



UCSF - Mission Bay Campus

Case Study

About UCSF - Mission Bay Campus

UCSF Medical Center at Mission Bay is its newest state-of-the-art hospital complex that has been designed to ensure that their facilities match UCSF's top-notch patient care. The new hospitals were built with a focus on the patient's experience every step of the way. At Mission Bay, you'll find the latest technology, including telemedicine, robotics and intra-operative imaging, as well as space to accommodate tomorrow's innovations. Built alongside UC San Francisco's vibrant research hub, these new hospitals bring together leading physicians and scientists to accelerate the translation of laboratory discoveries into actual treatments and cures. All of this is housed in a structure that incorporates the highest standards of patient safety, energy efficiency, seismic readiness and environmental sustainability.

Before Connexall

In February 2015, UCSF opened the above-mentioned state-of-the-art hospital complex on the Mission Bay campus. The Medical Center is six stories high and the equivalent of 2 blocks long in comparison to a much more vertical set up in the older facility. During the planning stages, they recognized that the way clinicians worked and communicated with one another needed to change in order to maintain efficiency in this new, much larger facility. The former facility had much smaller floor plans with high staff visibility and the new hospital has large floor plans and private rooms. This transition to private rooms caused many staff members to worry about the ability to readily attend to their patients' needs. To resolve these issues and alleviate the staff's apprehension, UCSF chose to have caregivers receive alarms and alerts on mobile devices. However, alarm fatigue was a major concern. UCSF looked to Connexall to manage all of the alarms and alerts to proactively mitigate alarm fatigue especially with SpO2 alarms which generate an enormous amount of false alarms in a pediatric environment.

The Connexall Solution

In order to maximize communication within the hospital complex and maintain patient safety, a fundamental component of all they do, the interdisciplinary planning committee understood that they had to leverage technology

to the fullest to ensure maximum efficiency and flexibility. Prior to opening the new facility, Connexall's Clinical Workflow team worked closely with UCSF in a test environment to customize the suspend feature within the Connexall platform utilizing best practices and other Connexall use cases so that when the hospital opened, alarm fatigue wouldn't be an issue.

Connexall, which is referred to as the "brains" of the system by those at UCSF, is able to determine:

- If an alarm is sent via the nurse call system or physiological monitor
- Whether to suspend an alarm (delay before sending to the mobile device)
- Who to send to
- When to escalate
- Who to escalate to
- When to stop

Any changes or settings are housed within the Connexall platform. Connexall sits between the input devices (Rauland Responder 5 Nurse Call, Responder Sync, General Electric Carescape monitors, TUGs, Hospital Email System, and the Hospital ADT System) and the Voalte output devices. Because the new hospital utilizes so much more technology than what was available at the old facility, no pilots were possible. As a result, there were many adjustments that had to be made once the hospital opened and all the systems went live.

In May 2015, about 3 months after opening, the Intensive Care Nursery (ICN) staff shared feedback that they were receiving too many alerts on their phones and felt that these alarms were not providing valuable information in regards to their patient status. This sense of feeling overwhelmed caused nurses to turn off the phone, leave it on a desk or put it in a drawer. The intent was not for the phones to be a distraction, but not carrying the phone risked clinical staff missing critical alerts and alarms. After gathering data and working with Connexall to analyze the information, they determined that a large majority of the alarms sent from GE did not require an immediate clinical action. A balance was needed to keep patients safe, but avoid alarm fatigue for staff. Alarms and alerts needed to be meaningful

and actionable per the Joint Commission’s NPSG 6. After careful evaluation, using the premise of “would it make you return to the bedside”, it was determined that Asystole, Vfib/Vtach, Tachy, Leads Fail, SpO2 Probe Off, and No SpO2 Probe could all be eliminated and that the most important alarms were Bradycardia and SpO2 low. Below are the parameters that were set to maximize patient safety and reduce alarm fatigue for staff:

