Gaining physician support for a Tele-ICU program

Overview

Tuomey Regional Medical Center (Tuomey) has served Sumter, South Carolina and the surrounding community for nearly 100 years with an eye towards persistent innovation. The 301-bed, Joint Commission-accredited facility is deeply committed to providing its patients the highest standard of care and service, earning international recognition for patient satisfaction.

While evaluating internal programs in their pursuit for continual service improvement, Tuomey determined that their ICU operations could be elevated by the addition of specialized patient care. Executive and clinical leadership at Tuomey identified Advanced ICU Care’s around-the-clock Tele-ICU patient monitoring as an opportunity to leverage 24/7 intensivist care to improve ICU patient outcomes.

The Objective: Raising the Bar in the ICU

Critical care in Tuomey’s ICU was largely provided by primary care physicians and the staff physicians comprised of Hospitalists, a Pulmonologist, and an Endocrinologist. The clinical leadership at Tuomey, headed by Dr. Gene Dickerson, Vice President of Medical Affairs, believed the level of ICU care they provided was reliable, but supplementing with more specialized expertise would improve overall ICU patient outcomes.

In addition, Tuomey sought a solution which would allow staff physicians to maximize their time at the bedside outside the ICU. Dr. Dickerson explained, “We wanted them to be confident that their critical patients were well cared for while they were seeing other patients.”

This led Dr. Dickerson to conclude his bedside team’s breadth of experience could best serve Tuomey’s sickest patients when complemented with Advanced ICU Care’s team of specialized intensivist physicians.
The Challenge: Integrating Two Teams

With the Tuomey ICU bedside as the "first line" of patient care at the hospital, the Advanced ICU Care team of intensivist physicians and critical care-trained nurses would provide an extra layer of specialized care via tele-technology with the shared objective of improving ICU patient outcomes.

Medical leadership of both organizations headed by Dr. Gene Dickerson, Vice President of Medical Affairs at Tuomey, and Dr. Corey Scurlock, National Medical Director for Advanced ICU Care, recognized potential concerns of the clinical teams, including:

- How will the addition of tele-physicians and advanced practitioners affect the role of the bedside physicians, in regards to their standing at the hospital as well as in their patients’ care?
- How would the Advanced ICU Care team imbed themselves into the established Tuomey workflows to limit disruption to patient care?

It was essential to promote a culture of constant, collaborative communication and transparency for the two clinical teams to build the trust necessary to effectively deliver cooperative care once the program went live in April of 2012.

The Outcome: Updated Protocols, Improved Results

Honed through extensive experience and success with other nationwide partners, Advanced ICU Care has developed a systematic implementation program. During regular meetings throughout the process, Tuomey and Advanced ICU Care collaboratively established goals and determined priorities. The two teams collectively identified the areas of glucose management and mechanical ventilation where the addition of intensivists would most benefit the established workflows in Tuomey's ICU and ultimately, positively impact patient care.

Glycemic Control

Tuomey already had an established general glycemic control protocol, but wanted to enhance their insulin drip (non-DKA) protocol. Collective discussion surrounding how to functionalize the insulin drip control process began in fall of 2012. The Advanced ICU Care clinical team met regularly on site with their Tuomey colleagues to present updated research on glycemic control best-practices and share insights gained from successful implementations and ongoing process improvement initiatives at other client facilities. The clinical leadership from both organizations, along with input from the Tuomey staff Endocrinologist, collaboratively designed the formal insulin drip protocol which was implemented in the 1st quarter of 2013.

The Advanced ICU Care nurse practitioners supported the Tuomey bedside nurses by managing a blood glucose daily management report (DMR). Twice daily, the Advanced ICU Care practitioner would run a report of real-time patient data that would flag patients with 2 blood glucose readings over 180 mg/dL. The practitioners would then further investigate underlying causes up the elevated glucose levels and then, together with their counterparts at the bedside, determine the best course of treatment.

18 months of complete data measure significant results of the Tuomey/Advanced ICU Care insulin drip protocol:

- Percentage of patient days with average daily glucose greater than 180: Decreased 37.5% from an average of 24% prior to implementation to 15% in the 3rd quarter of 2014
- Average daily glucose fell 11.8% from 152 mg/dL to 134 mg/dL, which is below the ADA's definition of hyperglycemia
- Initial quarter's result post-implementation: Decreased 46% to 15% in most recent, full quarter
- Reached collaboratively established goal to decrease the percentage of patient days with average daily glucose above 180 to 15%

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Ventilator Best Practices

While the ventilator settings used in the Tuomey ICU were safely within accepted standards, updated research supported revised best-practices. Slight adjustments to ventilator protocol and the addition of around-the-clock coverage in the ICU could notably influence the number of days Tuomey ICU patients spent on mechanical ventilation.

The clinical teams at Tuomey and Advanced ICU Care, including the staff Pulmonologist and respiratory therapists (RTs), thoughtfully and thoroughly discussed how best to deepen the management of mechanically ventilated patients. In a series of on-site and virtual meetings, they reviewed current research and reached consensus on joint goals, benchmark guidelines, and logistical details. As part of the new, joint initiative, the multidisciplinary team would collect and streamline pertinent data which would be reviewed by Advanced ICU Care’s tele-intensivists. They would then collaborate with the bedside team on ventilator settings as well as discuss the patient’s readiness to be removed from ventilation.

