A System Wide Approach to Telemedicine

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November 3, 2017, Arizona Telemedicine Course, Flagstaff Medical Center, Flagstaff AZ

About Mayo Clinic

- Nonprofit committed to Clinical Practice, Education and Research
- >63,000 employees
- >4,500 physicians
- > 1.3 million patients a year from all 50 states and > 136 countries
- 3 Destination Centers (Arizona, Florida and Minnesota)

Primary Value: The needs of the patient come first
Center for Connected Care
Vision Statement

To connect Mayo Clinic knowledge and expertise to anyone, anywhere, anytime

Virtual Care Services at Mayo Clinic

Current | Future

Outpatient Care
- Virtual Visits
- Remote Monitoring

Express Care
- Online/eVisits

20 Sub-Specialties
- Facility Care
- eConsults

Outpatient Clinic
- Urgent Care Express Care
- Home
- Virtual Health Center

Acute Care
- Pre-hospital
- Air/Ground Transport

Post-Acute Care
- Tele-Transitional Care
- Dialysis

Acuity
- Neonatology
- Stroke
- Enhanced Critical Care
- Pediatrics
- Emergency Medicine
- Psychiatry & Behavioral Health
- Post-Surgical Rounding

Post-Acute Care
- Inpatient Rehab
- Skilled Nursing Facility
- Outpatient Clinic
Acute Care Telemedicine

- 4 distant sites
- 34 originating sites
- ~3000 activations per year
  - Tele Stroke
  - Tele Neonatology
  - Tele Emergency Medicine
  - Tele Behavioral Health

Convergence on Technology Product

- Why:
  - Multiple products with high failure rates
  - Technical and operational support house within the clinical departments

- What did it take:
  - Buy-In from multiple shared services teams
  - IT approvals for products that fell outside of the traditional model
  - Partnerships across 5 IT units, Connected Care product team, and InTouch Health
  - Held > 85 training sessions
  - Trained > 500 staff
Optimized Network Connection

Results

- Standardization of products across all acute care telemedicine services
- Deployment to 39 Emergency Departments and Labor and Delivery units across Arizona and Midwest
- Implemented 24x7 support model
- Standardized contract and service level agreement language
- Enabled administrative operations convergence
- Enabled clinical service activation centralization

Technical Issue Trend

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Convergence of Administrative Operations

- **Why:**
  - Multiple, similar administrative processes across different departments
  - Redundancy within projects
  - All implementations “Started from Scratch”

- **What did it take:**
  - Centralized oversight within the Center for Connected Care
  - Standardization of documentation, billing, reporting, credentialing, processes
  - Coordination groups:
    - Acute Care Telemedicine Coordinating Group: multi-departmental coordination group for new acute care telemedicine initiatives in 2017

Results

- Dedicated implementation and support resources for the acute care telemedicine product line
- Diffusion toolkit developed to standardize processes and timelines to increase efficiency of implementations
- Standardized training, education programs, and learning content for care teams and providers
- 78 care team training sessions with 420 care team staff trained in 4 weeks
- Streamlined processes to support licensing, credentialing and privileging of telemedicine providers

Provider Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-Go Live</th>
<th>PGL Thru June</th>
</tr>
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<tbody>
<tr>
<td>Ability to Connect Upon First Attempt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of Audio (Excellent - Poor)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Quality of Video (Excellent - Poor)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection / Lost of Drops</td>
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</table>
Contributing Success Factors

- Proactively resolving issues before care teams are aware
- Stabilization of the product and proactive monitoring of the network and endpoints increases availability and reliability
- Partnership with IT* and InTouch Health has improved stability of the endpoints at Mayo Clinic campuses
- Continuous feedback to the practice regarding upcoming system outages and communication to use back-up plans
- Clinical service training at implementation with access to ongoing and ad hoc training
- Mock calls and simulation center access for telemedicine providers
- Simulated service activations for new care team members

Centralization of Service Activation

- Why was it needed:
  - Same care teams calling different numbers for acute care telemedicine services
- What did it take:
  - Establishment of a discrete phone number that prioritizes calls within the call center.
  - Establishment of decision trees that assist in meeting the target turn around time.
- Result:
  - All Midwest activations centrally managed through the Admissions and Transfer Center
  - Projected enterprise-wide activation centralization by June 2018
Convergence Impact on Telestroke

