome Measures

Accelerate ongoing efforts to streamline and modernize programs, reducing burden and promoting important focus areas.

Empower Consumers

Empower people through transparency of data and public reporting, so they can make well-informed decisions about their health care.

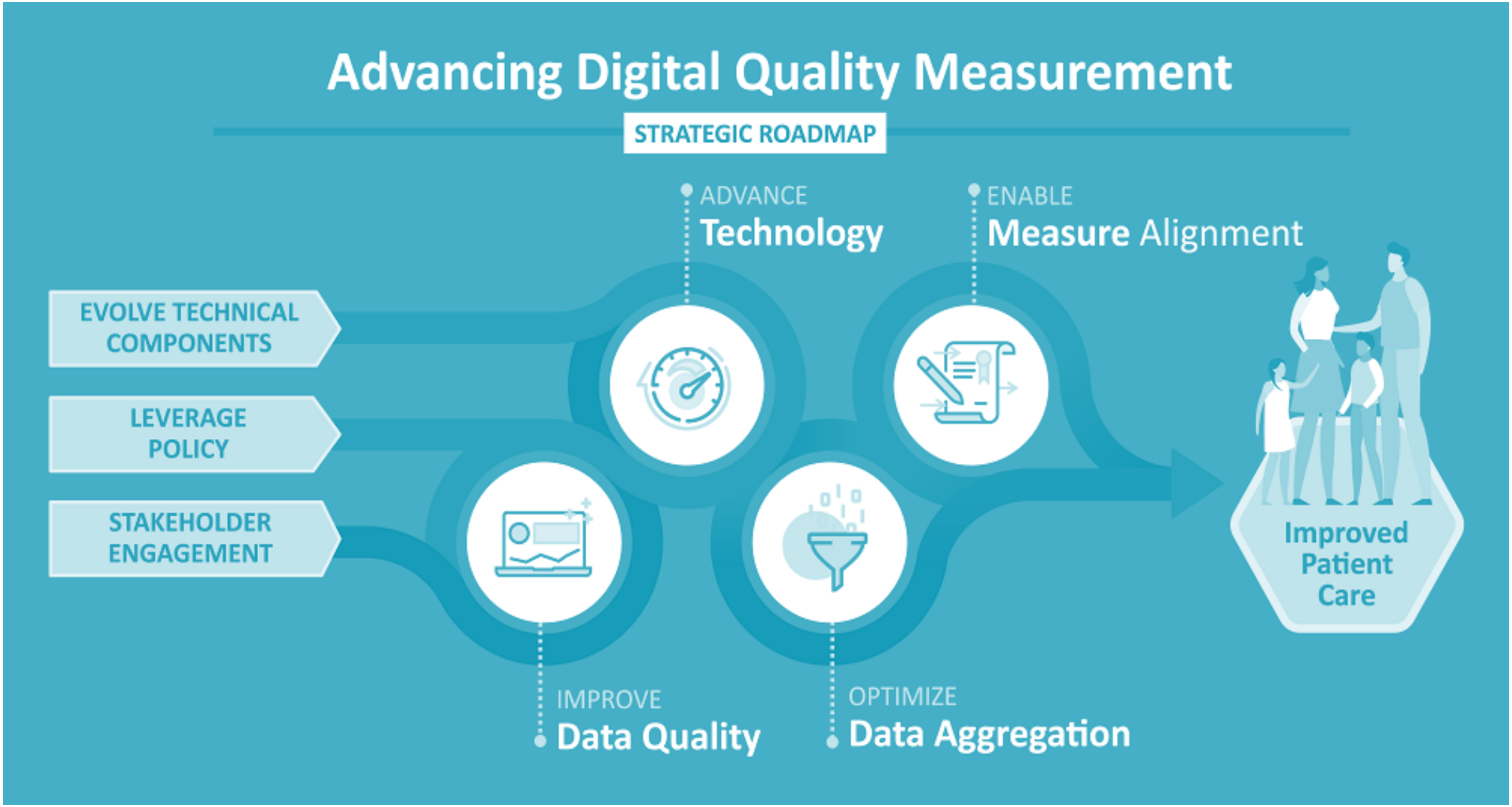