Ventilator rounds commenced at Tuomey in March of 2014. Comparing data prior to implementation of the protocol and complete months since the measures were instated, reveal positive initial outcomes of the initiative:

- **Average Ventilator Days:** 24% decrease
- **Saved 224 ventilator days**

Prior to around-the-clock Advanced ICU Care intensivist oversight, average monthly ventilator days fluctuated significantly: There was no consistent/predictable pattern, with the longest average monthly duration reaching 7 days. Since ventilator rounds began, there has been a steady downward trend from 5.2 days to 2.8 days; or a 46% decrease.

These improvement were a direct result of dedicated multidisciplinary participation between the Tuomey and Advanced ICU Care teams. Strong working relationships between individuals from both organizations were forged by rolling up their sleeves and working closely alongside one another toward the common goal of improved patient care.

Achieving Synergistic Results

By partnering with Advanced ICU Care, Tuomey added manpower with specialized training and robust analytic resources. This increased productivity and performance measurement, which in turn, enabled particular focus on collaborative initiatives, including glycemic drip and ventilator protocols. In culmination, the expanded efforts reduced average length of stay (LOS). Alongside Hospital LOS data, one can determine that the reduction in ICU LOS did not adversely affect Hospital LOS.

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<tr>
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<th>ICU Length of Stay</th>
<th>Hospital Length of Stay</th>
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<tr>
<td>Baseline</td>
<td>3.85 days</td>
<td>10.64</td>
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<tr>
<td>Post-Implementation Average</td>
<td>3.04 days</td>
<td>9.15</td>
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<tr>
<td>Percent Reduction in LOS</td>
<td>21%</td>
<td>14%</td>
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*The above chart compares the first full quarter of the Tuomey/Advanced ICU Care partnership (baseline) to subsequent complete quarters’ data.*
Another measure which illustrates the effectiveness of the Tuomey/Advanced ICU Care Tele-ICU partnership is how the actual LOS compares to what was predicted. Variables, including age, chronic health conditions, vital signs, and lab values, are collected for each patient and are used in algorithms to make predictions, referred to as APACHE predictions, for the individual patient regarding mortality, length of stay, and ventilator days.

Prior to Tele-ICU implementation, the average patient was in the ICU for a slightly longer duration than was predicted. However, after the Tele-ICU was implemented, the actual LOS was shorter than the data predicted; meaning on average, patients stayed in the ICU for shorter time periods than the data otherwise anticipated.

Continuous Tele-ICU: Peace of Mind Patient Care

While the Tele-ICU was implemented to ultimately improve patient outcomes, Tuomey staff physicians in a variety of disciplines also benefit from the partnership. Dr. Scott Girard, Medical Director of Hospitalist Service, identified the peace of mind readily accessible Board Certified partners with critical care expertise provides Tuomey staff physicians. “It gives our doctors flexibility in caring for patients both within and outside the ICU, knowing Advanced ICU Care is always there monitoring our patients.”

Tuomey staff physicians with varying experience and comfort treating ICU patients benefit from the oversight of experienced intensivists. Dr. Girard describes the relationships as, “almost a co-management dynamic, where the physicians here and in the Advanced ICU Care Operations Center ask what each other thinks and then collaborate on patient care.”

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<th>Pre-Implementation Average</th>
<th>Post-Implementation Average</th>
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<tr>
<td>Predicted ICU LOS</td>
<td>3.77</td>
<td>3.59</td>
</tr>
<tr>
<td>Actual ICU LOS</td>
<td>3.85</td>
<td>3.04</td>
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“We now have APACHE-scored data on a quarterly basis that let us know how we have improved together, and I do emphasize improving together,” says Dr. Dickerson. “We are functioning as a team, united in working towards the common goal of advancing patient care in the ICU.”

Conclusion

Drs. Dickerson (Tuomey) and Scurlock (Advanced ICU Care) anticipated skepticism regarding the effectiveness of the new tele-ICU program and concern about how the bedside team’s work would be affected. Advanced ICU Care’s current best-practice research and track record of success with other clients provided Tuomey staff initial encouragement. Regular transparent conversations and on-site meetings provided a forum to collaborate on mutual objectives and integrate Advanced ICU Care’s tele-critical care team into the existing workflows at Tuomey.

Dr. Scurlock and the Advanced ICU Care Client Services team provide ongoing support via a consistent presence, regularly collaborating with Tuomey bedside team members as well as clinical and executive leadership. They continually offer support in a variety of methods, including leading grand rounds on current critical care trends and reporting performance data on a quarterly basis.

The true testament of the clinical teams’ ability to overcome potential dissonance, communicate effectively, and provide effective care is evidenced by the improvement of patient outcomes. Any initial reticence was quelled over time as a result of producing positive results paired with Tuomey’s understanding that Advanced ICU Care was invested in the success of their ICU. The Tuomey physicians and bedside staff now welcome the heightened level of support and appreciate the elevated level of care their patients receive in the ICU due to the partnership.

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