Disclosures

- Financial Disclosure
  - No Honorarium
  - I do accept travel expense reimbursements: CTRC, Philips, ATA, SCCM

- Director of Nursing, Sutter Health eICU
Established in 2003 (Sacramento) and 2004 (Bay)

Largest eICU operations in the Western US
- 407 beds monitored (Sutter: 362; St. Joseph’s: 45)
- 49 eMDs
- 57 eRNs
- 20 clerical staff
- 272 ADC (2011)

Hours of Operation
- 24/7 patient monitoring
- 15-20 hr/day physician support
Sutter eICU-Monitored Hospitals

- Alta Bates Medical Center¹
- California Pacific Medical Center - Davies and California campuses
- Eden/San Leandro Medical Centers
- El Camino Hospital² (April, 2013)
- Marin General Hospital²
- Mills Peninsula Health Services
- Novato Community Hospital
- Petaluma Valley Hospital²
- Santa Rosa Memorial Hospital²
- St. Luke’s Hospital
- Summit Medical Center¹
- Sutter Delta
- Sutter Lakeside Hospital
- Sutter Medical Center of Santa Rosa
- Memorial Hospital Los Banos
- Memorial Medical Center Modesto
- Sutter Amador Hospital
- Sutter Auburn Faith
- Sutter Coast Hospital
- Sutter Davies Hospital
- Sutter Medical Center Sacramento
- Sutter Roseville Medical Center
- Sutter Solano Medical Center
- Sutter Tracy Community Hospital

¹ eICU nurse monitoring only
² Non-Sutter Health hospital
Auburn Roseville Memorial  General All Diagnoses ICU Mortality Ratio

- Predicted
- LCL
- Observed
- UCL

Cerner APACHE ®  n = >40,000

Observed-to-expected mortality ratio

Year: 2004 to 2011
ICU Length of Stay: Trend Over Time
Impact on LOS = $6,709,000 Savings

Sutter Health*
Ratio of Observed / Predicted ICU LOS
2004-2012Q1

<table>
<thead>
<tr>
<th>Time</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS Ratio</td>
<td>1.42</td>
<td>1.40</td>
<td>1.39</td>
<td>1.26</td>
<td>1.10</td>
<td>1.02</td>
<td>0.89</td>
<td>0.89</td>
<td>0.90</td>
</tr>
<tr>
<td>Saved ICU Days</td>
<td>-4857</td>
<td>-6418</td>
<td>-8064</td>
<td>-4441</td>
<td>-2047</td>
<td>-602</td>
<td>2965</td>
<td>3056</td>
<td>688</td>
</tr>
</tbody>
</table>

* Includes data from Auburn Faith, Roseville, Sutter Memorial and Sutter General.
** Data source: APACHE
*** Ratios > 1 and negative numbers = number of days lost (more ICU days than predicted per APACHE)
**** $1,000 more per ICU day versus floor day was used to estimate cost savings (2965 + 3056 + 688 = 6709 x $1,000)
Sutter Health Current Sepsis Stats

- Sepsis-related deaths in the hospital system have decreased 29% since 2008
- More than 1,300 lives saved between 2007 and 2010
- $21 million in cost savings because of reduced LOS
- Length of stay has been cut at least 17%

The use of medical information exchanged from one site to another via electronic communications to improve patients’ health status.

“Networks of audiovisual communication and computer systems that link critical care physicians (intensivists) and nurses to intensive care units (ICUs) in other, remote hospitals”.

“An activity that synchronizes and integrates the planning and operation of sensors, assets, and processing, exploitation, and dissemination systems in direct support of current and future operations.”

**ISR: intelligence, surveillance, & reconnaissance**

http://www.thefreedictionary.com
“ISR enables utilization of multiple assets from multiple geographic commands; collecting data across all domains that may satisfy strategic, operational and tactical requirements...enables the integration of this collected information to deliver intelligence to the right person at the right time anywhere on the globe.”

IRS “Extensive knowledge of adversary strategy, tactics, capabilities, and culture enables intelligence personnel to anticipate potential actions and provides the most complete and precise understanding of the adversary possible.”
Critical care nurses practice in settings where patients require complex assessment, high-intensity therapies and interventions, and continuous nursing vigilance. Critical care nurses rely upon a specialized body of knowledge, skills, and experience to provide care to patients and families and create environments that are healing, humane, and caring. 

Tele-ICU is “critical care nursing practiced over distance using telecommunications technology”. In addition to the knowledge, skills, and abilities outlined above, “tele-ICU nurses must possess high-level skills in communication, collaboration, decision making, systems thinking, and computer literacy”.

Practice Guideline 1
- Tele-ICU leaders and nurses must establish and sustain an environment that promotes effective communication, collaboration, and collegiality to ensure optimal quality outcomes.

Practice Guideline 2
- Tele-ICU nurses must demonstrate proficiency in specific knowledge, skills, and competencies to contribute maximally to patient outcomes and nursing practice.

Practice Guideline 3
- Tele-ICU leaders and nurses must be actively engaged in measuring and analyzing outcomes to ensure ongoing improvement in patient care and tele-ICU nurses’ contribution to care.
Knowledge Management

- IRS “We disseminate knowledge to better support decision-makers and shape operations.”

- “Tele-ICU nurses promote the translation of evidence into usable, relevant, and accessible knowledge.”
Global integrated ISR products need to be relevant, meaning that they are tailored to the requestor's requirements. Ensuring the relevance of intelligence to the requestor means that global integrated ISR planners should consider the suitability of specific ISR assets to achieve the commander's objectives. Additionally, global integrated ISR requirements should be timely enough to plan and execute operations. Intelligence resulting from timely global integrated ISR can provide information to aid a commander's decision-making and constantly improve the commander's understanding of the operational environment. The active nature of Air Force ISR assets makes them an essential enabler of timeliness when assets are made available to collect information when and where required. However, since availability of ISR assets is limited, responsiveness of ISR assets is often driven by the commander's objectives and priorities. Commanders must ensure proper asset utilization based on prioritized mission requirements. As technology evolves, every effort should be made to streamline processes to shorten timelines from tasking through product dissemination.

Global integrated ISR-derived information must be readily accessible to be usable. First, intelligence should be easily discoverable and retrievable; intelligence personnel must be able to "get at the information" in order to process, exploit, analyze, or disseminate. Second, producers and consumers should have the appropriate clearances to access and use the information. Third, global integrated ISR products should always be classified, catalogued, and electronically stored at the lowest possible classification, consistent with security policies, to enable sharing with partner nations, allies, interagency partners, and others. Understandably, some intelligence requires extraordinary protection, such as sensitive sources and methods, or the fact that certain knowledge is held.
“Tele-ICU nurses promote the translation of evidence into usable, relevant, and accessible knowledge.”

“Tele-ICU nurse continuously monitors data on large populations of patients and acts as real-time clinical decision support to collaborate with bedside nurses on conditions that require immediate attention.”
In today’s knowledge-based environment, we observe, and analyze the meaning and impact of a wide variety of events and convey useful, timely intelligence....

“Tele-ICU leaders and nurses must be actively engaged in measuring and analyzing outcomes to ensure ongoing improvement in patient care and tele-ICU nurses’ contribution to care.”
Videos

- http://www.youtube.com/watch?v=xVjXxAHWWCA
- http://www.youtube.com/watch?v=ZJJ2qq_c288&list=PLB016B3374351E4A1&index=13
Closing Remarks

- Tele-ICU can be more than just “monitoring” and “consultation”.
- When allowed & utilized appropriately Tele-ICU can/should be the ISR of care delivery.