# 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:

- Jillian Harvey
- Dee Ford
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  - Medical University of South Carolina

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#### Agenda

- · Telehealth Background
- MUSC Case Studies
- · Leveraging MUSC assets in quality, education, and research
- Ideas for telehealth best practices: The structured framework

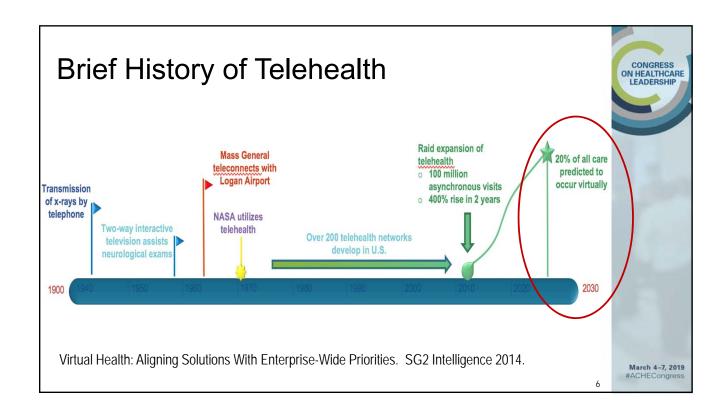


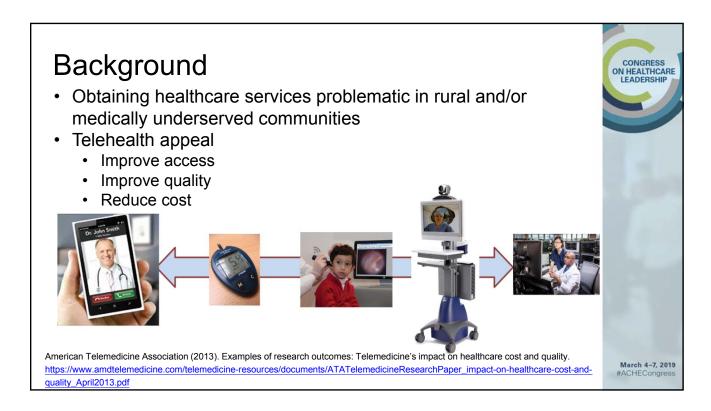
#### **Learning Objectives**

- 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)<sup>©</sup>

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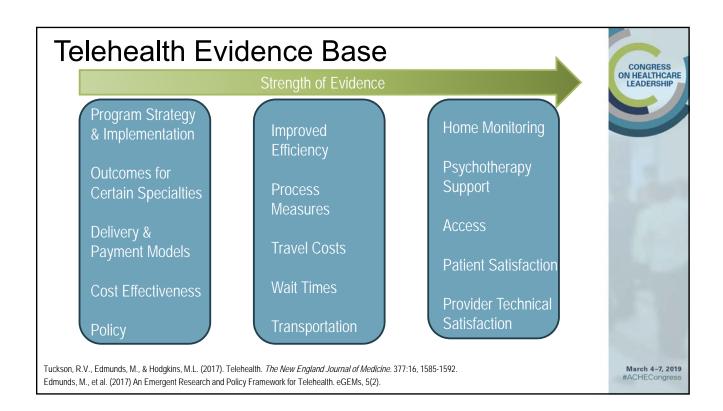


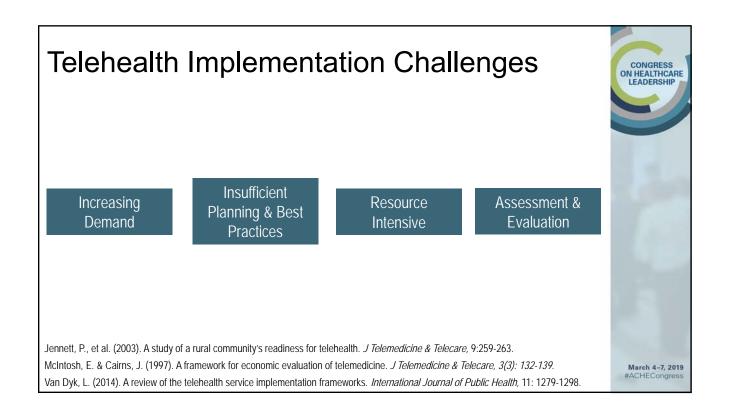
#### Concerns

- · 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

Broens, T.H., et al. (2007). Determinants of successful telemedicine implementations: a literature study. Journal of Telemedicine and Telecare, 13(6): 303-309. Jennett, P., et al. (2003). A study of a rural community's readiness for telehealth. *Journal of Telemedicine & Telecare*, 9:259-263. Van Dyk, L. (2014). A review of the telehealth service implementation frameworks. *International Journal of Public Health*, 11: 1279-1298.