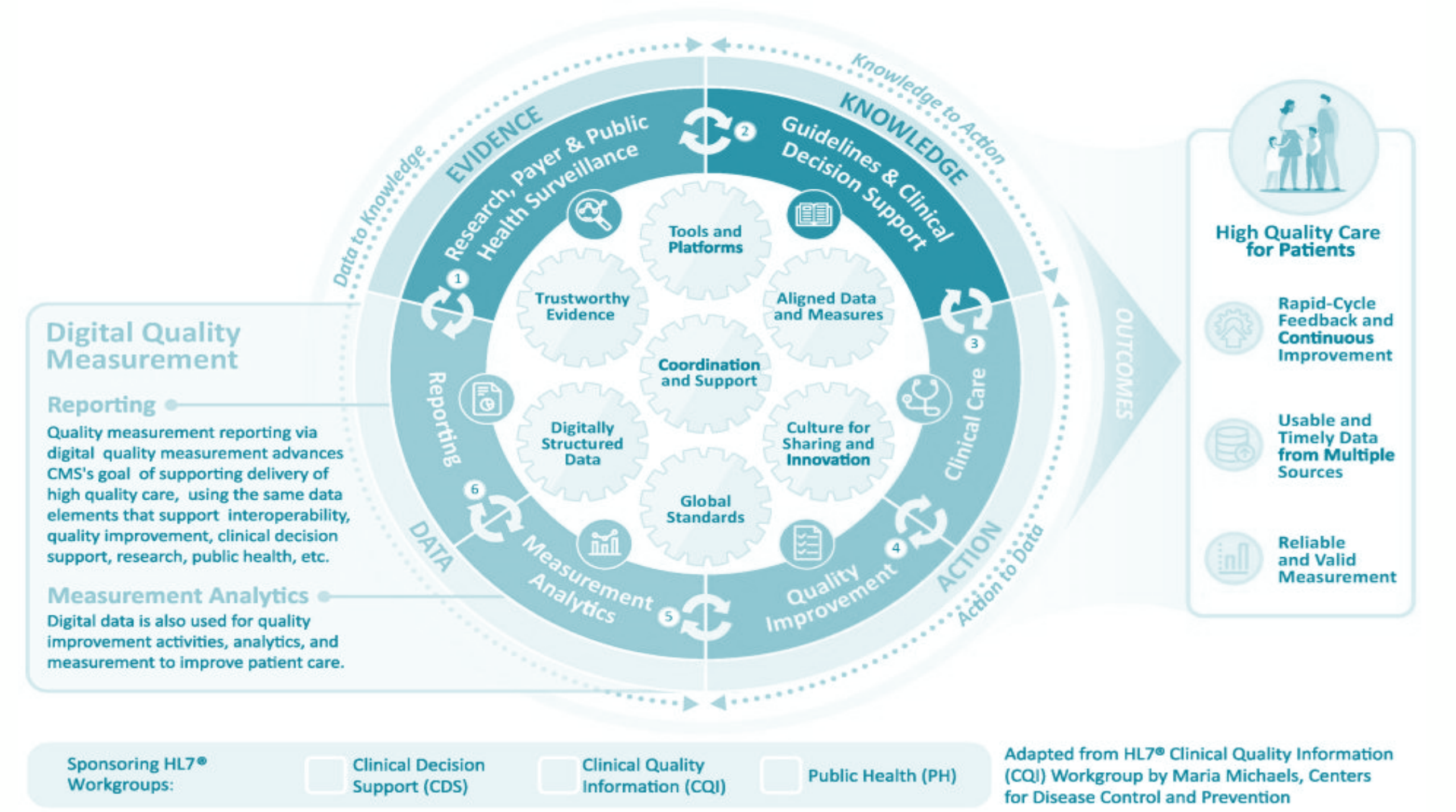
Transition to Digital Measures

Use data and information as essential aspects of a robust healthcare infrastructure to allow for payment and management of accountable, value-based care and to drive insights that help health organizations evolve.

