Penn State Hershey Medical Center’s Journey to State-of-the-Art Telemedicine

Based in South Central Pennsylvania, Penn State Hershey Medical Center (PSHMC) is a 563-bed academic hospital and one of the premier comprehensive stroke centers in the state. The hospital averages 800 stroke patients per year, with many of those transferred from rural hospitals where stroke-based expertise is limited or unavailable. The primary issue with transferring stroke patients: tPA must be administered to ischemic stroke patients within three hours from the onset of symptoms. By the time a patient was transferred, that critical treatment window had often closed.

Having some of the leading stroke specialists in the country, PSHMC saw the opportunity to create a comprehensive telemedicine program that could reduce transfer rates from rural hospitals and help get time-critical treatments to stroke patients faster. Today, the licensed program provides real-time stroke expertise from PSHMC to a network of regional hospitals, helping health systems and accountable care organizations achieve measurable improvements in their clinical, operational and financial performance.

Penn State Hershey Medical Center

Reaching a State of the Art in Telemedicine

Inside:

- How Penn State Hershey dramatically increased tPA use
- Integrating telestroke into existing partner hospital workflows
- Continuous improvement through regular communications and data review

Outside:

- Engaging stakeholders across the country
- Assembling a comprehensive telestroke network
- Developing a telemedicine network of their own

Best Practices for Developing a Telemedicine Network

If your hospital is considering a telemedicine system, PSHMC has identified several best practices to employ while getting underway. These tips have been used – and proven – within PSHMC and will help ensure that your organization starts off its telemedicine journey on the right foot.

- Ensure organizational support and define your vision
- Take the time to pick the right technology partner
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- Create a team approach with spokes: Think of the telemedicine network as a hub and spoke system – the hub site (PSHMC) acts as a partner throughout planning, implementation, stay present even after the system is up and running
- Emphasize the importance of time: Your tele medicine network will not succeed if the hub site is not ready to support a wide variety of movements among the spoke hospitals. Facilitate a mindset of continuous improvement - use the statistical data from your telemedicine system to provide candid feedback and coaching to the telestroke team.
- Don’t forget the importance of education: Community education is critical to the success of any telemedicine program – especially in acute, time-based care such as stroke care. Establish a community education plan that communicates the signs and symptoms of strokes, offers assistance on emergency treatments available and conveys the importance of time. This education program should be engaging and relevant to your telemedicine network members and should include links to the latest and most current public health guidelines.

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In just two years, the program doubled the number of partner sites and increased the number of consults by 65%, improving acute ischemic stroke treatment rates. The national NIH administration rate for hospitals (on average, it takes 60 minutes to treat a clot) rose from 30% to 42%. In total, the telestroke program treated 75% of acute ischemic stroke patients – far above the national average. Improved patient outcomes were also a critical component of the program. PSHMC, along with its spokes, treated 95% of patients in less than 60 minutes. 

Future Plans for LionNet

PSHMC’s telestroke program is still growing. In the next five years, PSHMC and its spoke hospitals have made ambitious long-term goals, including the following:

• Improved acute ischemic stroke treatment rates. The national NIH administration rate for hospitals (on average, it takes 60 minutes to treat a clot) rose from 30% to 42%. In total, the telestroke program treated 75% of acute ischemic stroke patients – far above the national average. Improved patient outcomes were also a critical component of the program. PSHMC, along with its spokes, treated 95% of patients in less than 60 minutes.

• Improved NIH administration and frequency of follow-up care. At some of the partner hospitals, NIH administration grew by a whopping 40% percent. Many, of the hospitals that had never before treated stroke patients are now doing so and are able to treat stroke patients on a more consistent basis. The result is a more stable patient flow.

• Steady decrease in transfer rates. In the past, LionNet’s spokes had transfer rates decrease from 20 percent to 5 percent, allowing patients more time to adjust comfortably with treating and keeping stroke patients.

In addition to decreased cost and decreased need to travel, PSHMC’s partnership vision has created the following benefits:

• National prestige. No other state that clones for NIH could be treated with less NEAT. Among those in this program, PSHMC has established a significant increase in public awareness. On the entire system, the telestroke program can be seen as an important part of PSHMC’s overall missions. The goal is to improve stroke care and to improve the quality of life for all Pennsylvanians.

Valuing its spoke

Penn State Hershey plans to expand the telestroke program following the success of LionNet. In the future, the telestroke program will focus on improving stroke care through the establishment of new partnerships. This includes telestroke programs with other regional hospitals, community paramedicine and home visits.

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Future Plans for LionNet

For stroke patients who are located in rural or underserved communities throughout Pennsylvania, LionNet provides access to expert stroke care. From the beginning, PSHMC set the precedent with its spoke hospitals that would lead to optimal technology, but to also create mutually beneficial partnerships.

Phase Four: Creating a Strong Hub Site

PSHMC has worked diligently both internally and externally to build its infrastructure for telestroke. When setting out to create the telestroke network, Dr. Raymond Reichwein, LionNet’s medical director, said that PSHMC wanted to be a leader in stroke care. “We aim to be the ‘hub’ of the community, the true academic hospital and the true hub site,” he said. In order to achieve this, Dr. Reichwein and his team had a five-year plan to set up a spoke network.

The education component of PSHMC’s foundation building was highly transparent and feedback is prioritized across all aspects of the program. As noted above, PSHMC conducts regular on-site visits with its spoke sites, looking at a variety of aspects. If anything needs troubleshooting, PSHMC is dedicated to improving it in a timely fashion and improving patient/family satisfaction.