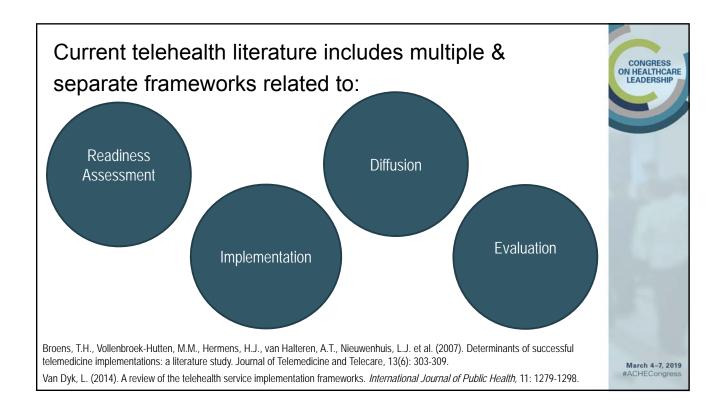
#### **Telehealth Complexity**

"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

Bashshur, R., Reardon, T., & Shannon, G. (2000). Telemedicine: A new health care delivery system. *Annu. Rev. Public Health, 21:613-637.* Van Dyk, L. (2014). A review of the telehealth service implementation frameworks. *International Journal of Public Health, 11: 1279-1298.* 





#### 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"



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Van Dyk, L. (2014). A review of the telehealth service implementation frameworks. International Journal of Public Health, 11: 1279-1298.

# 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

Beth L.H. Kreofsky, R. Nicole Blegen, Troy G. Lokken, Susan M. Kapraun, Matthew S. Bushman, and Bart M. Demaerschalk. Telemedicine and e-Health 2018. <a href="https://doi.org/10.1089/tmj.2017.0291">https://doi.org/10.1089/tmj.2017.0291</a>



