Advancing Telemedicine through an Adoption Model

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Natasa Sokolovich JD, MSHCPM, Executive Director, Telehealth at UPMC & Senior Director, Affiliated Physician Services

Dr. Bill Fera, Principal at EY

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Conflict of Interest

Natasa Sokolovich, JD, MSHCPM

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Other: None
Conflict of Interest

Bill Fera, MD
Has no real or apparent conflicts of interest to report
Learning Objectives

1. Describe the approach employed for developing the telemedicine adoption model

2. Select the maturity level that best describes telemedicine services within your organization

3. Identify two ways in which your organization can apply this adoption model
An Introduction to the Benefits Realized for the Value of Health IT

Satisfaction:
Patients, payers, referring physicians and healthcare organizations are better prepared to deploy and expand advances in technology by utilizing a standardized process to identify their current telemedicine / telehealth maturity level.

Electronic Information/Data:
Provider organizations can share data, information and leading practices to improve overall telemedicine services for the greater good of the patient and the healthcare community.

Prevention & Patient Education:
Patients become more empowered and engaged in their healthcare as the care setting shifts from the hospital and clinic into their homes and communities.

http://www.himss.org/ValueSuite
What do we mean by telemedicine / telehealth?

**TELEMEDICINE**
The use of technology to exchange health information, provide health education and enable care delivery at a distance or between two remote sites

**TELEHEALTH**
Often used as a broader definition that includes the use of tools which enhance patient health such as remote monitoring devices, wearables and mobile health apps
Factors driving interest

Telemedicine / Telehealth

- Volume to value
- Expanding coverage
- Physician shortages
- Consumerism
- Population health
- Triple aim

Triple aim
- Volume to value
- Expanding coverage
- Physician shortages
- Consumerism
- Population health
- Triple aim
Project background

Challenge
The industry lacks a standardized framework for assessing the maturity of a telemedicine program and readiness to expand

Opportunity
Define a standard industry process for developing telemedicine programs and strengthen the healthcare community

Solution
Develop the first market research based adoption framework
Benefits of an adoption model

- Enable evaluation and systematic planning
- Establish a process that enables scalability
- Determine the appropriate level of investment
- Provide a mechanism for assessing progress
- Promote transparency with telemedicine services
- Enhance the community of telemedicine providers
Scope

- Research
- Advisory Council formation
- Survey and model construction
- Vetting and socialization

Adoption Model
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matt Cox</td>
<td>Duke University Health System</td>
</tr>
<tr>
<td>Bill Gable</td>
<td>Duke University Health System</td>
</tr>
<tr>
<td>Karen Jackson</td>
<td>The Ohio State University Wexner Medical Center</td>
</tr>
<tr>
<td>Kyle Sharp</td>
<td>The Ohio State University Wexner Medical Center</td>
</tr>
<tr>
<td>Mark Moseley</td>
<td>The Ohio State University Wexner Medical Center</td>
</tr>
<tr>
<td>David Nash</td>
<td>Thomas Jefferson University</td>
</tr>
<tr>
<td>Alexis Skoufalos</td>
<td>Thomas Jefferson University</td>
</tr>
<tr>
<td>Frank Maguire</td>
<td>TriWest Healthcare Alliance</td>
</tr>
<tr>
<td>Natasa Sokolovich</td>
<td>University of Pittsburgh Medical Center</td>
</tr>
<tr>
<td>Nate Gladwell</td>
<td>The University of Utah</td>
</tr>
<tr>
<td>Amalia Cochran</td>
<td>The University of Utah</td>
</tr>
<tr>
<td>Ted Kimball</td>
<td>The University of Utah</td>
</tr>
<tr>
<td>Brian Carlson</td>
<td>Vanderbilt University Medical Center</td>
</tr>
<tr>
<td>Paul Sternberg</td>
<td>Vanderbilt University Medical Center</td>
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</table>
Challenges

- New industry model
- Relevance and applicability
- Variability in terminology
- Data collection and analysis

Adoption Model
Approach

1. Concept research and validation
2. Survey development and administration
3. Analysis and validation of findings
4. Adoption model socialization
**Key hypotheses**

- Providers started by adopting phone consults with other providers and patients
- Telemedicine programs started providing asynchronous services before synchronous services
- Initial telemedicine programs often involve a single provider or group of providers from related specialties
- Providers with highly mature telemedicine programs have:
  - A centralized governance model
  - Standardized workflows and processes
  - Standardized policies and procedures
  - A high level of interoperability
### Survey topics