CMS Meaningful Measures 2.0

CMS dQMs

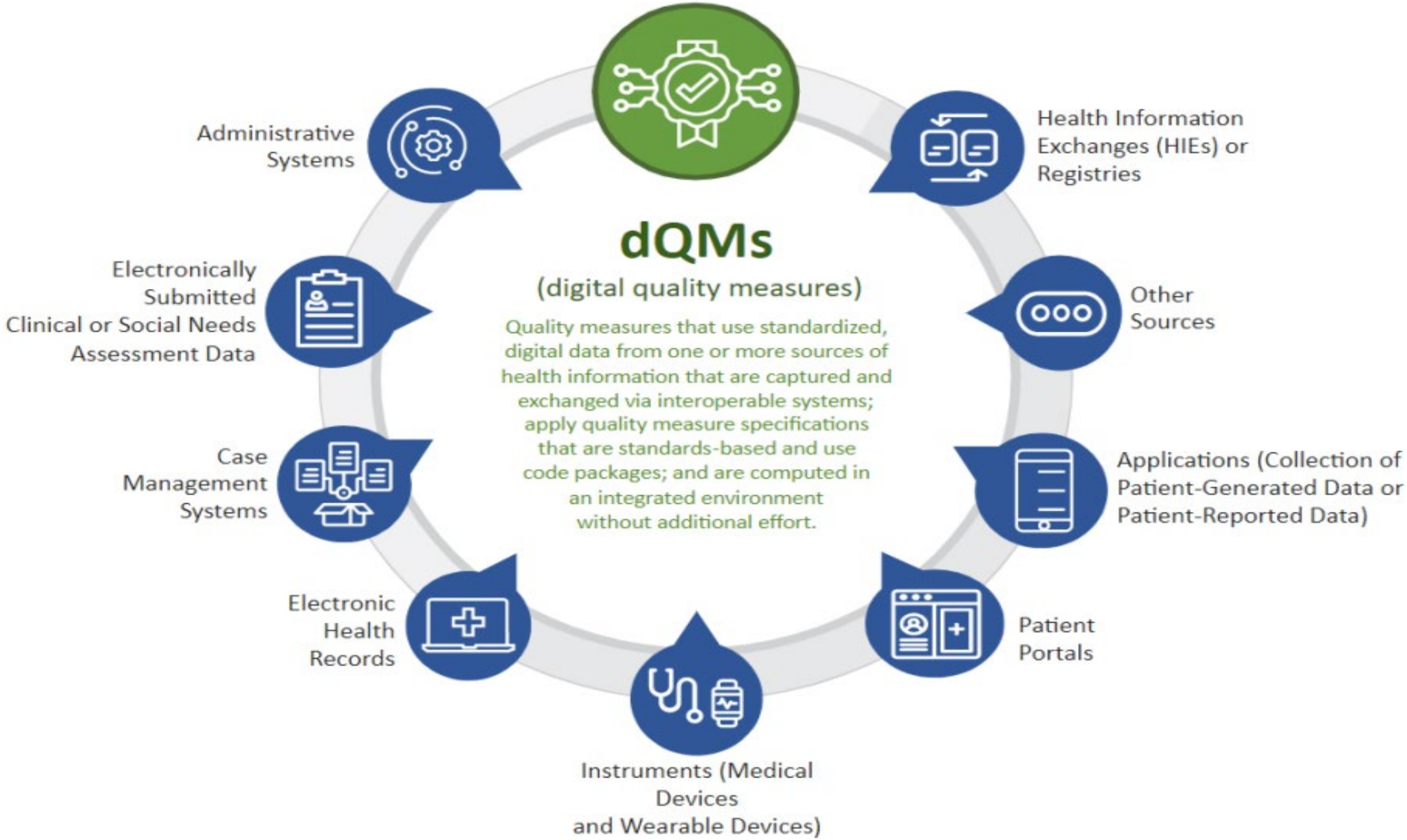

Advancing Digital Quality Measurement
STRATEGIC ROADMAP
ADVANCE
Technology
ENABLE
Measure Alignment
EVOLVE TECHNICAL COMPONENTS
LEVERAGE POLICY
STAKEHOLDER ENGAGEMENT
Improved Patient Care
IMPROVE
Data Quality
OPTIMIZE
Data Aggregation



Sponsoring HL7® Workgroups:

- Clinical Decision Support (CDS)
- Clinical Quality Information (CQI)
- Public Health (PH)

Adapted from HL7® Clinical Quality Information (CQI) Workgroup by Maria Michaels, Centers for Disease Control and Prevention


dQMs
(digital quality measures)
Quality measures that use standardized, digital data from one or more sources of health information that are captured and exchanged via interoperable systems; apply quality measure specifications that are standards-based and use code packages; and are computed in an integrated environment without additional effort.
Administrative Systems
Health Information Exchanges (HIEs) or Registries
Electronically Submitted Clinical or Social Needs Assessment Data
Other Sources
Case Management Systems
Applications (Collection of Patient-Generated Data or Patient-Reported Data)
Electronic Health Records
Patient Portals
Instruments (Medical Devices and Wearable Devices)

Care Management & Population Health

Activities that help practices better manage and engage patients in a patient-centered manner.

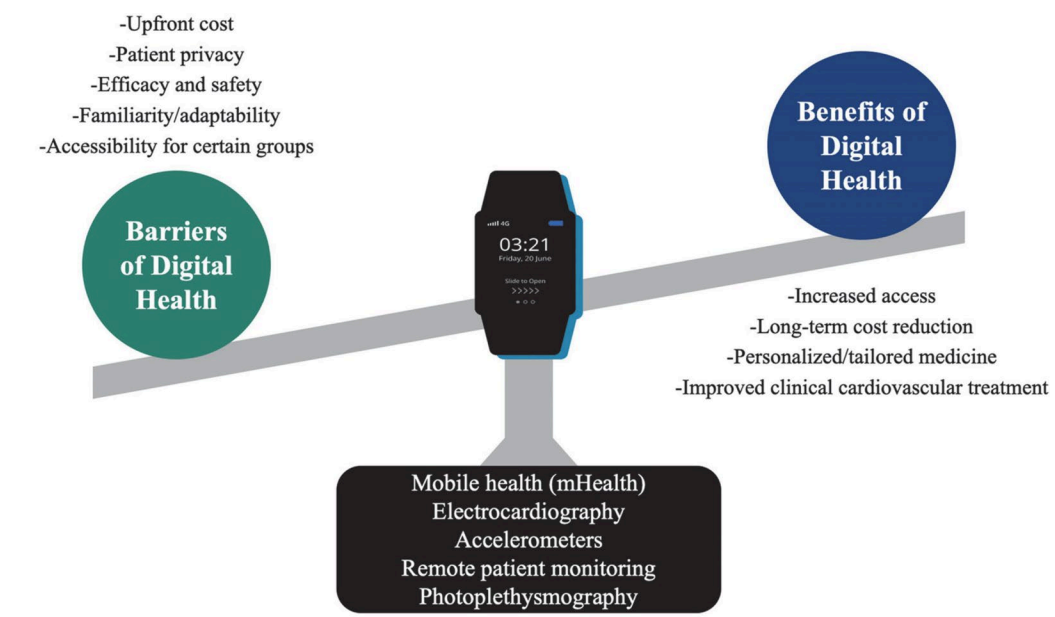
Patient Engagement	How does the practice or organization enable patient access to care, information and collaborative care management?
Evidence-Based/ Standard of Care	Does the practice or organization use patient data, tools and resources to guide appropriate clinical decision-making?
Quality Metrics	Does the practice or organization strengthen clinical documentation and capture data to support quality measurement and quality improvement?
Workforce	How does the platform help manage oversight of clinicians/staff and team-based care?
Continuity of Care	Can a patient's care over time be effectively managed through care coordination and data sharing?

