Digital Health and Quality Improvement

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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
FIGURE 1 | Evolving Applications of Digital Technology in Health and Health Care

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

SHOULD IT?

YES

NO

PROBLEM

NO

SHOULD IT?

YES

NO

PROBLEM

NO

PROBLEM

NO
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?
Plan

A

B
Specific Measurable Achievable Relevant Time

Do

Study

C
Analyze Evaluate Assess

Act

D
Adopt Adapt Abandon
**Increase pneumococcal vaccination rates in elderly patients**

**GAP**
A consistent process for identifying appropriate patients for pneumococcal vaccine does not exist

**DO**
- Work with EHR to build a flag
- Implement pre-visit planning process
- Conduct screening in exam room
- Train rooming staff to conduct PHQ2 or PHQ9
- Share responsibilities during rooming process
- Train MAs or nurses to document the visit

**STUDY**
- Correct vs incorrect identification of patients in EHR
- Number of patients identified in pre-visit planning
- Percentage screening completed WR vs ER
- Patient feedback
- Number of patients identified in pre-visit planning
- Increased number of immunizations received by elderly patients

**ACT**
- Reinforce and reevaluate
- Expand to other areas
- Refine

**Increase depression screening in patients with chronic pain or SUD**

**GAP**
Patient surveys revealed that they felt uncomfortable completing a depression assessment in the waiting room

**DO**
- Conduct screening in exam room
- Train rooming staff to conduct PHQ2 or PHQ9
- Share responsibilities during rooming process
- Train MAs or nurses to document the visit

**STUDY**
- Percentage screening completed WR vs ER
- Patient feedback

**ACT**
- Expand to other areas
- Refine

**Decrease the amount of clinician time spent on documentation after clinic hours**

**GAP**
Providers are documenting many elements of the patient visit that could be completed by other support staff

**DO**
- Share responsibilities during rooming process
- Train MAs or nurses to document the visit

**STUDY**
- Number of patients identified in pre-visit planning
- Increased number of immunizations received by elderly patients
- Decrease in after hours documentation

**ACT**
- Refine
Quality Improvement and Digital Health

- Patient Safety
- Clinical Outcomes
- Patient Experience
- Mutual Value

Quality Improvement

Common Ground

Digital Health

1. EHR Clinical Decision Support Tools
2. Digital Outcome Measures
3. Patient Portal and Community
4. 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.

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

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.

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.
Advancing Digital Quality Measurement

Strategic Roadmap

- Advance Technology
- Enable Measure Alignment

Evolve Technical Components
Leverage Policy
Stakeholder Engagement

Improve Data Quality
Optimize Data Aggregation

Improved Patient Care
Digital Quality Measurement

Reporting
Quality measurement reporting via digital quality measurement advances CMS's goal of supporting delivery of high quality care, using the same data elements that support interoperability, quality improvement, clinical decision support, research, public health, etc.

Measurement Analytics
Digital data is also used for quality improvement activities, analytics, and measurement to improve patient care.

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.
Patient-Centered Telehealth

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

- Reduce cost of data collection
- Expand range of usable data
- Leverage the broad adoption of EHR, etc.
- Establish a digital foundation of ongoing production...
Barriers of Digital Health
- Upfront cost
- Patient privacy
- Efficacy and safety
- Familiarity/adaptability
- Accessibility for certain groups

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

Incentive reinforcement
- Market forces
- Public reporting

Cultural components
- Strong physician leadership
- Continuous feedback
- Shared improvement goals

Improve quality and efficiency of health care
Factors Affecting Healthcare Facilities’ Ability to Adopt Digital Technologies

1. Data Security and Privacy
2. Insufficient Budgets
3. Legacy Systems
4.Difficulty Sharing Patient Data
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.