#### Telehealth Cardinal Sins

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

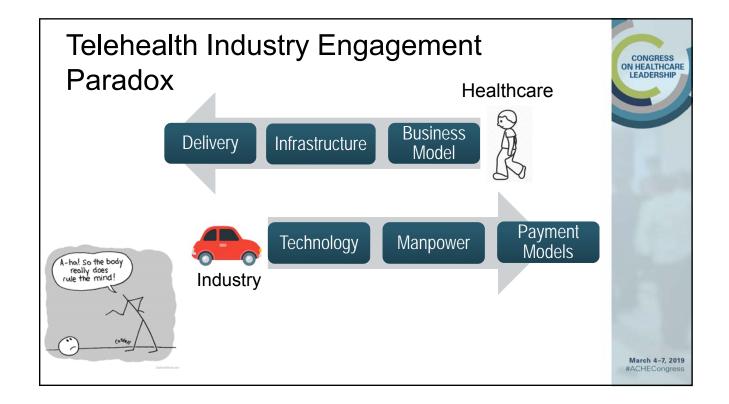


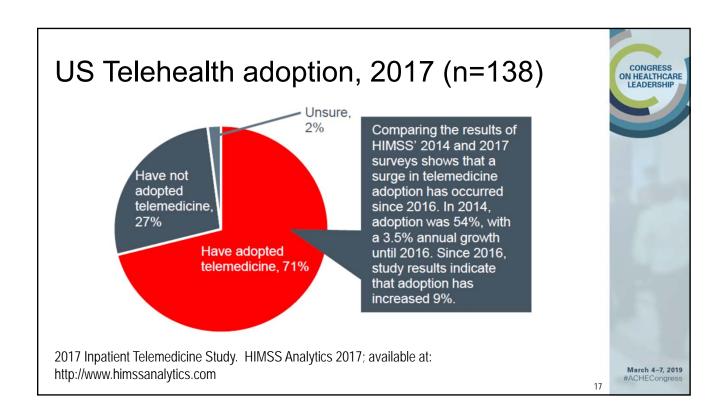


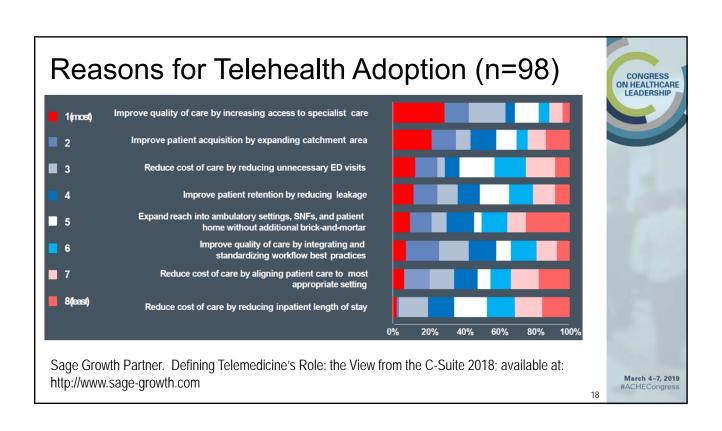


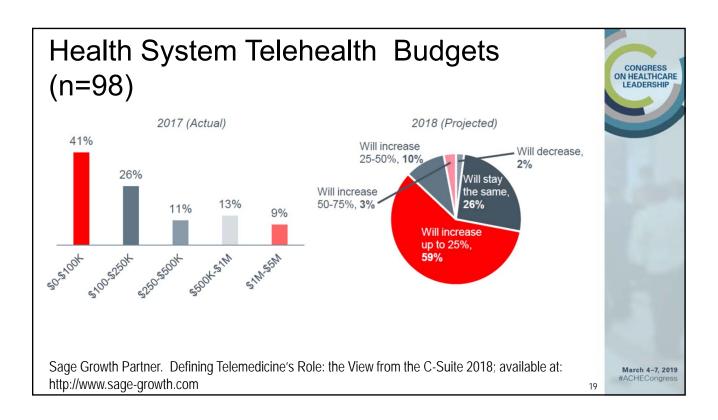
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#### History of MUSC Telehealth

- Physician, grass roots driven
- 2005 maternal fetal telemedicine
- 2008 telestroke
- 2009 critical care
- 2010 SE-VIEW
- 2011 'strategy B4'...





Tames BRUKe

THE DUKE ENDOWMENT







#### History of MUSC Telehealth

2013 – SC Legislature takes note...





### 2017 Federal Telehealth Center of Excellence Award



#### Criteria:

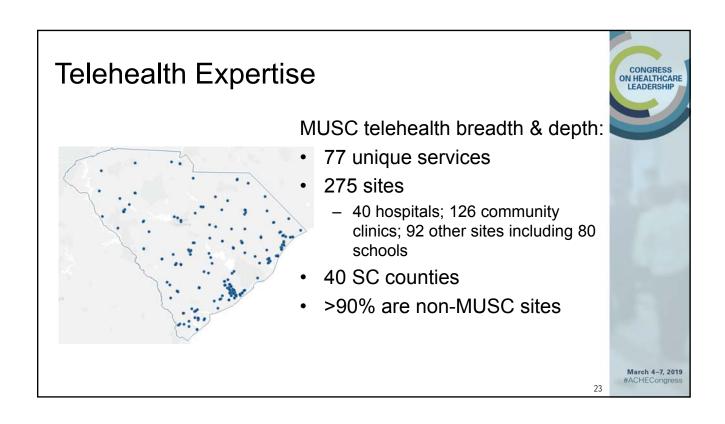
Telehealth expertise

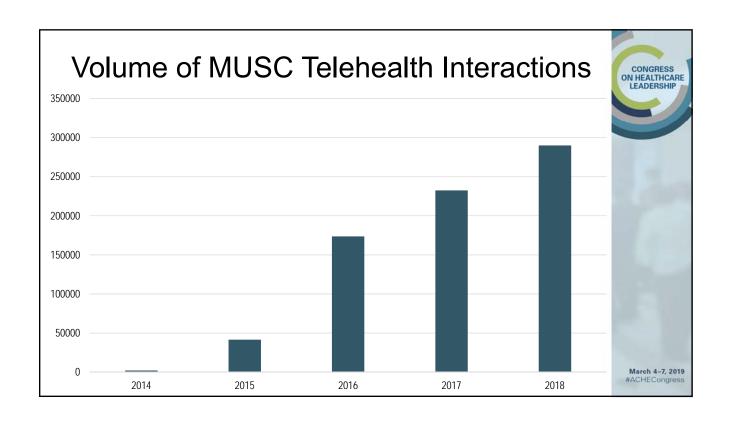


- Financially sustainable models
- Service to rural and underserved communities

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#### 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