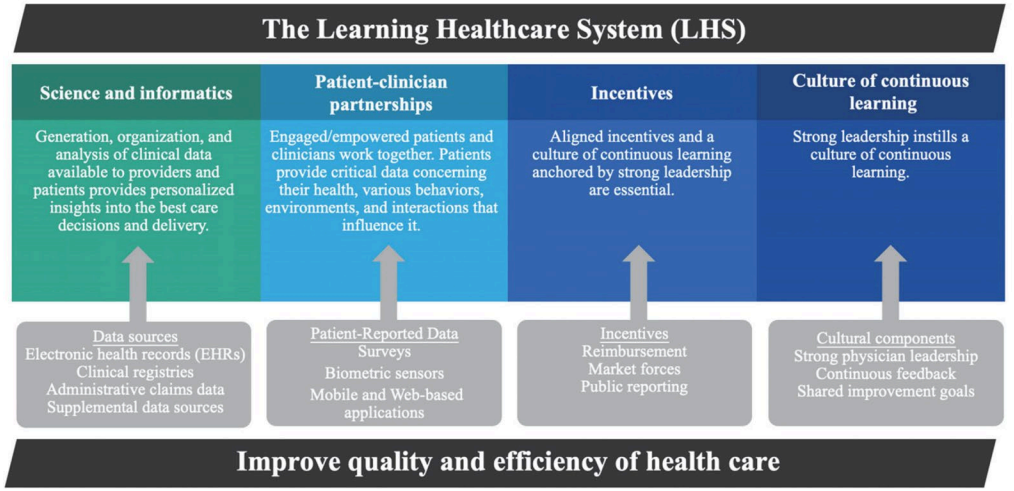
Operational & Infrastructure Integrity

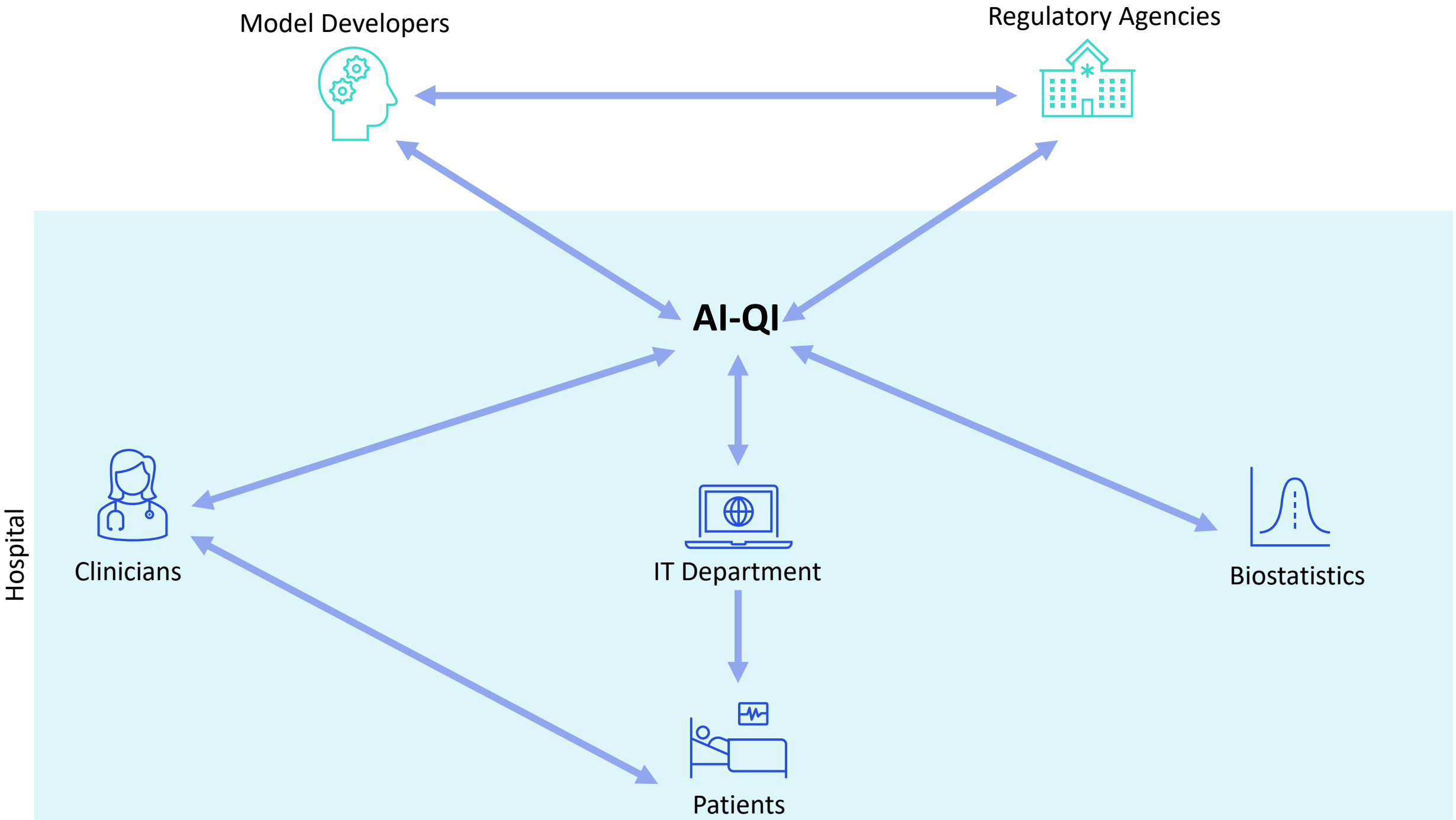
Activities that are an underpinning of the technology and support operational needs.

Regulatory Compliance	Does the practice or organization comply with applicable Federal/State laws and regulations?
Financial Considerations	How does the practice or organization help support coding, billing and contracting needs?
Privacy & Security	Are there safeguards to ensure patient data is secure?
Technology & Interoperability	How does the practice or organization assess its technology to ensure it meets clinical care delivery needs?

