Implementing a Structured Framework for Enterprise Adoption of Telehealth Service Development and Delivery

Disclosure of Relevant Financial Relationships

The following faculty of this continuing education activity has no relevant financial relationships with commercial interests to disclose:

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  – Medical University of South Carolina

Agenda

• Telehealth Background

• MUSC Case Studies

• Leveraging MUSC assets in quality, education, and research

• Ideas for telehealth best practices: The structured framework
Learning Objectives

• Identify the concepts and processes needed to navigate telehealth implementation

• Learn strategies to evaluate a telehealth service

• Examine the five phases of the Telehealth Service Implementation Model (T-SIM)©

Brief History of Telehealth

Virtual Health: Aligning Solutions With Enterprise-Wide Priorities. SG2 Intelligence 2014.
Background

- Obtaining healthcare services problematic in rural and/or medically underserved communities
- Telehealth appeal
  - Improve access
  - Improve quality
  - Reduce cost


Concerns

- Yet, telemedicine programs not widespread
- Small scale services poorly integrated into health systems
- Large-scale IT projects have failure rates >30%
- 75% of successful telehealth pilots not sustained

**Telehealth Evidence Base**

- **Program Strategy & Implementation**
- **Outcomes for Certain Specialties**
- **Delivery & Payment Models**
- **Cost Effectiveness**
- **Policy**
- **Improved Efficiency**
- **Process Measures**
- **Travel Costs**
- **Wait Times**
- **Transportation**
- **Home Monitoring**
- **Psychotherapy Support**
- **Access**
- **Patient Satisfaction**
- **Provider Technical Satisfaction**


**Telehealth Implementation Challenges**

- **Increasing Demand**
- **Insufficient Planning & Best Practices**
- **Resource Intensive**
- **Assessment & Evaluation**


Telehealth Complexity

“Organizationally, telemedicine provides challenges to the traditional notions of regionalized health care systems” (Bashshur, 2000)

• Persistent problems have not been successfully addressed:
  – Relationships between traditionally competing delivery systems
    • culture, practices, business models, governance
  – Telehealth organizational structure
  – Operational system
  – Boundaries of planning regions


Current telehealth literature includes multiple & separate frameworks related to:

Readiness Assessment
Diffusion
Implementation
Evaluation

Factors that Impact Telehealth Success

- Technology
- Organizational structures
- Change management
- Economic feasibility
- Societal impacts
- Perceptions
- User-friendliness
- Evaluation and evidence
- Legislation
- Policy and governance

“A holistic implementation approach is needed”


Sustainable Telemedicine: Designing and Building Infrastructure to Support a Comprehensive Telemedicine Practice (Mayo Clinic Experience)

Analysis:
1. “Strategy…not clearly articulated”; priorities and scope not maintained
2. Services created from different practice areas resulted in variation, creating further challenges in providing operational support across the enterprise
3. Numerous stakeholders and competing priorities negatively impacted service development
4. Fragmented technology; no clear operational procedures

Telehealth Cardinal Sins

1. Setting up a telehealth program without provider engagement & availability
2. Setting up a telehealth program without a clear path from patient to technology
3. Setting up a telehealth program without an evaluation plan
4. Setting up a telehealth program untethered from organizational strategy

Telehealth Industry Engagement Paradox
US Telehealth adoption, 2017 (n=138)

Comparing the results of HIMSS’ 2014 and 2017 surveys shows that a surge in telemedicine adoption has occurred since 2016. In 2014, adoption was 54%, with a 3.5% annual growth until 2016. Since 2016, study results indicate that adoption has increased 9%.

2017 Inpatient Telemedicine Study. HIMSS Analytics 2017; available at: http://www.himssanalytics.com

Reasons for Telehealth Adoption (n=98)

Health System Telehealth Budgets (n=98)

History of MUSC Telehealth

- Physician, grass roots driven
- 2005 – maternal fetal telemedicine
- 2008 – telestroke
- 2009 – critical care
- 2010 – SE-VIEW
- 2011 – ‘strategy B4’…
History of MUSC Telehealth

2013 – SC Legislature takes note…

2017 Federal Telehealth Center of Excellence Award

Criteria:
- Telehealth expertise
- Financially sustainable models
- Service to rural and underserved communities
Telehealth Expertise