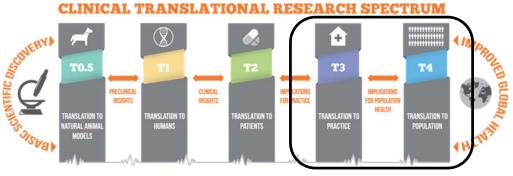


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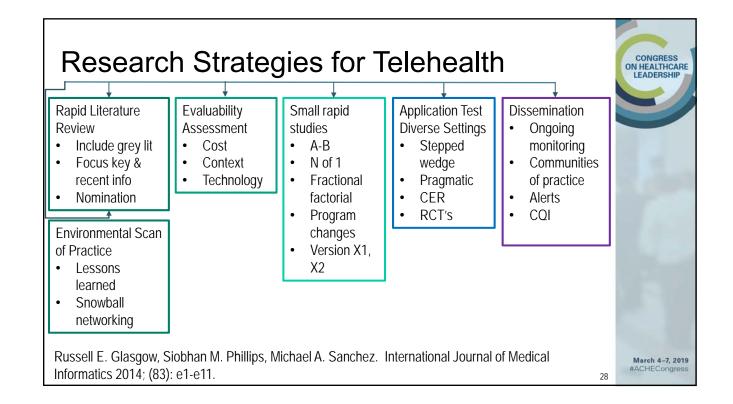
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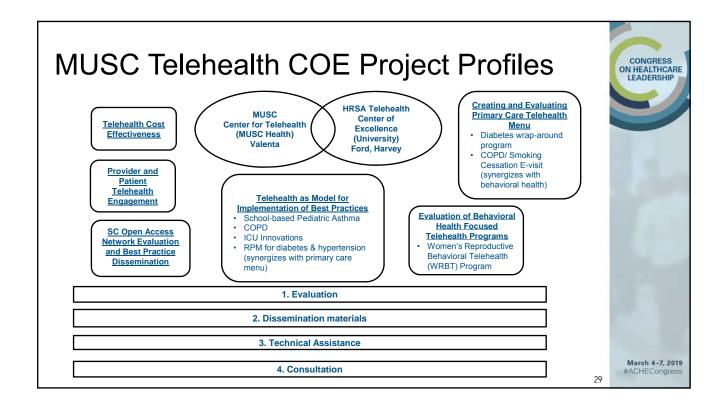


- Apply rigorous, team science to characterize telehealth best practices
- Develop materials and programs to facilitate 'next level' telehealth