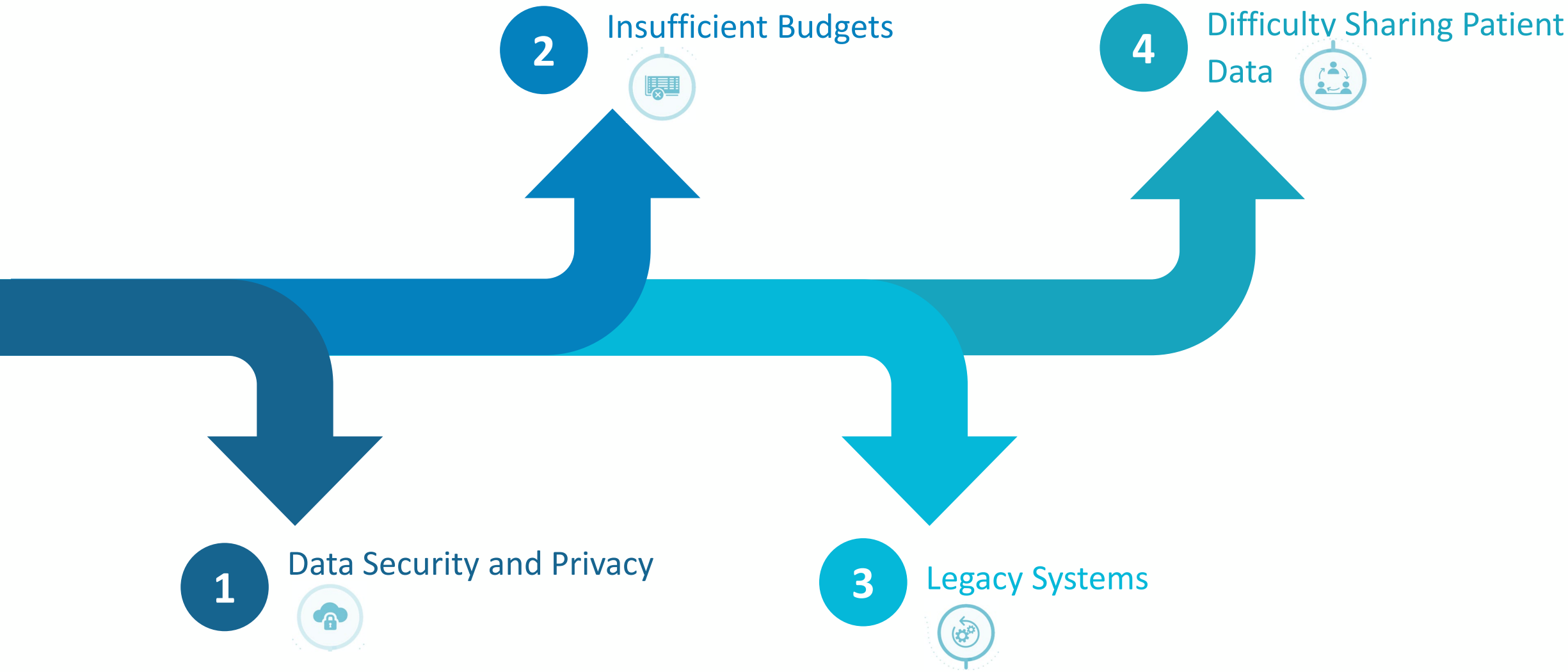
What and Where to Measure


-Upfront cost
-Patient privacy
-Efficacy and safety
-Familiarity/adaptability
-Accessibility for certain groups
Barriers of Digital Health
Benefits of Digital Health
-Increased access
-Long-term cost reduction
-Personalized/tailored medicine
-Improved clinical cardiovascular treatment
Mobile health (mHealth)
Electrocardiography
Accelerometers
Remote patient monitoring
Photoplethysmography


The Learning Healthcare System (LHS)
Science and informatics
Generation, organization, and analysis of clinical data available to providers and patients provides personalized insights into the best care decisions and delivery.
Patient-clinician partnerships
Engaged/empowered patients and clinicians work together. Patients provide critical data concerning their health, various behaviors, environments, and interactions that influence it.
Incentives
Aligned incentives and a culture of continuous learning anchored by strong leadership are essential.
Culture of continuous learning
Strong leadership instills a culture of continuous learning.
Data sources
Electronic health records (EHRs)
Clinical registries
Administrative claims data
Supplemental data sources
Patient-Reported Data
Surveys
Biometric sensors
Mobile and Web-based applications
Incentives
Reimbursement
Market forces
Public reporting
Cultural components
Strong physician leadership
Continuous feedback
Shared improvement goals
Improve quality and efficiency of health care


Model Developers
Regulatory Agencies
AI-QI
Hospital
Clinicians
IT Department
Biostatistics
Patients

Factors Affecting Healthcare Facilities' Ability to Adopt Digital Technologies



BOX 1 | Core Principles for Stewards of the Digital Health Infrastructure and Data

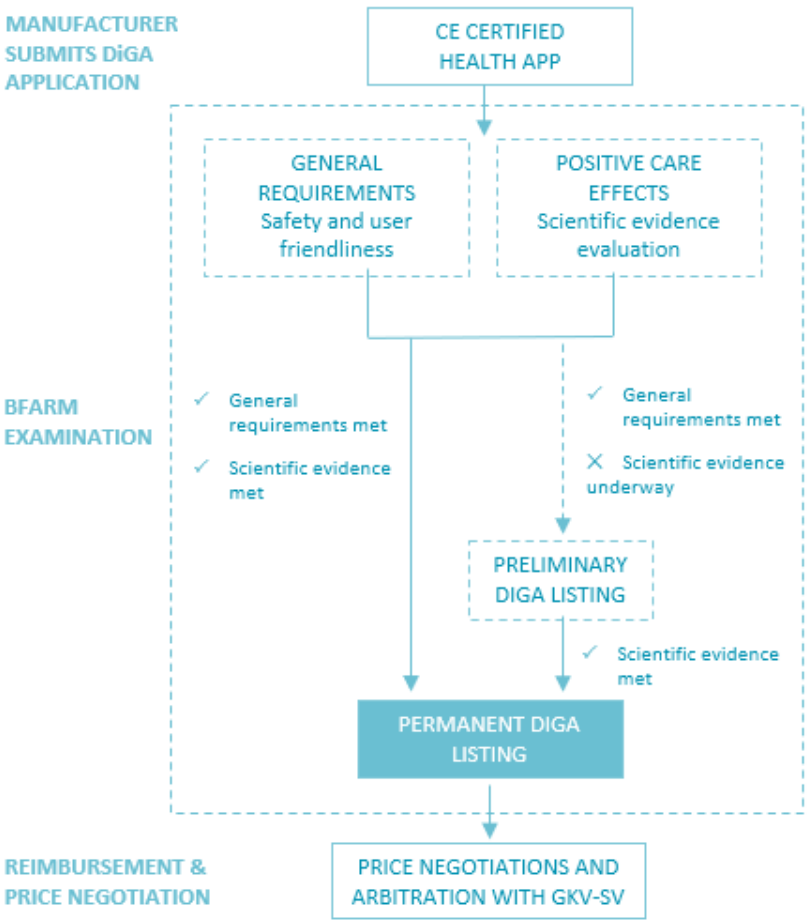
Personal: Discretion on control and use of personal data resides with the individual or their designee.
Safe: Data stewardship protocols safeguard against use resulting in personal harm.
Effective: Data are collected and maintained according to validated stewardship protocols.
Equitable: Data systems are designed to identify and counter bias or disparities.
Efficient: Every digital equipment acquisition or service license enhances health system interoperability.
Accessible: Data are available when and where needed for decision-making.
Measurable: Digital health performance is continuously monitored for accuracy and interoperability.
Transparent: Personal data sources and uses are clearly indicated, including timing and context.
Adaptive: Data strategies are regularly calibrated to ensure continuity, currency, and utility.
Secure: Data sharing protocols are considered secure by users.