**MUSC telehealth breadth & depth:**
- 77 unique services
- 275 sites
  - 40 hospitals; 126 community clinics; 92 other sites including 80 schools
- 40 SC counties
- >90% are non-MUSC sites

**Volume of MUSC Telehealth Interactions**

- 2014: 0
- 2015: 20000
- 2016: 150000
- 2017: 250000
- 2018: 300000
Financial Sustainability

- SC ‘non-parity’ state

- Current financial models:
  - Direct negotiation with payers
  - Supply-demand model with participation fee
  - Sustainability through scale and volume
  - Corporate partnerships

Service to Underserved Areas

- Blue = fully or partially medically underserved

78% of services in completely or partially medically underserved regions
MUSC Telehealth COE Objectives

- Apply rigorous, team science to characterize telehealth best practices
- Develop materials and programs to facilitate ‘next level’ telehealth

Research Strategies for Telehealth

- Rapid Literature Review
  - Include grey lit
  - Focus key & recent info
  - Nomination
- Evaluability Assessment
  - Cost
  - Context
  - Technology
- Small rapid studies
  - A-B
  - N of 1
  - Fractional factorial
  - Program changes
  - Version X1, X2
- Application Test
  - Diverse Settings
  - Stepped wedge
  - Pragmatic
  - CER
  - RCT's
- Dissemination
  - Ongoing monitoring
  - Communities of practice
  - Alerts
  - CQI

MUSC Telehealth COE Project Profiles

1. Evaluation
2. Dissemination materials
3. Technical Assistance
4. Consultation

Criteria for Cost-Effectiveness Evaluation

1. Mature telehealth program with identifiable cohort
2. Data available in 12 month windows
3. Data sufficiently robust to measure cost and benefit differences
4. Little “leakage” of care
5. Utilization at scale to power cost effectiveness analysis
Case Study 1: Telestroke

Telestroke History

- Telestroke 2008
  - 5 partners
  - 87 consults
  - 0 Primary Stroke Centers

- Telestroke 2018
  - 28 partners
  - 4,818 consults
  - 15 Primary Stroke Centers
Impact of Telestroke Exposure on Outcomes
Adjusted Relative Risk Ratio and 95% CI

- Received tPA
  - Adjusted Risk Ratio: 1.24
- Received EVT
  - Adjusted Risk Ratio: 1.26
- In-Hospital Mortality
  - Adjusted Risk Ratio: 0.92
- Discharge to IRF
  - Adjusted Risk Ratio: 1.10
- Discharge to SNF
  - Adjusted Risk Ratio: 0.91
- Discharge to Home
  - Adjusted Risk Ratio: 1.025
Case Study 2: School Telehealth

• 2015
  – Precision public health: target counties with ↑ asthma
  – 7 SC counties with school telehealth
  – Williamsburg County: only county with 100% penetration (11 schools)

• Program structure
  – School nurses access MUSC pediatricians & NP’s via tele
  – Focus on acute and chronic disease management
Epidemiologic Approach

- 2012-2017 SC Medicaid data age 3-17

- Key information
  - Enrollment status
  - Demographics (age, gender, race/ethnicity)
  - Primary/secondary dx

Average Probability of ED visit, 2012-2017
<table>
<thead>
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<th>Sample size</th>
<th>Model 1</th>
<th>Model 2</th>
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<tr>
<td></td>
<td>Estimate</td>
<td>95% CI</td>
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<td>Overall effect of the telehealth</td>
<td>-6.89</td>
<td>-11.84</td>
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<td>Varying effects of the telehealth</td>
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<td>Year 2015</td>
<td>-4.16</td>
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<td>Year 2016</td>
<td>-6.01</td>
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<td>Year 2017</td>
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<td>Age</td>
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<td>Age 3-7 (ref)</td>
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<td>Age 8-12</td>
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<td>Age 13-17</td>
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<td>Male</td>
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<td>Race/ethnicity</td>
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<td>White</td>
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<td>Others</td>
<td>1.52</td>
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Note: Standard errors adjusted for heteroscedasticity.
Initial MUSC Telehealth Goal

“Everything we do within our walls, we should do outside our walls”