Bradycardia

Keep no delay before sending

Time to accept to 30 seconds

Delay after accept to 60 seconds

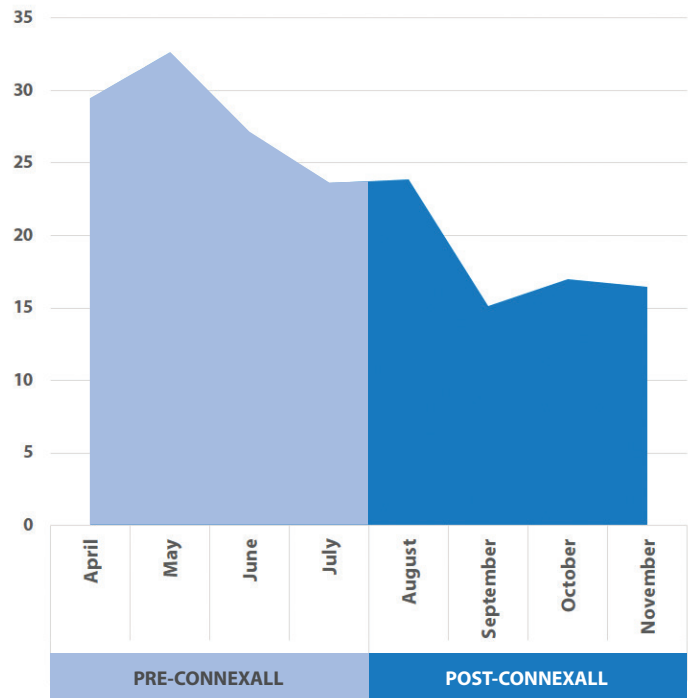
SpO2 Low

Increase delay before sent to 25 seconds
(utilizing Connexall’s unique Suspend Feature)

Time to accept to 30 seconds

Delay after accept to 60 seconds

GE Alerts to Phones per Nursing Shift



Connexall Results Summary

As of September 2015, the number of GE patient monitor alarms in the ICN was reduced from 32 per RN per shift to 15 per RN per shift - that’s almost a 50% reduction. Additionally, when surveyed, the nursing staff communicated that they were content with the amount of alarms they were receiving and were no longer leaving their mobile devices in desk drawers or turning them off; the phones were no longer viewed as a detriment. After the success in the ICN, UCSF implemented this same workflow initiative into all their critical care units. In the Pediatric ICU and the Cardiac ICU, most alerts were reduced by approximately 50%. For the Cardiac Transitional Care Unit, new workflow parameters were needed as the amount of alerts and alarms far exceeded those of the ICUs. At the highest month, each nurse was getting 55 alerts to their phones per shift and after implementing the workflow parameters, each nurse was getting 18 alerts per shift - a monumental change.

NUMBER OF ALARMS PER MONTH	
Before Implementing Connexall’s Suspend Feature	62,295
After Implementing Connexall’s Suspend Feature	16,205
APPROXIMATE ALARMS ELIMINATED OVER 12 MONTHS	553,000

Into the Future

UCSF continues to assess alerts coming to the mobile devices monthly to ensure that if further changes are needed, they can be made. Additionally, the GE monitors are also assessed on a regular basis to see if it’s possible to reduce the amount of primary alarms even further. RTLS (Real Time Location Services) is on the horizon to expand the reduction of the number of alerts to mobile devices. By utilizing RTLS, Connexall can suppress an alert if the caregiver is already at the patient’s bedside avoiding an unnecessary secondary alarm. Furthermore, parameters can be set up for escalations to alert the closest available staff member if the primary caregiver is in another room, or on a break. This patented feature of the Connexall software platform resolves delayed responses often resulting in negative outcomes.

UCSF will continue to utilize technology to create the best clinical outcomes possible. They are a thought-leader in healthcare who strives to share best practices and lessons learned with other facilities that are just beginning the journey of alarm management to achieve a better, safer environment for patients and staff.