



Photo courtesy of Isensix

Justifying the Purchase of a **Wireless Temperature Monitoring System**

MultiCare is an integrated health organization consisting of Allenmore Hospital, Good Samaritan Hospital, Mary Bridge Children's Hospital and Tacoma General Hospital, numerous primary care and urgent care clinics, multi-specialty centers, and hospice and home health services in Tacoma, Washington.

Due to the complexity of our operations and the size of our organization, we are compelled to seek out and employ new technologies in order to ensure compliance and quality of patient care. One area of compliance we found necessary to address with an innovative solution was temperature monitoring. During a regulatory inspection we discovered temperature log data from our medication refrigerators and freezers was missing due to equipment and power failures. As a result, we lost thousands of dollars worth of vaccines and other pharmaceutical products. Our cross-functional leadership team reviewed these issues and began searching for an automated solution for tracking and monitoring our temperature-critical materials, while enabling us to demonstrate continuous regulatory compliance.

Quality and Compliance Driven Requirements

We required a temperature management solution that was cost-effective, easy to deploy across our wide variety of facilities, and wireless so as to

avoid costly facilities modifications. We preferred a solution that could use our existing 802.11 wireless network in order to take advantage of the IT infrastructure, resources, and security tools already in place. We also wanted a system that would provide real-time visibility and notifications, particularly at our remote locations.

In addition to protecting valuable inventory, the system needed to maintain the proper documentation required by the Department of Health and the Joint Commission.

Refrigerators containing expensive drugs are automatically monitored every 15 minutes.

We wanted to reduce the time our staff spent monitoring temperatures and filling out paperwork. We also wanted to eliminate the manual process of maintaining the notebooks and files of temperature log documentation required to demonstrate continuous regulatory compliance. In an environment of unannounced surveys and inspections, the ability to automate the process, document our procedures and show our remediation practices is extremely important.

Our Preferred Solution

We chose AssureTemp by Eoscene, whose services were familiar to us as they also

Photo courtesy of Eoscene

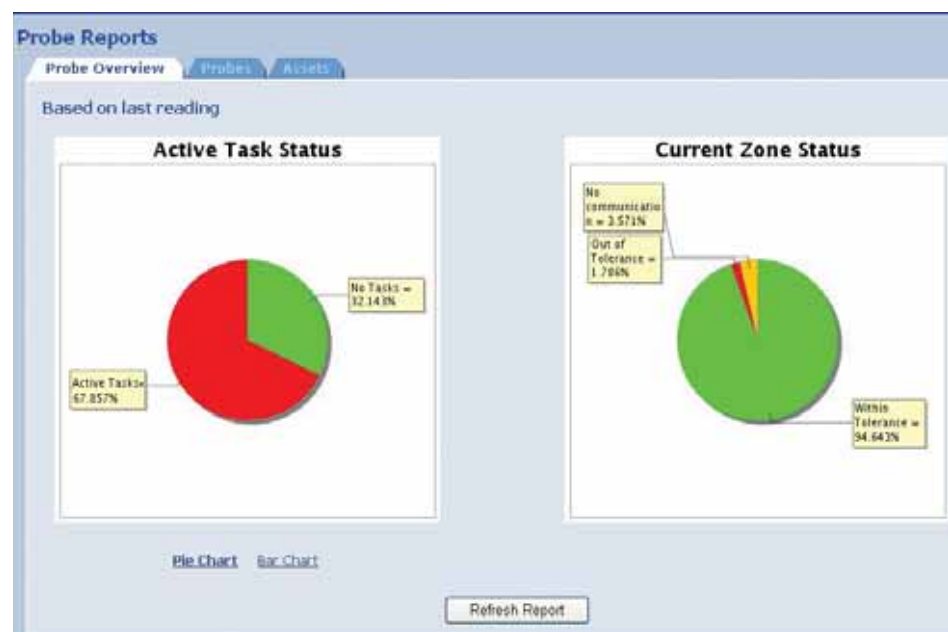


Image courtesy of Eoscene

Costly losses can be avoided by identifying malfunctioning equipment before it fails.

provide our compliance management solution, eCMS. This monitoring system protects our valuable inventory by capturing temperature readings through a submersible temperature sensor that is mounted inside the refrigeration unit. Sensors are available in several types, but we primarily use probes encased in glass beads, which closely simulate the actual temperature of our refrigerated agents. The solution comes in wired and wireless models, but because of our extensive wireless network, we chose to employ a wireless monitor that we placed adjacent to the refrigeration unit. Multiple temperature sensors can be attached to a single monitoring unit in order to monitor refrigerator/freezer combinations, or several refrigerators in a single area, more cost effectively.