- **Growth**
  Stability of the products and formalized training resulting in a 50% increase in volumes to the Midwest telestroke program

- **Standardization**
  All neurologists using the same products
  Standardization of clinical algorithms

- **Transition**
  Ability to move from 3 regional services to 1 enterprise program in 2018
  Convergence of clinical staffing

Centralized Governance Structure
Clinical Practice Management and Oversight

Clinical Operations
- Practice Strategy Development
- Service Prioritization
- Clinical Practice Engagement
- Clinical Service Oversight
- Practice Relationship Management with Partners

Service Delivery
- Telemedicine Consultation
- Space Availability
- Clinical Staffing Models
- Staff Scheduling
- Documentation and Billing Compliance

Clinical Metrics & Quality Outcomes
- Patient Measures
- Provider Measures
- Service Quality Assurance
- Evidence-based Research

Clinical Program Adoption
- Practice Relationship Management
- Service Promotion and Marketing
- Medical Training and Education

Connected Care Management and Oversight

Product Development and Management
- Business Development
- Relationship Management
- Market Research
- Research and Development
- Product Strategy and Planning
- Adoption and Market Leadership

Implementation Services
- Implementation Management
- Requirement Consulting
- Practice Readiness
- Support Design and Standardization
- Training and Education
- Process Improvement
- Marketing

Clinical Operations Services
- Ongoing Clinical Service Management
- Education and Competency Support
- Document Management Provisioning
- Virtual Rooming
- Data Analytics
- Contract Management

Product IT Support
- Issue Tracking and Management
- QA Testing
- Customer Support
- Technical Assessment and Consulting
- Product Configuration
- Asset Management
- Account Management

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**Convergence on Clinical Workflow**

1. Determined that Telestroke Consult is needed
2. Position InTouch Device in room
3. Site contacts ATC for Telestroke 507-255-0411
4. "This is [site/unit] calling for a telestroke consult"
5. Midwest ATC RN pages Telestroke provider and asks for referral information
6. Midwest ATC RN asks screening questions including:
   1. Onset of Symptoms/ Last Known Well
   2. Age
   3. Acute Stroke Symptoms <8 hrs
   4. Any trauma?
   5. CT viewable
   6. Anticoag
   7. TPA consideration
   8. TPA administration
7. Neurologist responds to page and Midwest ATC RN delivers report
8. After consult complete return this device to designated storage location
   1. Plug device in
   2. Never turn device off
   3. Place device with camera facing the wall

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**Centralization of Physician Staffing and Scheduling**

<table>
<thead>
<tr>
<th>Day of the Week</th>
<th>Total Sites</th>
<th>2015</th>
<th>2016</th>
<th>% of Annual</th>
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</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>344</td>
<td>339</td>
<td></td>
<td>14.3%</td>
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<td>Monday</td>
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<td>387</td>
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**Telestroke Activations By Day of the Week**

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Convergence on Quality Measures

PATIENT CHARACTERISTICS
- Age, gender, time-to-treatment
- NIHSS score at first presentation and arrival after transfer

PATIENT OUTCOMES
- Time of arrival and departure for transfer, arrival time at receiving hospital
- Preliminary and final discharge diagnosis
- Hospital length of stay, in-hospital complications, mortality
- eNRS and NIHSS at discharge and discharge location

TREATMENT RATES
- Administration/treatment stroke
- IV alteplase protocol adherence

SAFETY MEASURES
- Symptomatic and asymptomatic intracerebral hemorrhages
- Mortality at 7 days and 90 days

TIME MEASURES
- Time of consultation notification
- Phone response
- Video consult initiation
- Patient arrival
- CT scan
- Diagnosis
- Decision making
- Initiation of intravenous alteplase t-PA or the decision not to treat

TRACKING TRANSFERS
- Time of transfer
- Destination facility
- Time of arrival

OPERATIONAL FAILURES
- Record any technical failure and limitation
- Communication problems
- Work flow issues
- Violations of security of protected health information policies

CT IMAGES QUALITY
- Limitations, delays, or inability to perform a stroke consultation

CONCLUSION
Progressing from Service Line to Enterprise has required convergence and centralization of technology, people, operations, governance, and evaluative strategies

Dumitrascu O, Denaerschalk B, Telestroke, Current Cardiology Reports 2017