Philips Telestroke Solutions: Moving the Needle in a Primary Stroke Center

Telestroke Care Becomes Personal at John Muir Health System

On a typical December evening, Carol Olff, Director of the John Muir Health TeleICU Center, was in the crowd as her husband's band played at a local establishment. As the band transitioned to the next song, Carol's husband, Mike, reached for his bass guitar but was suddenly unable to move his left arm. Realizing that something was wrong, Carol quickly evaluated him as another nurse in the crowd called 911. John Muir Health had recently expanded their inpatient telehealth capabilities beyond the ICU to also cover stroke patients being admitted to the Emergency Department. Their goal was to ensure that AHA guidelines were rapidly followed for each patient being assessed for stroke. When Carol oversaw the program's roll-out, she never imagined that her husband would be the program's 102nd patient.

The Setting: A High-Performing IDN Looking to Innovation for Continuous Quality Improvement

John Muir Health is an integrated health care delivery network (IDN), serving a large suburban population in Walnut Creek, CA, Concord-Martinez, CA and surrounding communities. With a long history of excellence in various quality metrics, John Muir Health was among the first participants in accountable care organizations, and is continually seeking new ways to improve quality of care.

As a Primary Stroke Center of Excellence, John Muir Health was already performing well on key metrics of stroke quality of care (i.e., the AHA Get-With-The-Guidelines (GWTG) stroke benchmarks). In order to maximize the chance of taking an appropriate intervention within a short time window, the Stroke Team was using a tightly defined protocol, which emphasizes parallel workflows and prompt notifications.

John Muir Health also has a well-established TeleICU Center: John Muir Health Critical Vision. Having demonstrated the powerful impact of telemedicine on quality and outcomes in the ICU, the TeleICU Center team sought out ways to leverage the telemedicine capability in other units.

As an area with high acuity and unique

time sensitivity, the Stroke Program was selected as a high potential opportunity to use telemedicine to improve outcomes. The TeleICU Center and the Acute Stroke Team believed that using portable Philips eICU carts to allow the TeleICU Center to support the ED remotely might speed workflow and improve outcomes.

When Carol's husband came into the ED presenting with a stroke, the whole team knew the importance of time. "We knew time was critical, and that a number of expert resources that were not immediately available in the ED needed to be brought into the care and treatment process quickly."

The Challenge: Even Excelling Institutions Need to Improve Outcomes with Stroke

Gold standard management of acute ischemic stroke is administration of tissue Plasminogen Activator (tPA) within 3 hours from last time seen normal. Additionally, recent treatment expansion capabilities include tPA up to 4.5 hours and /or interventional thrombectomy within a 6 hour time period from last time seen normal. Executing stroke protocols requires the ED nursing team to conduct and coordinate several evaluations, including the NIHSS, medication history, coagulation parameters, and CT or MRI scans. There are also documentation requirements, as well

PHILIPS

as an important need to inform and provide human care for the patient and any family members.

Stroke protocols are complicated, and require the ED nursing team to coordinate several patient evaluations, physician assessments and downstream hospital departments (including radiology, critical care and interventional suites), with most of the care coordinated from the highly dynamic ED environment. At the same time, the Acute Stroke Team is working against a ticking clock to save valuable brain tissue. Furthermore, stroke admits can occur 24/7/365. Clots don't care how many nurses or neurologists are on duty.

Therefore, even leading institutions can struggle to achieve 'good' stroke outcomes in an absolute sense, and many ischemic stroke patients are not eligible to receive tPA in time for it to provide benefit to their stroke.

Telestroke Supports the ED Team, So the ED Team Can Care For the Patient

As Carol watched the stroke team treat her husband, her mind raced with all the possibilities. But, she also knew that John Muir Health's Stroke program, supported by her own team in the TeleICU Center, was equipped to deliver stroke care of outstanding quality. The extra level of enhanced care from the Telestroke center delivered several unique advantages to give her husband a better chance of a good outcome:

1. Early remote consult from a neurologist:

In on-call situations, or situations in which one staff neurologist is covering two campuses, urgent consults can be delayed. The Telestoke program's telemedicine cart can enable a rapid remote patient evaluation by the neurologist. The neurologists can remotely join the case from home or office, via a video connection on their laptop.