How It Works

The monitor takes temperature readings at preconfigured time intervals to allow for variability of refrigerated contents. Refrigerators storing high-cost and temperature-sensitive products along with those units that are frequently opened are monitored every 15 minutes, while other less critical inventory can be monitored once an hour. The monitor units are AC powered but contain a battery backup that will continue to take readings in the event of a power loss. The monitor will store data over 30 days without power. This allows us to determine the viability of contents even during a power outage, which is extremely critical in outlying centers and clinics.

It is important to note, across our many facilities, we use a variety of refrigerator types from small, "dorm-room" models, to standard kitchen models, and the individual performance of these different models varies widely. Through the use of our



Wireless Temperature Monitoring

temperature monitoring system we are able to integrate the solution with all types of refrigerators and avoid costly losses by identifying malfunctioning equipment before it fails.

The system has a variety of notification methods, including audible alerts, alarms, and e-mail and pager messages. These notifications are customizable based on our locations' needs and standard operating procedures. Notifications received via e-mail or on a pager contain critical information about the refrigerator: location, current temperature and required temperature range. These alerts can be sent to multiple users and devices, including staff workstations and mobile devices. Typically our pharmacy manager or engineering team responds to any alarms.

The integrated monitoring service—available via the Internet, 24/7—monitors the connectivity of all probes and temperature monitors, and alerts our staff when an “out of tolerance” condition occurs. The system includes an activity management component that creates a follow up task documenting the out of tolerance condition and requires the responder to document the remediation activity before it can be closed. If the documentation task is not completed it is escalated to the



Photo courtesy of Cooper Atkins
Temperature monitoring data demonstrates which refrigerated equipment brands perform best allowing us to make smarter purchasing decisions.

appropriate supervisor. All out of tolerance incidents and corrections are tracked, documented and reported. If at any time the system experiences a network outage, the appropriate information technology resource is notified. The built-in escalation process ensures we have the ability to push required remediation efforts to any available party, based upon our response procedures.

Initial Deployment and Planned Expansion

Even with capital budget constraints, the decision to invest in a temperature monitoring system was an easy one for three primary reasons: (1) it saves money and protects valuable inventory while increasing quality of care, (2) its real-time reporting and documentation spotlights trends in the data and enables us to comply with regulatory needs, and (3) it saves time by automating previously manual processes.

Initially we implemented the system in the inpatient pharmacy, oncology clinic, and anticoagulation clinic at Allenmore Hospital, as well as the oncology clinic in our Gig Harbor location and in the Mary Bridge Health Center, Community Care location. With the success we have had, we plan to expand the use of the automated temperature monitoring system to all of our

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high-risk and high-quantity medication refrigerators and freezers throughout all of our facilities.

We know that with the use of this solution our data is never lost, log entries are not forgotten, and tracking continues on weekends, holidays, and during any unforeseen emergencies. We are notified immediately when a device is malfunctioning, allowing a staff member to correct the situation or contact engineering without any delay. The 24/7 temperature monitoring meets all our DOH requirements, CDC recommendations and the explicit requirements of the Joint Commission for compliance.

More than Just Temperature Management

Beyond monitoring temperatures, the system also provides automatic reporting which helps keep us in compliance with The Joint Commission and Department of Health documentation requirements. Our staff values the reporting and self-documenting options, along with customizable features, such as the individual checklists, inspections and staff audits which allow us to document both manual and automated temperature measures, and drill-down dashboard reporting which can be pre-filtered for specific teams and equipment. These features help us be better prepared for unannounced surveys. We have designated staff to manage our preparation for compliance surveys, and having an online system where all the data is captured and stored makes this process much more user-friendly. In addition, the system can record and display both manual and automated temperature measures, a key feature when managing state funded vaccines.

Data Management and Reports

The care and safety of our patients is of the utmost importance. With this wireless temperature monitoring system, our team can now spend their time and resources where they are most needed: with our patients.

Since all our facility data is stored on a secure server, mining for trends is simple and fast. We can use the system to look at our data and see what devices pass or fail our standards, learn about any seasonal problems, and note cost savings realized from preserved inventory. Understanding which refrigerated equipment brands perform better than others allows us to make smarter purchasing decisions.

Conclusion

With wireless temperature monitoring providing real-time, automated visibility into the status of our temperature sensitive materials, we can focus on more important tasks. Not only was the implementation of the solution economic and efficient, it was embraced by our entire team, from IT to nursing to executive management. The system has helped us meet all regulatory compliance needs, protect valuable inventory, and allowed our staff to focus their energies on providing top quality patient care. ■



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