



CASE STUDY

NorthBay Health's Augmenting of Cerner EMR with PeraHealth's Rothman Index Shows Decrease in Unplanned Transfers to the ICU

HIGHLIGHTS

- NorthBay Health partnered with PeraHealth in early 2020, completing implementation during the COVID-19 pandemic
- The health system replaced MEWS with PeraHealth's solutions to improve overall clinical surveillance
- Initial results include a 30 percent decrease in unplanned transfers to the ICU



NorthBay Health is a locally based, independent, nonprofit healthcare organization in Solano County, California. The health system includes two hospitals: NorthBay Health Medical Center in Fairfield (home to Travis Air Force Base) and NorthBay Health VacaValley Hospital in Vacaville; a 100-provider primary and specialty care medical group; the NorthBay Cancer Center, and several advanced keynote services, including heart and vascular, neuroscience and spine and orthopedics. NorthBay Health is Magnet-designated and is a member of the Mayo Clinic Care Network. Their mission is to provide "Compassionate Care, Advanced Medicine, Close to Home." The 154-bed NorthBay Medical Center is Solano County's most comprehensive hospital. Services include a Level II Trauma Center, maternity care and a neonatal intensive care unit. It is also the only civilian hospital in the county capable of performing open heart surgery. NorthBay VacaValley Hospital in Vacaville offers 24-hour emergency care, oncology care and diagnostic services.

BACKGROUND AND OPPORTUNITY:

While it is surrounded by corporate giants such as Kaiser Permanente and Sutter Health, local families and individuals of all ages rely on NorthBay to receive high quality healthcare services close to home. The system serves a large proportion of high-acuity, under-insured and uninsured patients and seeks to provide top-notch care to all residents, while recently developing a Health Equity Committee. NorthBay's vision and strategic initiatives include four pillars: focus on people, quality, cost and convenience.

"Our patients don't do a lot of proactive health; it's more reactive medicine, so we're seeing people when they're really sick," said Seth Kaufman, MD, Chief Medical Officer and Chief Quality Officer. "Then, COVID turned things upside down. It's even more important now from a business standpoint that we are aggressive in evaluating patients early when they're decompensating to keep them out of the ICU."

The system, which has Cerner for their EMR, had been using the Modified Early Warning System (MEWS) as part of their process to transfer deteriorating patients into their ICU, however "it was not real-time and was not working well," said Natalie Correll-Yoder, MN, CCRN, CCNS, Clinical Nurse Specialist/Clinical Practice Manager. Aside from the need to better identify deteriorating patients, the system was challenged with sepsis mortality, maintaining ICU staffing, and enhancing palliative care services.

SOLUTION:

In 2020, Correll-Yoder introduced PeraHealth's Rothman Index (RI) to NorthBay's leadership after learning about it at the American Association of Critical Care Nurses (AACN) national conference. Using a shared decision model, she gathered feedback about current challenges and requirements for a new system from frontline staff and a leadership workgroup that included Dr. Kaufman and representatives from the quality and information technology teams.

Ultimately, NorthBay decided to implement Rothman Index (RI) Trend from PeraHealth, impressed by the solution's unique and powerful approach to accurately recognizing the physiological status of patients. Correll-Yoder shared that "a deciding factor for us was the fact that the RI captures subtle changes in patient condition since it includes nursing assessments. We expected that this would set the RI apart from the vitals-based algorithm we were using. We were also intrigued with the outcomes that other customers had achieved with RI Trend." Correll-Yoder was alluding to the fact that other hospitals have used the Rothman Index to impact mortality, readmissions, ICU bouncebacks, and unplanned transfers, to name a few.

When implementation began in fall of 2020, NorthBay expected some challenges given it was during the COVID-19 pandemic, however Mother Nature had even more difficulties in store -- historic wildfires disrupted health system operations and dramatically impacted the surrounding patient population. The NorthBay team persevered as they were determined to continue their implementation, soon having a successful go-live in November 2020, followed by a full-scale roll-out in the first half of 2021.

"With our independent structure, we have less bureaucracy, which is one of the reasons we've been successful with the Rothman Index," said Dr. Kaufman. "We didn't require as many meetings and discussions. We realized the RI was all about quality and it had value, so we were able to implement it fairly quickly."