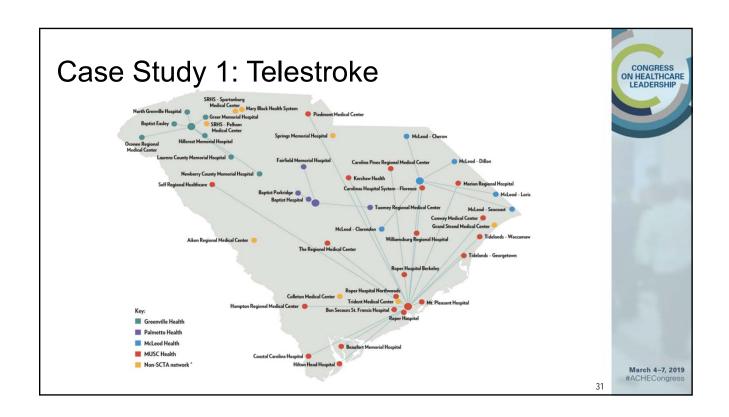




#### Criteria for Cost-Effectiveness Evaluation

- 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



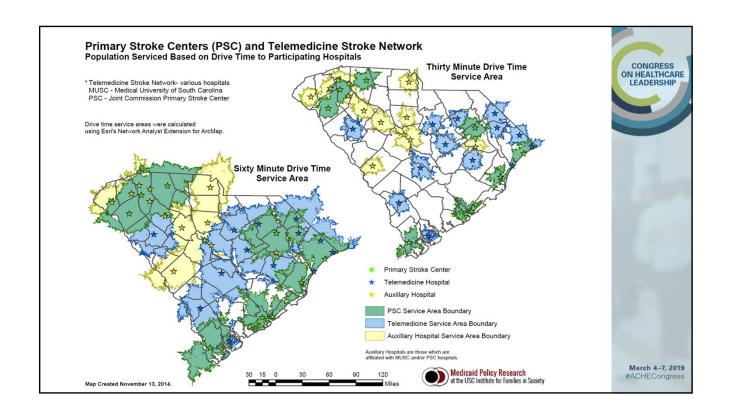


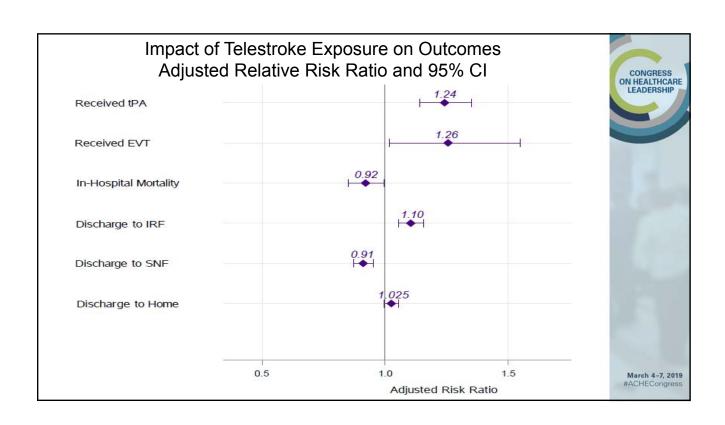
#### Telestroke History

- Telestroke 2008
  - 5 partners
  - 87 consults
  - 0 Primary Stroke Centers
- Telestroke 2018
  - 28 partners
  - 4,818 consults
  - 15 Primary Stroke Centers









#### Case Study 2: School Telehealth

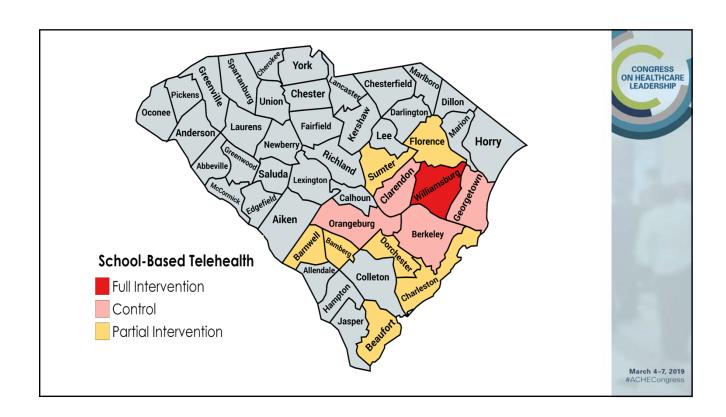
- 2015
  - Precision public health: target counties with ↑ asthma
  - 7 SC counties with school telehealth
  - Williamsburg County: only county with 100% penetration (11 schools)
- Program structure
  - School nurses access MUSC pediatricians & NP's via tele
  - Focus on acute and chronic disease management





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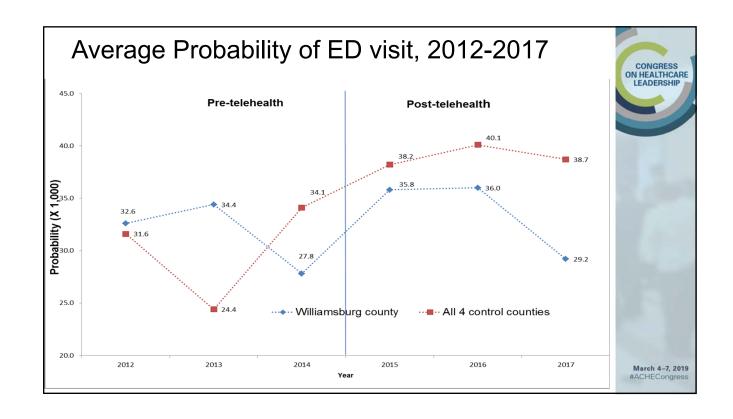


#### Epidemiologic Approach

• 2012-2017 SC Medicaid data age 3-17

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





Estimates from Linear Probability Models,  County and Time Fixed Effects  Model 1 Model 2										
Sample size		258752								
·	Estimate	e 95% CI		P-value	Estimate	95% CI		P-Value		
Overall effect of the telehealth	-6.89	-11.84	-1.94	0.0064						
Varying effects of the telehealth										
Year 2015					-4.16	-11.21	2.90	0.2482		
Year 2016				(	-6.01	-13.46	1.44	0.1138	)	
Year 2017					-11.07	-18.12	-4.02	0.0021		
Age										
Age 3-7 (ref)										
Age 8-12	-6.28	-7.86	-4.70	<.0001	-6.27	-7.85	-4.70	<.0001		
Age 13-17	0.12	-1.75	2.00	0.8968	0.13	-1.75	2.00	0.8944		
Male	1.03	-0.39	2.45	0.1565	1.03	-0.39	2.45	0.1543	1 25	
Race/ethnicity										
Black (ref)										
White	-6.19	-7.85	-4.53	<.0001	-6.18	-7.84	-4.52	<.0001		
Others	1.52	-0.74	3.77	0.1878	1.52	-0.74	3.78	0.1873	March 4-7, 2019 #ACHECongress	
Note: Standard errors adjusted for heteroscedasticity.										



#### Initial MUSC Telehealth Goal

"Everything we do within our walls, we should do outside our walls"



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#### 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

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# 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



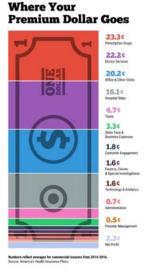
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#### Not another dollar in the system...