Seeing the patient can give the neurologist a quick read on the severity of the stroke, and audio/video communication with the ED stroke team allows the neurologist to 'conduct the orchestra' and provide direction to the team. This leads to fast, confident diagnoses and quicker treatment, while reducing disruptive drive times for the on-call physician.

2. Telemedicine Scribing:

If nurses are documenting care, they are not providing it. The John Muir Health TeleICU Center provides scribing services to ED Nursing in stroke cases, if the ED nurse requests this support service. During the case, the eRN can scribe to document various care activities, including patient assessment, NIHSS results, and IV set up. Later, the ED RN reviews, validates, & co-signs entries of the TeleICU Center.

"This has really been a big thing. Once the ED nurses knew that they could get their scribing from the TeleICU Center, they included the eRN on camera from the TeleICU Center for stroke cases. Suddenly, the TeleICU is doing this great service for them, and the nursing team is really happy. And they can really focus on the patient, so it helps things move faster at the point of care." – *Jennifer Cave-Brown, Stroke Program Coordinator, Nurse Practitioner*

3. Watching everything other than the stroke:

When a stroke code is triggered, the care team understandably focuses primarily on stroke management. But in an aging population with multiple morbidities, patients may also frequently have other chronic or episodic conditions that also need to be monitored while the stroke is addressed. The TeleICU Center can consolidate information from the EMR, scribe patient home meds, and quickly

identify health issues that may relate to conditions other than the acute stroke.

4. Keeper of the Stopwatch:

With a maximum 6-hour window to execute key diagnostic and interventional procedures, keeping close track of the time elapsed since reported onset of symptoms is critical. Having a dedicated nursing resource at a stationary desk allows the TeleICU Center to manage the timeline for patients and visualize electronically how they are progressing along the Stroke Protocol in real time. This allows for timely reminders to be sent, while maintaining an overall vision for the care pathway. Such tracking is even more important when the Acute Stroke Team is dealing with multiple stroke patients at the same time.

5. Dispatcher of Information:

When so much information is being accumulated to a central resource from different departments, it is often challenging to know when and where to look for updates. A central resource able to view the patient EMR constantly can serve as an information dispatcher. The eRN can 'push' updates on lab results, PACS, and clinician notes to point-of-care clinicians to aid them in their care of the patient without interrupting workflows.

6. A second pair of eyes:

A proven way in which telemedicine improves outcomes is by doubling up oversight to prevent normal human errors. For most cases, there are no errors to catch, but over time the benefit can be dramatic. This impact is no less true in stroke, where there are many complicated and critical things to do in delivering excellent stroke care – each of which carries a risk of a small error.

Even for the majority of cases in which no human errors occur, the presence and immediate accessibility of the TeleICU eRN on screen in the room can help reassure patients and their families that someone is continually monitoring the patient's condition and ready to react.

Carol's husband received excellent care from John Muir Health's stroke staff in the ED, supported by the TeleICU Center. The severity of his condition was quickly determined by a neurologist and his stroke episode was evaluated and recorded by the TeleICU team. Luckily, he had suffered only a transient ischemic attack (TIA), and suffered no long-term effects.