- Respondent information
- Organizational profile
- Primary objectives
- Regulatory and reimbursement
- Utilization of technologies
- Duration of implementation
- Technology enablement
- Telemedicine partnerships
- Telemedicine adoption levels
- Program governance
- Clinician engagement
- Future plans
Survey respondents

<table>
<thead>
<tr>
<th>ORGANIZATION TYPE</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Academic Medical Center</td>
<td>56.3%</td>
</tr>
<tr>
<td>Health System</td>
<td>16.7%</td>
</tr>
<tr>
<td>Hospital</td>
<td>12.5%</td>
</tr>
<tr>
<td>Other</td>
<td>14.6%</td>
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<table>
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<tr>
<th>NUMBER OF BEDS</th>
<th>Percentage</th>
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<tr>
<td>1 to 100</td>
<td>4.3%</td>
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<tr>
<td>101 to 500</td>
<td>19.1%</td>
</tr>
<tr>
<td>501 to 1,000</td>
<td>29.8%</td>
</tr>
<tr>
<td>1,001 to 3,000</td>
<td>14.9%</td>
</tr>
<tr>
<td>More than 3,000</td>
<td>8.5%</td>
</tr>
<tr>
<td>Unsure</td>
<td>8.5%</td>
</tr>
<tr>
<td>N/A</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

Distribution by Region

- Midwest: AMC (5), Health System (3), Hospital (8), Other (3)
- Northeast: AMC (1), Health System (1), Hospital (8), Other (3)
- South: AMC (8), Health System (1), Hospital (8), Other (3)
- West: AMC (3), Health System (1), Hospital (8), Other (3)
Telemedicine utilization

TOP USE CASES
1. Psychiatry / Behavioral Health
2. Stroke
3. Radiology
4. Neurology
5. Pediatrics
6. Maternal Fetal Medicine
The majority of providers have invested < $1.1M

Three of the four AMCs that invested > $20.1M are currently using grants

Providers with investments between $10.1M - $15M are academic medical centers
Objectives

- Availability of grant(s): 42.2%
- Consumer engagement: 42.2%
- Financial incentives: 15.6%
- Improve access: 95.6%
- Improved patient outcomes: 84.4%
- Physician shortage: 66.7%
- Streamlined workflow: 46.7%
- Other: 8.9%
Reimbursement sources

- Medicare: 52.3%
- Medicaid: 61.4%
- Commercial payers: 61.4%
- Direct contract: 72.7%
- Unsure: 6.8%
- Other: 18.2%
Key Findings

• Over 55% of healthcare providers deploy Telemedicine by service line or department

• Synchronous (live interactive virtual consults) were the most common form of telemedicine visit implemented

• Most organizations indicate starting with high acuity clinical services

• Organizations with complex services did not necessarily have:
  – Centralized governance model
  – Standardized workflows
  – High level of interoperability
# External challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Immature</th>
<th>Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-state licensure impedes delivery of services</td>
<td>50%</td>
<td>58%</td>
</tr>
<tr>
<td>One or fewer forms of reimbursement</td>
<td>35%</td>
<td>17%</td>
</tr>
<tr>
<td>No state reimbursement</td>
<td>29%</td>
<td>33%</td>
</tr>
<tr>
<td>One or fewer commercial payers that reimburse for services</td>
<td>32%</td>
<td>17%</td>
</tr>
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</table>
Adoption level conceptual approach

Alignment and engagement
- Level 0 Governance
- Level 1 Providers
- Level 2 Patients
- Level 3 Simple
- Level 4 Complex

Enabling technologies
- Level 5 Complete
- Level 6 Expanded

Care across the continuum

Interoperability
- Level 7 Integrated
# Adoption levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Capabilities</th>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>Full interoperability to include patient generated data</td>
</tr>
<tr>
<td>6</td>
<td>Services across the care continuum for multiple specialties</td>
</tr>
<tr>
<td>5</td>
<td>Remote monitoring</td>
</tr>
<tr>
<td>4</td>
<td>Complex synchronous and asynchronous services</td>
</tr>
<tr>
<td>3</td>
<td>Simple synchronous and asynchronous services</td>
</tr>
<tr>
<td>2</td>
<td>Patient health portal</td>
</tr>
<tr>
<td>1</td>
<td>Provider education and e-consults</td>
</tr>
<tr>
<td>0</td>
<td>Centralized governance, standardization and scalability</td>
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Centralized governance model