In many telemedicine programs, the influx of new technologies and processes at spoke sites can significantly impact workflow. Due to its phased roll out, PSHMC set out to improve workflow and efficiency at the spoke sites through the implementation of an education campaign focused on stroke awareness and the foundationalism of Patient-Focused Care. Since PSHMC views its spoke sites as partners, it wanted them to become primary stroke centers. Establishing excitement for PSHMC’s partnership vision a reality.

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**Two Years in: Major Successes and Future Plans**

In just two years, the LionNet program has successfully launched in 15 of Pennsylvania’s 177 counties. Since the conclusion of the clinical trials in 2012, the LionNet program has expanded to 15 counties and has achieved three major milestones to improve stroke care:

- **Increased acute ischemic stroke treatment rates**: The national 90-minute door-to-needle administration rate was 7.2% in 2013. LionNet has increased this rate to 46.2%.
- **Increased tPA administration and frequency of onsite care**: At some of the partner hospitals, tPA administration grew by 67% and 41% respectively. Now, more hospitals are able to successfully perform tPA administrations.
- **Steady increase in transfer rates**: In the past two years, LionNet has seen transfer rates decrease from 20% to 10%, while LionsNet – which involves more comfortable with treating andkeeping stroke patients.

**Snapshot of the LionNet Program**

PittMed worked diligently by both internally and externally to reach all goals for its SheepNet telemedicine project for patient care within the stroke care network for the Central Western region of Pennsylvania. Today, PittMed continues to provide stroke telemedicine services to the region, meeting and exceeding the metrics set for stroke care.

PittMed is now one of the leading telemedicine programs in the country, with its program doubling the number of partner sites and increasing the number of consultations by 345%.

PittMed’s partners include 177 hospitals and over 300 clinics in 177 counties. To ensure that all patients receive the best possible care, PittMed has established a strong program in the region to address the needs of patients with stroke.

PittMed has developed a comprehensive telemedicine program that provides remote, real-time care for acute stroke patients. PittMed has worked diligently both internally and with REACH Health to ensure that it can meet the needs of patients with stroke.

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**Future Plans for LionNet**

Since the stroke program’s successful launch in 2012, PittMed has continued to grow and expand in the region. PittMed’s program has contributed to the overall success of the LionNet program and has achieved three major milestones to improve stroke care:

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**Key Takeaways**

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**Telemedicine Case Study**

- **Create a team approach with spokes:** Too often, potential telemedicine projects are seen as separate from the rest of the hospital, yet they don’t exist in a vacuum. PSHMC and its partner hospitals work as a single entity, with doctors and staff from all areas of the hospital participating. To ensure success, a well-defined team approach needs to be in place, with spokes responsible for their own areas while also working together as a team.

- **Don’t forget the importance of education:** Education and awareness campaigns are crucial to the success of any telemedicine program. PSHMC’s telestroke network emphasizes the importance of educating the public, medical staff, and emergency medical services staff on the signs and symptoms of strokes and the importance of prompt treatment. Regular education sessions are conducted for all stakeholders, ensuring that everyone understands the critical role telemedicine can play in saving lives.

- **Communicate and collaborate:** Effective communication and collaboration are key to the success of a telemedicine network. PSHMC has established clear communication channels between the hub and spoke sites, ensuring that all members of the team are kept informed of critical updates and decisions.

- **Secure organizational support and define your vision:** Getting buy-in from key stakeholders is crucial to the success of any telemedicine project. PSHMC has worked closely with its leadership team to ensure that everyone understands the potential benefits of telemedicine and is committed to making it a success.

- **Take the time to find the right technology partner:** The telemedicine space is crowded with vendors claiming to do it all. PSHMC and its partners took the time to research and evaluate different options, ensuring that they found a technology partner that would be able to support their needs and vision.

- **Identify a clear, single, scalable platform:** PSHMC has implemented a single, scalable platform that allows for seamless communication and collaboration between the hub and spoke sites. This platform is user-friendly and requires minimal training, ensuring that everyone can use it effectively.

- **Establish a community education plan that communicates the urgent treatments available and conveys the importance of time:** PSHMC’s telestroke network provides real-time stroke expertise from PSHMC to a network of regional hospitals, helping health systems and accountable care organizations achieve measurable improvements in their clinical, operational and financial performance.

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**Outside:**

HOW TO LEAD A LEAN-BASED, AFFORDABLE, BEST PRACTICE TELEHEALTH PROGRAM TO REACH THE STATE OF THE ART.
Best Practices for Developing a Telemedicine Network

If your hospital is considering a telemedicine system, PSHMC has identified several best practices to employ while getting underway. These tips have been used—and proven—within PSHMC and will help ensure that your organization starts off its telemedicine journey on the right foot.

1. **Set the foundation:** Your telemedicine network will not succeed if the hub site is not ready to support a wide variety of treatments available and convey the importance of time. Today, the LionNet program provides real-time stroke expertise from PSHMC to a network of regional hospitals, helping health systems and accountable care organizations achieve measurable improvements in their clinical, operational and financial performance.

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Having one of the leading stroke specialists in the country, PSHMC saw the opportunity to create a comprehensive telemedicine program that could reduce transfer rates from rural hospitals and help get time-critical treatments to stroke patients faster. Today, the LionNet program provides real-time stroke expertise from PSHMC to a network of regional hospitals, and it has quickly become one of the most sophisticated telestroke networks in the country. Not only did the program dramatically improve patient care for stroke victims, it was also designed in a way that greatly benefits both PSHMC and its network of spoke-partner hospitals.

In this paper, you will learn about PSHMC’s telestroke network and how the hospital built it from the ground up. The article will also share PSHMC’s best practices and proven strategies for other hospitals to utilize when developing a telestroke network of their own.

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