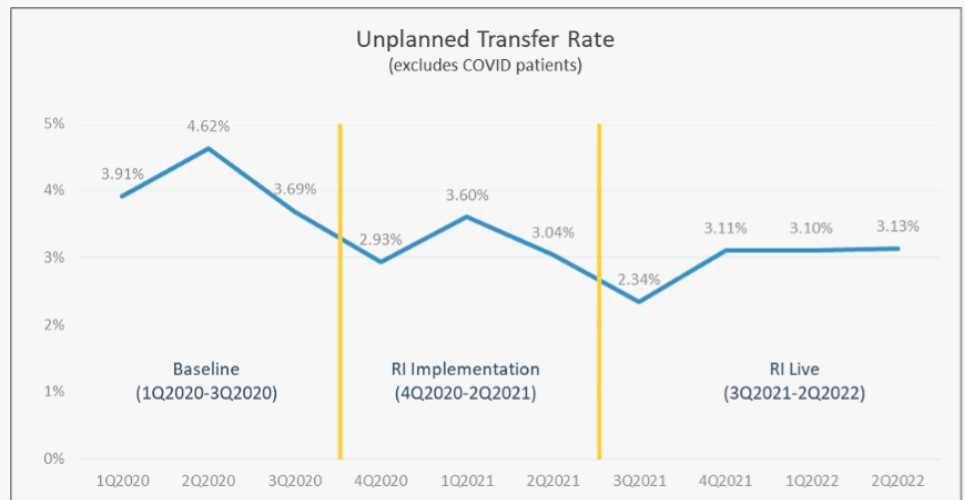
The system had a phased rollout, unit-by-unit, with the ICU nurse rounders serving as the core team of superusers. The clinical team incorporated the RI into their workflows (i.e., daily safety huddles), with specific use cases to recognize deteriorating patients to help prioritize the sickest patients for proactive rounding, enhance discharge readiness process and improve their communication through a common language, supporting the objective view of each and every patient.

Heather Resseger, MSN, RN, CNL, CPHQ, Chief Nursing Officer, said, "We are a Magnet facility that emphasizes education and evidence-based practice and research. It resonates with our culture for our staff to be able to speak the same language using the RI to highlight when we need to do something to prevent an event."

RESULTS

NorthBay nurses respond to all RI alerts and look at RI Trend when doing full body patient assessments; ICU rounders check the RI score and trendlines throughout every shift; clinical managers report out on RI warnings during the daily organization-wide safety call, which includes all executives and managers. Changes in patient condition are identified, communicated among the team, and addressed quickly and efficiently.

RI is also integral as part of the chart review process and used to better analyze hospital metrics. "I do all the code blue analyses, and 70 percent to 80 percent of the time, the RI is already trending and had identified the patients before they coded," said Correll-Yoder. "We had a nice decline in the rate of unplanned transfers to the ICU after our RI implementation -- we are making a difference!"

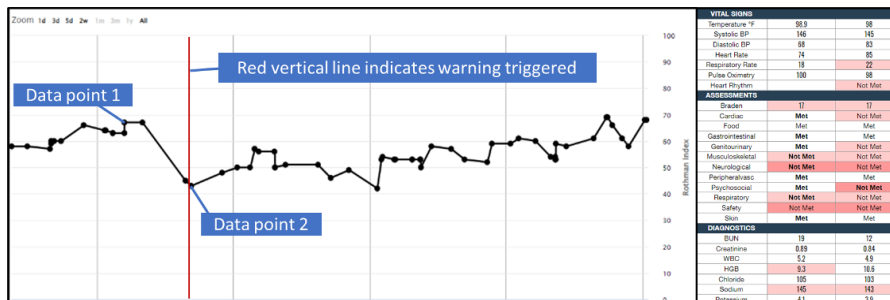


Post implementation of the Rothman Index, NorthBay achieved a 30% reduction in unplanned transfers to the ICU.

Outcomes attributed, in part, to RI utilization include:

- 30 percent reduction in unplanned transfers to the ICU
- Improved frequency and identification of patients at risk in safety huddles
- Overall improvement in team communication using the RI as "common language"

Additionally, NorthBay noted an example of a PeraHealth's ability to serve as a safety net, especially during a time of staff shortages with many novice nurses on the floors: A patient with a chronic cardiac condition began to show signs of deterioration, triggering a medium-level warning. The rounder and the staff nurse quickly used the information brought forward by the RI Trend warning in communication with the physician, resulting in successful intervention for the patient and a few days later, discharge.



The Rothman Index (RI) Trend graph demonstrates its ability to proactively and objectively identify deterioration for the patient. The EMR information is processed in real-time, triggering a warning to signal the appropriate clinician(s) to take action. Each RI score (i.e. data point 1 and 2), when selected, shows the specific, contributing documentation (image on right) to empower the clinician with information to take the most appropriate course of action.

Looking forward, NorthBay hopes to add RI Mobile, which enables clinicians to use mobile devices to identify at-risk patients while on-the-go with alerts and data coming directly to their devices. Also, the Palliative Care and Case Management teams are beginning to incorporate the RI into their workflow as they continue their phased rollout.