Policy and Practice Recommendations

1. Use what works
   - Smartphones

2. What is effective?
   - Behavior, medication
   - Compliance, assessment

3. EBM needed
   - Further review

4. Start in one place
   - Psychiatric care

5. Practice adoption
   - Collaborate
THERE ARE DIFFERENT REIMBURSEMENT ROUTES FOR DIGITAL HEALTH APPS IN ‘LEADER’ COUNTRIES

**DiGA reimbursement pathway in Germany**

- **Manufacturer submits DiGA application**
- **CE CERTIFIED HEALTH APP**
  - General requirements met
  - Positive care effects
  - Scientific evidence evaluation
- **BFARM examination**
  - General requirements met
  - Scientific evidence met
- **PRELIMINARY DIGA LISTING**
  - Scientific evidence met
- **PERMANENT DIGA LISTING**
- **Reimbursement & price negotiation**
  - Price negotiations and arbitration with GKV-SV

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**mHealth Validation Pyramid in Belgium**

- **Level 1 (M1) Registration to the FAMHP**
  - CE CERTIFIED HEALTH APP
  - CE MARKING AND GDPR COMPLIANCE CHECKED
- **Level 2 (M2) Assessment by E-Health Platform**
  - Risk assessment of data security, privacy, and medical confidentiality
  - Interoperability & connectivity assessment
- **Level 3 (M3) Approval by the NIHDP**
  - Clinical evidence evaluation
  - Reimbursement

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**Current DTx reimbursement route in France**

- **Opinion phase**
  - CE CERTIFIED HEALTH APP
  - Medico-technic assessment by CNEDIM and HAS
- **Decision phase**
  - Actual medical benefit assessment (SA) severity of diseases and efficacy/safety/efficacy ratio
  - Clinical evidence evaluation
  - SA sufficient
  - SA insufficient
- **Price negotiation phase**
  - Reimbursement rate based on SA category
  - Important SA: 65%
  - Moderate SA: 30%
  - Low SA: 15%
  - No reimbursement
  - Price negotiations and final decision by CSGMT & Ministry of Health

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1. Federal Agency for Medicines and Health Products
2. National Institute for Health and Disability Insurance
3. Medical device and health technology evaluation committee
4. Social Security Fund Ceased Primaire d’Assurance Maladie

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Global DTx Reimbursement Landscape

Germany

45 DiGAs Reimbursed in Germany

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- **Bipartisan, bicameral legislation; supported by AMP & other organizations. Current Co-sponsorship: 8 Representatives, 4 Senators as of 4/24/23**

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**France – 5**

- **France 5**
- **Level 3** (temporarily financed by exception)

**Belgium – 1**

- **Belgium 1**
- **moveUP**
- **Level 3** (temporarily financed by exception)

**States (Medicaid) – 3**

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

- **Bipartisan, bicameral legislation; supported by AMP & other organizations. Current Co-sponsorship: 8 Representatives, 4 Senators as of 4/24/23**

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**Federal (Medicare) – 0**

- **Federal 0**

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**Scotland – 2**

- **Scotland 2**

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**Japan – 2**

- **Japan 2**
- **CureApp SC for Smoking Cessation**
- **CureApp HT for Hypertension**
Is Digital Health Needed to Solve the Problem?

01  Cost
02  Bias
03  Maintenance
04  Effort
Primary Prevention and screening

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

Diagnosis and staging

Treatment

Surveillance and self-management

Prevention/Screening

Diagnosis/Staging

Treatment

Surveillance

1-5 Products and Tools

6-8 Data

9-10 Services
Hype Cycle Of The Top 50 Emerging Digital Health Trends In 2022

- Longevity research
- Nutrition devices
- Employee wellness programs
- Exoskeleton
- Clinical trial recruiting
- Clinical trial management
- Remote care apps
- Cloud computing
- Nutrition apps
- Robot companions
- Medication management
- Microbiome testing
- Remote care platforms
- Electronic Medical Records
- Mental health apps
- Smartphone health apps
- Fitness trackers

- Much progress not expected
- Moderate progress expected
- Significant progress expected

Data visualization by The Medical Futurist
Thank you!

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References


• Richardson S, Lawrence K, Schoenthaler A, Mann DM. A framework for digital health equity. 2022;5(1). doi:https://doi.org/10.1038/s41746-022-00663-0

• Milne-Ives M, Caroline de Cock, Lim E, et al. The Effectiveness of Artificial Intelligence Conversational Agents in Health Care: Systematic Review. 2020;22(10):e20346-e20346. doi:https://doi.org/10.2196/20346


References


• Bombard Y, Hayeems RZ. How digital tools can advance quality and equity in genomic medicine. 2020;21(9):505-506. doi:https://doi.org/10.1038/s41576-020-0260-x

• Cohen AF, Mathews SC. The Digital Outcome Measure. 2018;2(3):94-105. doi:https://doi.org/10.1159/000492396