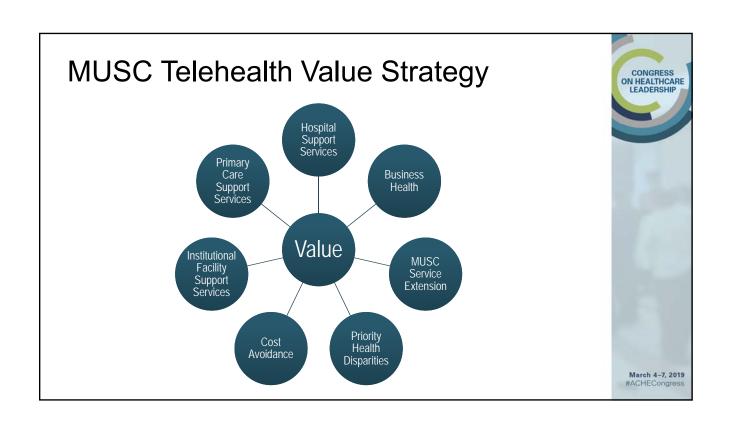


MUSC Mission: Telehealth for efficient, effective care...

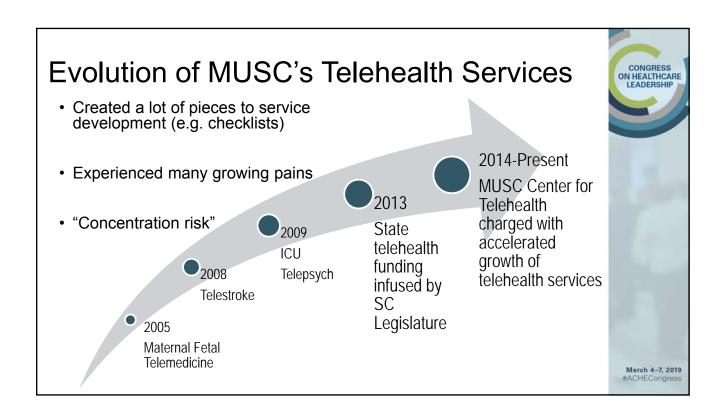


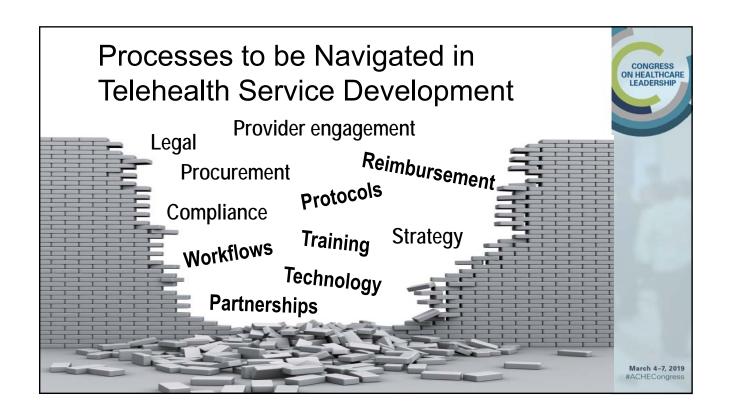
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В	С	D	E	F	G	Н	I	J	K	L	M	N	0
Vision	Strategy Champion	Strategy Value Equation Template	Service	Service Champion	Service Value Equation	Primary Utilization Outcome	Primary Effectiveness Outcome	Primary Cost Outcome	Calculated Value	Q1 Goals	Q2 Goals	Q3 Goals	Q4 Goals
Within the next 5 years, the hospital contract services value strategy will be comprised of acute care hospital networks participating in the included programs. Network success will be measured through a combination of improved access to the specific programs' specialty services, quality of care measures, and positive financial margins for both MUSC and participating SC hospitals.			Tele ICU	Ford/ Nandita Nadig	lives saved for all hospitals/hotal cost to hospitals	annual admissions (9680)	lives saved per year (600)	cost for all hospitals (\$768*9680 admissions = \$7,434,240)	Every \$12k invested saves a life	see KPI reporting	see KPI reporting	see KPI reporting	see KPI reporting
		Stroke C. Holmsteadt		consults/cost to hospital	Total number of consults for program annuall	quality metric per patient per 5000 ED visits	Total cost of program paid by hospitals annually	\$570 per consult	see KPI reporting	see KPI reporting	see KPI reporting	see KPI reporting	
		Neurology	C. Holmsteadt	consults/cost to hospital	Total number of consults for program annuall	quality metric per patient per 5000 ED visits	Total cost of program paid by hospitals annually		see KPI reporting	see KPI reporting	see KPI reporting	see KPI reporting	
		EEG	Jon Edwards	consults/cost to hospital	Total number of consults for program annuall	quality metric per patient per 5000 ED visits	Total cost of program paid by hospitals annually		see KPI reporting	see KPI reporting	see KPI reporting	see KPI reporting	
		Inpatient Psychiatry	Jeff Cluver	consults/cost to hospital	Total number of consults for program annuall	quality metric per patient per 5000 ED visits	Total cost of program paid by hospitals annually		see KPI reporting	see KPI reporting	see KPI reporting	see KPI reporting	
			ID	Amanda Parks	consults/cost to hospital	Total number of consults for program annuall	quality metric per patient per 5000 ED visits	Total cost of program paid by hospitals annually	TBD	TBD	TBD	TBD	TBD
			Telepathology	David Lewin	TBD/averaage cost to hospital	Average consults per hospital	quality metric per patient per hospital	average cost to hospital	TBD	TBD	TBD	TBD	TBD