Reflecting on the impact of telemedicine on the quality of stroke care at John Muir Health, Donna Brackley the SVP Patient Care Services at John Muir Medical Center, Concord Campus identifies the Philips eICU technology as a critical enabler of change:
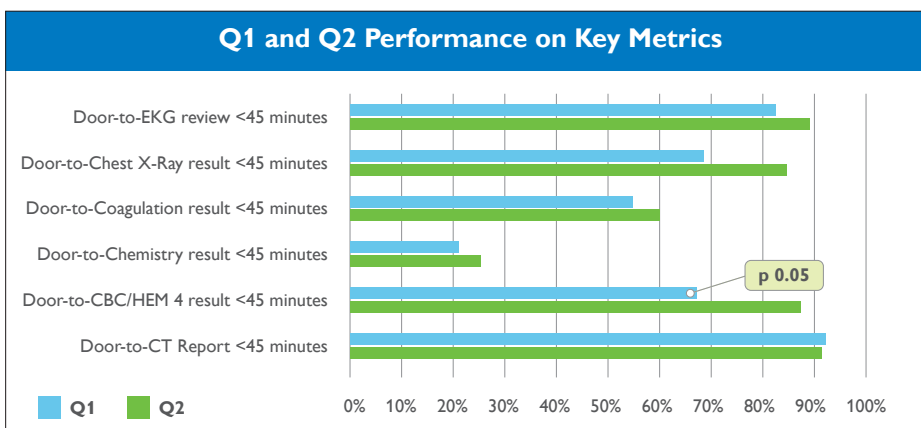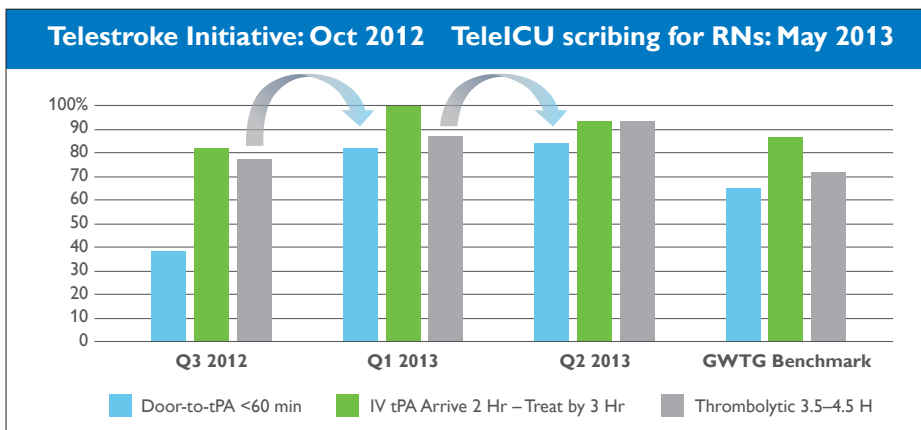
How Far Can the Needle be Moved? The Impact on Quality Metrics

The TeleStroke Initiative was implemented at the beginning of Q4 2012 (October). John Muir Health's results on key metrics in Q3 2012 were adequate, but below the aspiration for a quality-focused Comprehensive Stroke Center. On the critical metric of tPA administration time, Q3 2012 results lagged the GWTG benchmark.

After the TeleStroke Initiative, tPA administration results improved substantially, and now far exceed the GWTG benchmark. Further improvements were achieved in Q2 2013, after TeleICU scribing allowed ED RNs to focus on the patient. Overall, mean Door-to-tPA time decreased from 66.7 minutes to 62.35 minutes between Q3 2012 and Q2 2013.

"Through an innovative approach of applying the Tele-ICU technology to the treatment of stroke patients, we have been able to demonstrate rapid remote assessment by neurologists to improve time-sensitive interventions, such as door to needle times for tPA administration. The teleICU has been the enabling technology facilitating communication and collaboration within the care team to improve patient outcomes."

- Donna Brackley the SVP Patient Care

Telestroke Initiative: Oct 2012   TeleICU scribing for RNs: May 2013

Legend: Door-to-tPA <60 min | IV tPA Arrive 2 Hr – Treat by 3 Hr | Thrombolytic 3.5–4.5 H

Q1 and Q2 Performance on Key Metrics

Door-to-EKG review <45 minutes
Door-to-Chest X-Ray result <45 minutes
Door-to-Coagulation result <45 minutes
Door-to-Chemistry result <45 minutes
Door-to-CBC/HEM 4 result <45 minutes
Door-to-CT Report <45 minutes

p 0.05

Q1   Q2   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Key Takeaways:

1 Telemedicine can have a major impact in the complex setting of acute stroke.

2 The eICU connects the best resources across the distributed health system to focus on timely interventions in patient care.

3 A telestroke initiative can have a marked impact on metrics of care quality, including key door-to-needle measures that have been established by guidelines groups as core measures.

4 The experience of John Muir Health provides a template for other hospital systems to develop their own telestroke initiatives.

5 Philips can help hospital systems that are seeking to implement a telestroke program.

Philips Healthcare is part of Royal Philips

How to reach us
www.philips.com/healthcare
healthcare@philips.com

Please visit www.philips.com/eicu