SOURCE: National Academy of Medicine Leadership Consortium: Collaboration for a Learning Health System. n.d. *Digital Health Action Collaborative Strategic Framework.*

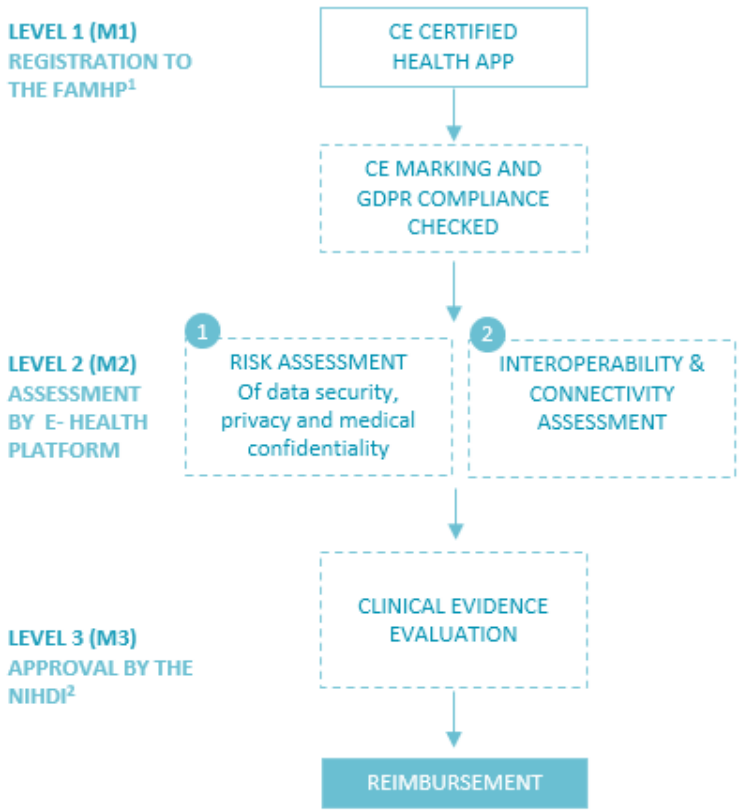
Policy and Practice Recommendations

THERE ARE DIFFERENT REIMBURSEMENT ROUTES FOR DIGITAL HEALTH APPS IN 'LEADER' COUNTRIES

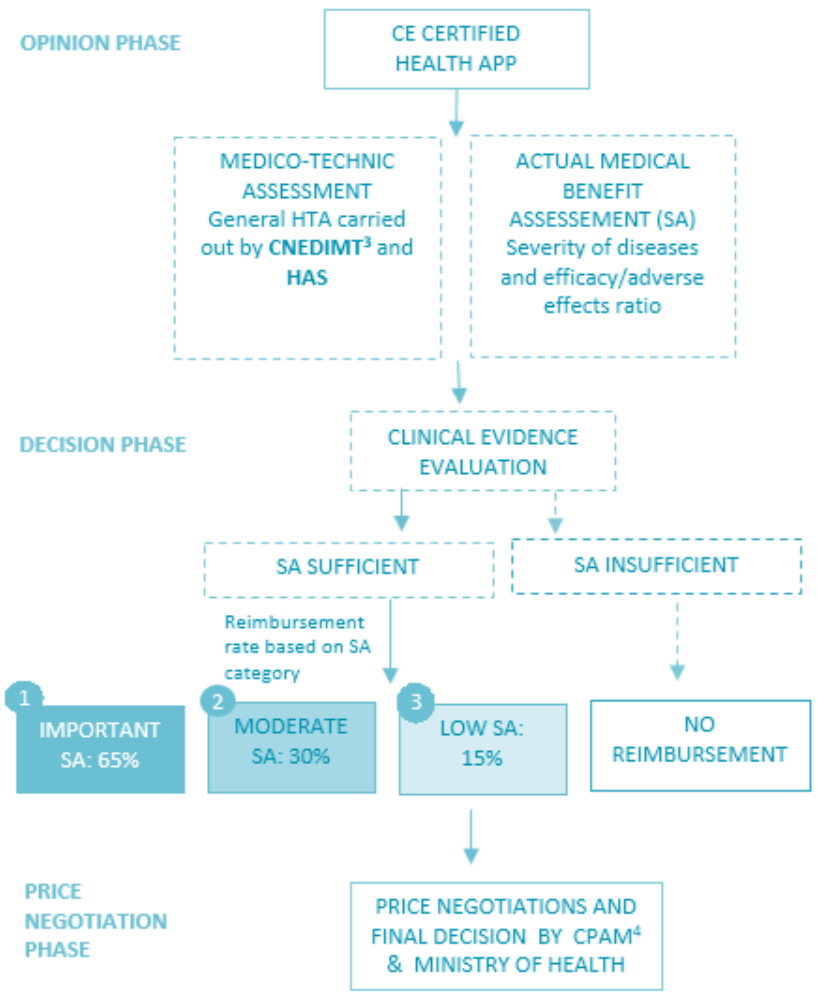
DiGA reimbursement pathway in Germany



mHealth Validation Pyramid in Belgium



Current DTx reimbursement route in France



1. Federal Agency for Medicines and Health Product
2. National Institute for Health and Disability Insurance
3. Medical device and health technology Evaluation Committee
4. Social Security Fund Caisse Primaire d'Assurance Maladie

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Global DTx Reimbursement Landscape

Germany

45 DiGAs Reimbursed in Germany

DEPRESSION:
- MY SEVEN STEPS — Depression (€470,01) – trial period 2/17/23-2/16/23
- elona — Depression (€535,49) – new trial period 12/26/22-12/25/23
- edu — Depression (€357,00 1st Rx, €178,50 follow up Rx) – new trial period 12/26/22-8/25/23
- novego — Depression (€249,00)
- Selfapy — Depression (€217,18)
- deprexis GAIA — Depression (€210,00)

MSK DISORDERS:
- medi Companion patella — Musculoskeletal (€345,10)
- MAWENDO — Musculoskeletal disease of the kneecap (€119,00)
- reflex VIVIRA — Gonarthrosis, knee (€784,21)
- Back, Knee & Hip Pain – 40 indications (€206,79)
- kaia — Back Pain (€489,39) – new permanent listing 2/3/23

PANIC DISORDERS:
- Agoraphobia, Panic Disorder and Social Phobias (€620,00) — invirto
- Panic Disorder and Agoraphobia (€576,00) — Mindable
- Panic Disorder (€599,00) — HelloBetter
- Agoraphobia, Panic Disorder, GAD, Social Phobias (€230,00) — velibra GAIA

DIABETES:
- Diabetes + Depression (€222,99) — HelloBetter
- Diabetes (€499,80) — vitadio

SUBSTANCE USE DISORDERS:
- Tobacco Addiction, (€249,00) – new provisional listing 1/29/23 — Smoke Free
- Tobacco Addiction, Smoking Cessation (€329,00 1st Rx, €119,00 follow up Rx) — Hero app
- Alcohol Dependence (€192,01) — VORVIDA GAIA

STRESS & ANXIETY:
- Selfapy — GAD (€228.50)
- HelloBetter — Burn Out & Stress (€235,00)
- novego — Anxiety (€219.98)

BREAST CANCER:
