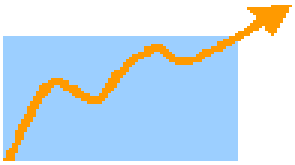
SpaceMed Trendline

Smart Operating Rooms Are Coming to Community Hospitals



Originally printed in the
SpaceMed Newsletter
Summer 2010

www.spacemed.com

Background

Smart technology is ubiquitous today but the best example in the modern hospital is the smart operating room (OR). Once found in only a few large academic medical centers, the technology is showing up in the surgical suites at mid-sized community hospitals like the 344-bed Sacred Heart Hospital in Eau Claire, Wisconsin. Just a few years ago, it was unthinkable that a community hospital like Sacred Heart Hospital could be one of the first in the country to use a technology configuration that includes the iCT (intra-operative computed tomography) and iMRI (intra-operative magnetic resonance imaging) for both diagnostic and surgical use. At Sacred Heart Hospital, patient treatment using advanced technology has improved quality outcomes and reduced the need for additional surgeries. It also has given the hospital state-of-the-art tools that have enabled it to draw top medical and surgical talent to the region.

Sacred Heart Hospital's Smart Operating Rooms

Sacred Heart Hospital actually has two innovative surgical suites designed for both diagnostics and complex surgeries for brain, spine and trauma patients. The concept took shape in 2005 when key administrators and surgeons traveled the world conducting extensive research on available technologies from various manufacturers to best configure the surgical suite with patient comfort and outcomes in mind.

The hospital's first smart OR suite was launched in 2008 and featured an iMRI. The iMRI moves to and from the patient during procedures to offer real-time imagery during brain surgery. Conversely, in standard neurosurgeries, regular MRI scans can only be done before and after an operation. The smart OR technology combines diagnostic images with those taken during surgery to produce a high-definition, 3-D map of the brain. In addition, a high-resolution microscope operates with a GPS-like system to magnify the field of view so that surgeons can avoid sensitive areas of the brain.

Sacred Heart Hospital recently launched its second smart OR suite featuring an iCT. The iCT also moves to and from the patient during procedures to offer real-time imagery. In standard spinal procedures, regular CT scans can only be done before and after an operation.

The minimally-invasive technology applied in the smart OR suites offers the most sophisticated imagery and mapping technologies, equipping surgeons with the highest level of accuracy for the complete removal of tumors of the brain and precise placement of spinal screws.

In addition to the iMRI and iCT, there are various other technological components that come together in the smart OR suites to create an integrated system of advanced imaging and mapping technology including:

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- **BrainSUITE®** — a surgical mapping system in which all imagery is managed and registered for immediate access
- **VectorVision® Sky** — considered the global positioning system (GPS) for the brain and spine
- **Zeiss OPMI® Pentero Microscope** produces highly-magnified images of the brain or spine allowing the surgeons a clear view of landmarks that might not have been visible during preop scans
- Nurses use the **BrainSUITE® Room Control System** to project the images onto four 57-inch flat screens in the OR and to control lighting and temperature

Impact on Quality of Care

The biggest effect of this new technology is on the quality of patient care. Navigational tools allow surgeons to make the smallest possible incisions, resulting in faster recovery time. The iMRI allows surgeons to examine a patient while he or she is still in the OR to make sure all of the tumor has been removed which also helps reduce reoperation rates. Another benefit to neurosurgery patients is that the technologies can identify unexpected situations, such as blood clots, which help surgeons manage their cases better and prevent serious complications. Plus, the images surgeons receive during surgery help them protect surrounding healthy areas of the brain and spine because they can pinpoint the area for surgery to the exact millimeter. Patient safety is another key benefit. Due to the mobility of the smart OR technologies, brain, spine and trauma patients do not need to be moved from the operating table. Keeping a patient still lessens the risk of complications. Moreover, smaller incisions are possible due to high-definition images and result in quicker healing and less risk to the patients.

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