#### 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)



 $ITIL\ image\ retrieved\ from\ \underline{https://consultantsfactory.com}$ 

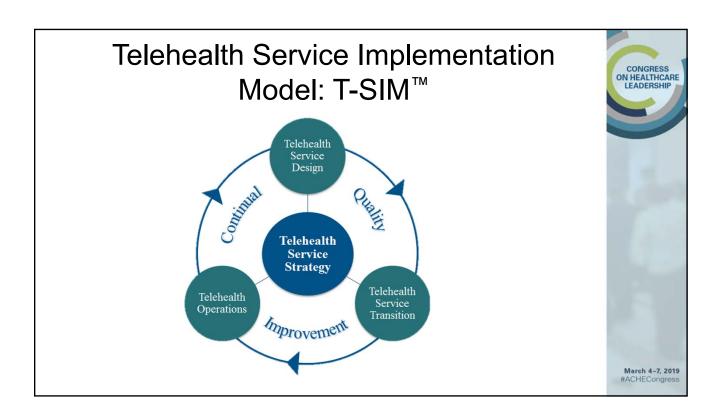


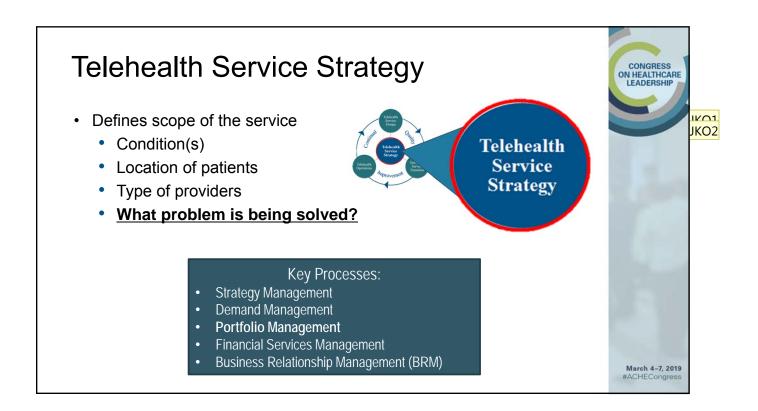
# Created Telehealth Service Implementation Model: T-SIM™

"Telehealth is a clinical service delivered over an IT service"

- Provided terminology and a standard framework
- Highlighted strengths & weaknesses







#### Slide 52

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





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#### Telehealth Standardized Scoring Tool