- Breast Cancer survivors (€952,00) — optimune GAIA
- Breast Cancer (€535,50) — PINK!
- Breast Cancer (€399.84) — CANKADO

INSOMNIA:
- HelloBetter — Organic & Non-organic Insomnia (€599,00)
- somnio — Inorganic insomnia (€224.99)

OBESITY:
- Obesity from excess caloric intake, Grades I&II (€499,80) — zanadio
- Obesity (€426,96) — OVIVA

TINNITUS:
- My Tinnitus App — Tinnitus (€449,00)
- kalmeda — Tinnitus (€189,00)

EATING & PERSONALITY DISORDERS:
- Selfapy — Binge Eating Disorder (€540,00) – new trial period 1/5/23-5/4/23
- PRIOVI GAIA — Unstable Borderline Personality Disorder (€855.82)
- Selfapy — Bulimia Nervosa (€540,00) – new trial period 1/5/23-5/4/23

GI DISORDERS:
- Irritable Bowel Syndrome (€574,56) – trial extension for 11 months to 11/25/23 — caracare

WOMENS/MENS HEALTH:
- HelloBetter — Vaginismus (€235.00)
- krauss health — Erectile Dysfunction (€656.88)
- endo app — Endometriosis (€598,95)

OTHER INDICATIONS:
- HelloBetter ratiopharm — Chronic Pain (€599,00) – trial extension for 7 months to 7/17/23
- COPD (€415,00) – new trial period 12/26/22-12/25/23 — kaia, Chiesi
- Cephalea — Migraine (€690,00)
- Aphasia and Dysphasia (€487.90) — neotech

MULTIPLE SCLEROSIS:
- Multiple Sclerosis (€2077,40) – new trial period 1/7/23-1/6/24 — levidex GAIA
- Multiple Sclerosis w/ fatigue (€243,00) — elevida GAIA

DiGA Listing Color Key: Permanent (BLACK), Provisional (RED) — Price Shown: Gross Price (negotiated, arbitrated, or not)

DiGA Directory De-Listings: 1) Mika for cancer (3/25/22), 2) M-sense for migraine (4/4/22), 3) Rehappy for post stroke care (8/26/22), 4) Esysta for T1/T2 diabetes (10/4/22), 5) Selfapy for Panic Disorder (11/18/22)

1

England-9 **Scotland-2**

deprexis, OVIVA, xyla, Liva healthcare, Slimming, MORE Life, SECOND NATURE

Also recommended by NICE and covered by UK NHS

daylight — Anxiety

Sleepio — Insomnia

Japan – 2

CureApp

CureApp SC for Smoking Cessation

CureApp HT for Hypertension

France – 5

Belgium – 1

moovcare By Sivan, diabeo, OdySight® *Under Article 51*, diabeloop, deprexis

2

PECAN Launched: early overage of digital medical devices for therapeutic purposes and remote medical monitoring

moveUP

Level 3 - (temporarily financed by exception)