Case Study 3: Inpatient Pediatric GI

- Single provider
- ‘Customized’ workflow
  - Not consistent across comparable services
  - Not mapped out
  - Confusion re: roles/responsibilities
- Poor communication with partner sites
- Inadequate training at partner sites
- No formalized evaluation plan

Low utilization
Low satisfaction
Case Study 4: Outpatient Transplant Nephrology

• Lack of provider champion engagement
• Workflow
  – Everything to everybody = multiple changes to workflow
  – Not formally mapped out
  – Confusion re: roles/responsibilities
• Service goal a moving target = delay and frustration
• No formalized governance
  – Response to partner site & internal providers = multiple tech change
• High provider/staff turnover
• No pro forma & unrealistic volume expectations

Not another dollar in the system…

MUSC Mission: Telehealth for efficient, effective care…
# MUSC Telehealth Value Strategy

**Value**

- Hospital Support Services
- Primary Care Support Services
- Business Health
- Institutional Facility Support Services
- Cost Avoidance
- Priority Health Disparities
- MUSC Service Extension

## Vision

By 2025, MUSC Telehealth will be recognized as a leader in telemedicine services, creating a culture of innovation and excellence.

## Strategy Champions

- **Dee Ford**
  - Hospital outcomes lead to hospitals

## Strategy Value Creation

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<tr>
<th>Area</th>
<th>Strategy Value Creation Template</th>
<th>Service</th>
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## Key Insights

- **Within the next 5 years, the hospital contract services value strategy will be completed.**
- **Hospital networks participating in these programs.**
- **Network access will be measured through**
- **A combination of improved access to the specific program's specialty services, quality of care measures, and positive financial margins for both MUSC and participating IC hospitals.**

## Table Data

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Evolution of MUSC’s Telehealth Services

- Created a lot of pieces to service development (e.g. checklists)
- Experienced many growing pains
- “Concentration risk”

2005
Maternal Fetal Telemedicine

2008
Telestroke

2009
ICU
Telepsych

2013
State telehealth funding infused by SC Legislature

2014-Present
MUSC Center for Telehealth charged with accelerated growth of telehealth services

Processes to be Navigated in Telehealth Service Development

- Provider engagement
- Legal
- Procurement
- Compliance
- Workflows
- Technology
- Partnerships
- Reimbursement
- Protocols
- Training
- Strategy
Discovered ITIL
(Information Technology Infrastructure Library)

- Created by UK in 1980’s
- Detailed practices for IT service management
- Aligns services with business needs
- Used worldwide:
  - US Governments (States, Navy, Army)
  - Industry (Disney, Honda, Visa)

Created Telehealth Service Implementation Model: T-SIM™

“Telehealth is a clinical service delivered over an IT service”

- Provided terminology and a standard framework
- Highlighted strengths & weaknesses
Telehealth Service Implementation Model: T-SIM™

Telehealth Service Strategy

- Defines scope of the service
  - Condition(s)
  - Location of patients
  - Type of providers
  - What problem is being solved?

Key Processes:
- Strategy Management
- Demand Management
- Portfolio Management
- Financial Services Management
- Business Relationship Management (BRM)
JKO1  I would suggest changing the diagram to enlarge or highlight the section you are discussing beyond the red circle, which doesn’t stand out well
  Jan Oldenburg, 1/2/2019

JKO2  Also, I changed your line spacing to be .8 so you didn’t smush them so much
  Jan Oldenburg, 1/2/2019
Thinking beyond “replicating care over distance”
MUSC Mission statement: “Telehealth for efficient, effective care”

 Assess the impact on stakeholders:
1) Patients
2) Referring providers
3) Consulting providers
4) Payers
5) Health system (as a whole)

Prioritize services that:
• Add efficiency to care teams
• Add value to care over the continuum
• Mitigate time and distance barriers to care

Telehealth Standardized Scoring Tool

Support of implementation
• Physician champion
• Provider capacity
• Strategic alignment

Potential impact
• Quality
• Cost
• Access to care

Growth opportunity
• Market size
• Saturation
• Demand
Telehealth Service Design

- Implement a **common architecture**
- Understand each “site of care” has different rules
- Draft clinical and operational protocols
- Customize test scripts
- Identify KPI’s
- Navigate compliance, legal, credentialing and EHR issues and processes