#### Support of implementation

- Physician champion
- Provider capacity
- Strategic alignment

#### Potential impact

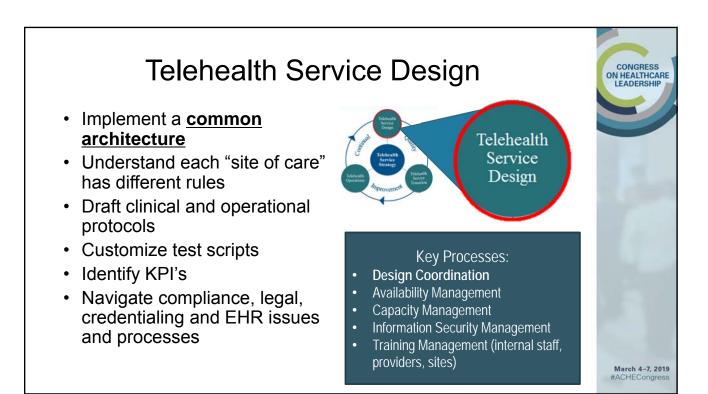
- Quality
- Cost
- Access to care

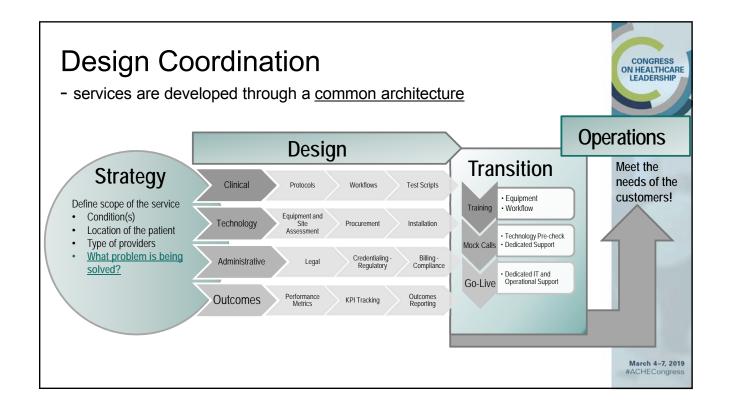
#### Growth opportunity

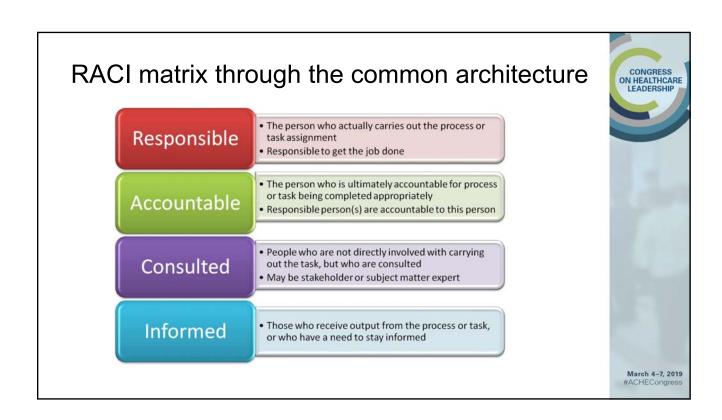
- Market size
- Saturation
- Demand













#### **Telehealth Service Transition**

#### Movement from test to golive

- Training tech and workflow
- Mock calls (alpha internal testing, beta – partner site testing)



#### Key Processes:

- Transition Planning & Support
- Data & Knowledge Management
- Change Management

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#### **Telehealth Service Operations**

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



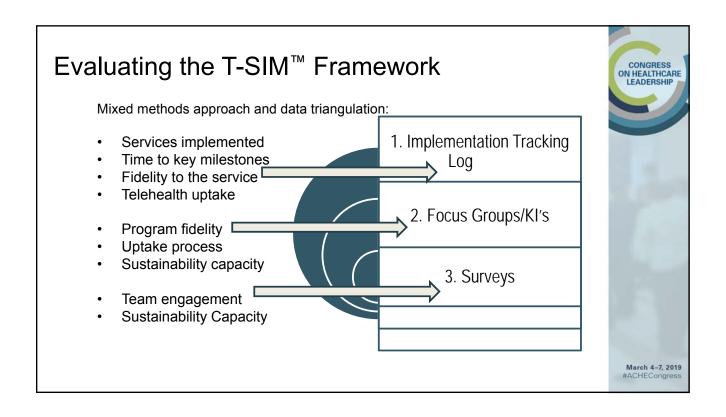


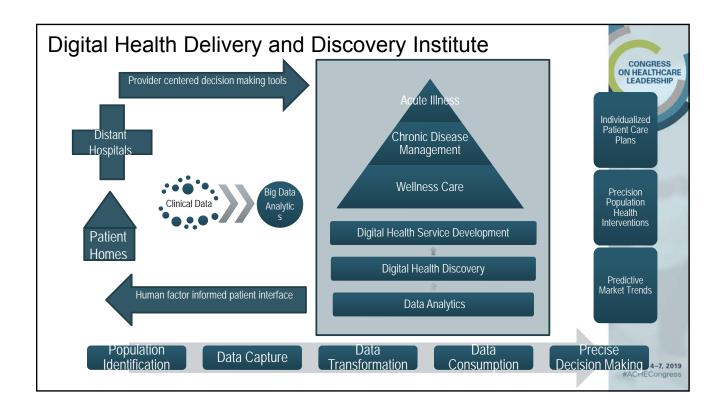
#### Key Processes:

- 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





#### **Summation**

- · Telehealth journey is complex
- Success is achievable
- Structured implementation framework is major catalyst



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#### **Questions?**



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#### Jillian Harvey, MPH, PhD

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.



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#### 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 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.



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#### 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.



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