Federal (Medicare) – **0**

States (Medicaid) – **3**

3

Access to Prescription Digital Therapeutics Act of 2023 (S.723/H.R.1458) Introduced

Bipartisan, bicameral legislation; supported by AMCP & other organizations, Current Co-sponsorship: 8 Representatives, 4 Senators as of 4/14/23

reSET reSET-O

Massachusetts (covered benefits)
Oklahoma (covered benefits)
Florida (covered benefits)

Other States Funding reSET/ reSET-O:
Kentucky, North Carolina, Indiana, Ohio, Michigan, Wisconsin, South Carolina, Alabama

PalmHealthCo

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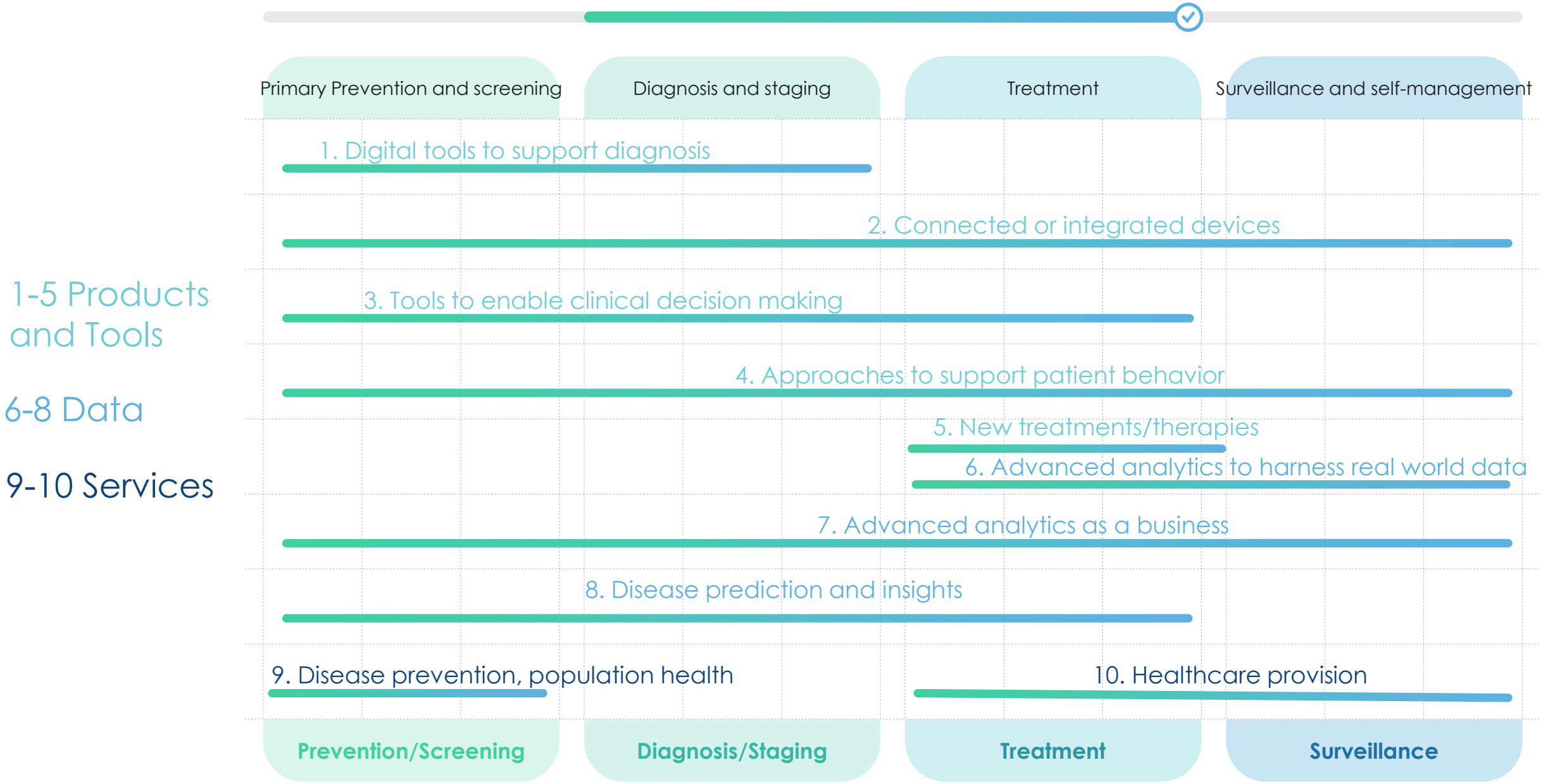
Is Digital Health Needed to Solve the Problem?

01 Cost

02 Bias

03 Maintenance

04 Effort


Primary Prevention and screening
Diagnosis and staging
Treatment
Surveillance and self-management
1. Digital tools to support diagnosis
2. Connected or integrated devices
3. Tools to enable clinical decision making
4. Approaches to support patient behavior
5. New treatments/therapies
6. Advanced analytics to harness real world data
7. Advanced analytics as a business
8. Disease prediction and insights
9. Disease prevention, population health
10. Healthcare provision
1-5 Products and Tools
6-8 Data
9-10 Services
Prevention/Screening
Diagnosis/Staging
Treatment
Surveillance

Hype Cycle Of The Top 50 Emerging Digital Health Trends In 2022

THE MEDICAL FUTURIST

Thank you!

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LinkedIn

Dr. Dipu Patel Portfolio

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