- Scalable IT strategy that accounts for a high level of interoperability with EHR, CIS, devices and medical equipment
- Standardized workflows, processes, P&Ps designed for telemedicine and standardized across the enterprise
- P&Ps in place for security and regulatory compliance (e.g., HIPAA)

24% describe the governance of their telemedicine organization as “managed centrally across the enterprise”

25% centrally developed and standardized workflows, policies and procedures and protocols
1 Provider education and e-consults

• The use of telemedicine technologies, including video conferencing, to support clinician / provider (GME, CME)

67% currently do or will support provider education through telemedicine technologies

92% have VTC capabilities; of those, 81% use VTC technology for educational purposes

77% have secure, high-speed, wireless internet access to support voice, video and data capabilities
2 Patient health portal

• Dedicated patient health portal that may include customized health, wellness or disease management content based on EHR data

• Capabilities may exist for patients to integrate data from wearables and mobile applications into the EMR

35% offer internet sites to support wellness / disease management

58% offer patient education through telemedicine with a total of 74% offering in the next three years

51% of patient education programs are customized for individual patients
Simple synchronous and asynchronous services

- Virtual consults with patients, second opinions, pre- and post-operative visits, etc.
- Relatively simple patient exam cameras and viewing monitors
- Simple store and forward capabilities that do not require a high level of technical requirements or infrastructure within a few clinical specialties

- **70%** have patient rooms equipped with cameras and other devices that can be accessed or viewed remotely
- **67%** have exam equipment for remote patient consults / evaluations
- **58%** use digital cameras to support telemedicine service
4 Complex synchronous and asynchronous services

• Multiple asynchronous and synchronous services across several specialties / sites to support care for various levels of patient acuity

• Specialized cameras with remote control

• Integration with numerous medical equipment and devices

• Two or more complex asynchronous services (e.g., telestroke, eICU or trauma consults)

54% have viewing monitors for images and / or video streaming (i.e., technologies to support synchronous services)

35% have remote presence technologies associated with independent workflow from a different location (portable cameras / modules)
5 Remote monitoring

- Remote monitoring of patients at home
- Home medical equipment capable of transmitting basic clinical data; may include messaging and webcam to support patient to clinician visits
- Medical equipment dispensed by the provider as part of the care treatment plan

54% have remote monitoring or mobile devices for patient use

37% use patient supported remote monitoring through telemedicine with a total of 51% offering in the next three years

All respondents not currently offering telemedicine plan to offer remote patient monitoring in the next three years
Services across the care continuum for multiple specialties

- Portfolio of telemedicine services across the entire care continuum
- Telemedicine services offered by at least 60% of clinical departments
- Highly integrated care delivery approach that is regularly used for ongoing patient management (e.g., psych / behavioral health)

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>deliver care through telemedicine at all points on the care continuum</td>
</tr>
<tr>
<td>14%</td>
<td>offer telemedicine services across 60% of clinical specialties</td>
</tr>
<tr>
<td>7%</td>
<td>Offer real time intra-procedure or operative consults</td>
</tr>
<tr>
<td>61%</td>
<td>use telemedicine to provide ongoing care to avoid a hospitalization or re-admissions for a chronic illness</td>
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Full interoperability to include patient generated data

- All medical device data is transmitted, analyzed and accepted into the EHR (internal)
- Ability to exchange data with external organizations such that it appears as primary data
- EHR and ancillary clinical systems interoperability to support multiple sources of patient data
- Ability for patients to self-report and track health or lifestyle data to support customized programs; data is analyzed and contained within the EHR as primary data

<table>
<thead>
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<th>Percentage</th>
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<tbody>
<tr>
<td>44%</td>
<td>Use other clinical information systems (CIS) such as lab or radiology</td>
</tr>
<tr>
<td>54%</td>
<td>Use cardiology PACS system</td>
</tr>
</tbody>
</table>
Where do you begin or re-start?

1. Gather intelligence
2. Innovate and define strategy
3. Design the program
4. Stage and sequence
Limitations

• Not a formal certification or assessment of the quality or outcomes of a telemedicine program
• Not an accreditation or credentialing process for telemedicine related to quality in care delivery
• A high level of maturity is not a guarantee for meeting a certain clinical quality and outcome standards
• Does not incorporate external factors such as reimbursement, legal and regulatory federal and state policy as an indicator of maturity
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Questions

Contact Information

- Natasa Sokolovich
  - UPMC
  - sokolovichn@upmc.edu
- Bill Fera
  - EY
  - Bill.Fera@ey.com
  - @BillFeraEY