Key Processes:
- Design Coordination
- Availability Management
- Capacity Management
- Information Security Management
- Training Management (internal staff, providers, sites)

Design Coordination
- services are developed through a **common architecture**
RACI matrix through the common architecture

- **Responsible**
  - The person who actually carries out the process or task assignment
  - Responsible to get the job done

- **Accountable**
  - The person who is ultimately accountable for process or task being completed appropriately
  - Responsible person(s) are accountable to this person

- **Consulted**
  - People who are not directly involved with carrying out the task, but who are consulted
  - May be stakeholder or subject matter expert

- **Informed**
  - Those who receive output from the process or task, or who have a need to stay informed

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Telehealth Service Transition

- **Design**
- **Operations**
Telehealth Service Transition

Movement from test to go-live
• Training – tech and workflow
• Mock calls (alpha – internal testing, beta – partner site testing)

Key Processes:
• Transition Planning & Support
• Data & Knowledge Management
• Change Management

Telehealth Service Operations

• High quality, reliable services
• Processes to manage “incidents”
  • any unplanned event that has a negative impact on normal operations

Key Processes:
• Incident Management
• Problem Management
• Access Management
Continual Quality Improvement

- Striving for high-reliability
  - Preoccupation with failure
  - Reluctance to simplify interpretations
  - Sensitivity to operations
  - Commitment to resilience
  - Deference to expertise

Evaluating the T-SIM™ Framework

Mixed methods approach and data triangulation:

1. Implementation Tracking Log
2. Focus Groups/KI's
3. Surveys

- Services implemented
- Time to key milestones
- Fidelity to the service
- Telehealth uptake
- Program fidelity
- Uptake process
- Sustainability capacity
- Team engagement
- Sustainability Capacity
Summation

- Telehealth journey is complex

- Success is achievable

- Structured implementation framework is major catalyst
Questions?

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Jillian Harvey is an Associate Professor in Healthcare Leadership and Management at the Medical University of South Carolina (MUSC) and the Director for the Doctor of Health Administration Division. She received a Master of Public Health from Oregon State University and a PhD in Health Policy and Administration from the Pennsylvania State University. Her research experience includes program evaluation, healthcare quality improvement, and mixed methods research approaches. Dr. Harvey is a Co-Investigator for the MUSC HRSA’s funded Telehealth Center of excellence and the Evaluation Director for MUSC’s NIH funded Clinical and Translational Science Award (CTSA). Her current research focuses on evaluating the development and implementation of telehealth programs and the impact on healthcare outcomes.
Dee Ford, MD, MSCR

Dee W. Ford, MD, MSCR, is a tenured Professor of Medicine in the Medical University of South Carolina’s (MUSC) Division of Pulmonary and Critical Care. She is a physician scientist and physician leader with expertise in health services research, health professional education, and quality improvement. She received her BS in biology from the University of South Carolina where she was inducted into Phi Beta Kappa. She received her MD from Johns Hopkins and was inducted into the Alpha Omega Alpha honor society. Dr. Ford completed her internal medicine residency training at the Johns Hopkins Hospital and her pulmonary/critical care fellowship training at MUSC. She is known for initiating, leading, and evaluating novel programs in the context of highly effective multidisciplinary teams. She serves as Medical Director for MUSC’s Tele-ICU and ICU Innovations Outreach Programs and is the Program Director for MUSC’s Federal Telehealth Center of Excellence.

Shawn Valenta, RRT, MHA

Shawn Valenta is the Administrator of Telehealth at the Medical University of South Carolina (MUSC Health) in Charleston, South Carolina. With over 17 years of clinical and health care leadership experience, Shawn has a demonstrated record in successfully achieving results with a focus on quality improvement and cost-efficiency. Shawn oversees the strategic initiatives and operations of the MUSC Center for Telehealth, a HRSA-designated National Telehealth Center of Excellence. He is the administrative leader for the operations of telehealth services that range from the ICU to the home, including a 28-hospital telestroke network and one of the fastest growing school-based telehealth networks in the country. Shawn has developed and managed the budget for over $100 million of state-invested telehealth funds for South Carolina and has successfully executed contracts for over 200 South Carolina telehealth sites. Shawn works collaboratively in statewide strategic planning and furthering the health of South Carolinians with telehealth technology through the South Carolina Telehealth Alliance.