ED doors open wide for more than one year

Hospital Achieves Zero Tolerance for Divert

By Tyler Smith

Once upon a not so very long time ago, the word “divert” produced winces and groans among staff and faculty at University of Colorado Hospital. The offending word, which circulated almost every day, meant the Emergency Department was full and had to turn away ambulances unless they carried patients who were critically ill or severely injured.

From July 2012 to April 2013 alone, the hospital spent nearly 1,200 hours on divert as it struggled with capacity issues and boarded large numbers of inpatients in the Emergency Department. Each instance sent the emergency medical services (EMS) community an unwelcome message best summed up by Lorna Prutzman, RN, MSN, executive director of Cardiac and Vascular Services (CVC), in a June 2011 interview.

“We’re hanging out a sign that says we’re closed for business when we go on divert,” she said. “It’s like we’re 7-Eleven and we say were open 24/7, but we have to close because we have too many people at the counter. We’re saying as a hospital that we can’t take care of the sick and injured and they’ll have to wait until we get back. It could be two hours; it could be 22 hours.”

New view. Fast forward to 2014 and the world has changed. The hospital hasn’t spent a single hour on divert since it opened its new ED in April 2013. The wide-open doors have increased ambulance traffic (an average of 50 arrivals per day in May 2014 versus 35 before the ED move) and changed the way EMS providers view the hospital.

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“The turnaround has been 180 degrees,” agreed Fred Severyn, MD, associate professor of Emergency Medicine at the University of Colorado School of Medicine and co-medical director for the Aurora Fire Department. With the hospital on divert, he explained, emergency rigs had to head to another facility, taking them out of service and forcing another EMS vehicle to cover additional territory during that time.

“Rigs that were out of service put a big strain on city resources,” Severyn said. “Now we’ve established a much more consistent home for EMS at the hospital. They know we can take any patient. We divert no one from the community to other institutions.”

Target zero. The reasons for the 14-month no-divert streak are varied. The new ED, with its additional capacity and revamped

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care-delivery process, has helped the hospital absorb volume increases that in the past would have shut the doors. But there are many other factors, including a much larger and better designed area for ambulance arrivals; additional inpatient beds in AIP 2 and overflow areas to manage patient surges; a Clinical Decision Unit (CDU) for observation patients; and efforts to predict hospital capacity and prepare for heavy volume.

It’s also important that hospital leadership is committed to not simply reducing but eliminating divert hours as part of a larger strategy for managing capacity and building a reputation as the most appropriate stop for patients needing the highest levels of care, said Richard Zane, MD, chair of the Department of Emergency Medicine.

“Divert doesn’t do what we think it does,” Zane said. “When we called it, it didn’t stop ambulatory patients or the critically ill from coming to the hospital. We now understand that divert was never a relief valve for capacity. We’ve taken away something that never was the answer.”

In fact, Zane said, going on divert is “an enormous imposition to the community” that taxes EMS and overloads other hospitals. “It’s our obligation to the community to take our responsibility to stay off divert very seriously.”

As one measure of that commitment, the hospital transferred the responsibility for calling divert from the ED charge nurse and attending physician to Zane and Leeret who, in turn, recognize it’s an organizational priority to keep the doors open. But Leeret acknowledged it’s much easier to do that today than it was before the 2013 expansion, which added scores of new ED exam rooms and inpatient beds.

The hospital later bolstered its capacity, opening a cardiothoracic ICU in the old Neuro ICU; a Temporary Holding Reserve Unit in the former home of the Medical Intensive Care Unit; designating beds in the CVC pre- and post-procedural areas for inpatients; and carving out an eight-bed Surgical Surge Unit from the AIP 2 PACU.

“We have more places to put patients,” Leeret said. On the flip side, the CDU manages the care of ED patients who need more than treat-and-release care, but who have at least an 80 percent chance of discharge within 23 hours with additional evaluation and treatment. In its first year, the 16-bed unit helped the hospital avoid more than 6,800 inpatient admissions while providing patients with appropriate care.

Boarder wars. The ultimate goal is to keep hospital beds open so that the ED doesn’t have to board inpatients, a situation that throws sand in the gears of patient throughput. The relationship between divert and inpatient boarding is evident during the July 2012 to April 2013 period leading up to the new ED opening. The hospital accumulated nearly 90,000 boarding hours, which in turn led to the regular calls for divert.

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“This is consistent with national experience which shows that the only variable which correlated with ambulance diversion was inpatient capacity,” Zane said.

In the new ED’s first year, the total number of boarder hours fell to a little over 30,000, thanks in part to the additional available beds. But the basic problem remains: inpatient boarders drain resources from the ED. That makes it far more difficult for the remaining providers to treat patients arriving for emergent care in a timely fashion. The ED’s care-delivery process, which is built on assessing patients as they come in the door and routing them to the appropriate level of care, grinds down, and length of stay in the ED increases. Leeret said inpatient nurse managers have sent staff to shore up resources in the ED when there are boarders, but that is not a permanent fix.

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“We’re trying to do a better job of predicting what will happen on a given day and bring that to hospital administration to address earlier,” she said.

**Crystal ball gazing.** The hospital has long held daily capacity management meetings for hospital managers and nurse managers to discuss and plan for anticipated admissions and discharges. But those discussions center on what is already in the works for a given day and figuring out how to respond. The new approach is to predict demand, based on the surgical schedule for the week and historical data from other admission sources, including the Access Center, the CVC, the GI Lab, and the ED.

“Overcapacity is a perfect storm,” Leeret said. “No one thing puts us into a situation where we board inpatients. But if we look at the day of the week by individual admission source and our historical experience, and the week’s surgery schedule, we have a better chance of seeing the wave coming.”

Justin Emerick, a process improvement consultant for the hospital, has developed a modeling tool based on the surgical schedule and historical data from other admission sources that predicts the hospital’s census up to five days in the future. It’s been up and running for a little more than a month, and hospital managers use it at the morning capacity huddles, he said.

The tool is not perfect, Emerick said. On the one hand, the surgical schedule offers a very reliable roadmap for capacity planning. “We know the relationship between what’s on the schedule and what will actually happen,” he said. Historical data, on the other hand, is suggestive but uncertain. Past experience might indicate that demand for beds tends to increase on a certain day and a certain time, but there is no hard-and-fast way to know how many patients will come through the Access Center or the ED or other avenues on a given day.

Still, Emerick says his analysis shows that 80 percent of the time, the model’s five-day prediction of capacity varies from what actually occurred by 10 percent or less.

“We’re very confident in our one-day prediction,” Emerick said. “We’re trying to get to the point where we can say we’ll be full in two days. That would mean we wouldn’t be racing to get nurses in from the float pool or to scramble to staff appropriately – up or down.”

Despite its limitations, the model has been a help, said April Koehler, RN, nurse manager of the ED. “We go to capacity meetings knowing at 7 a.m. if we’ll be boarding patients in the ED,” she said.

**Ahead of the curve.** Zane said predictive modeling is essential to distributing resources efficiently and redesigning care delivery. But the hospital has a long way to go in analyzing the factors that contribute to overcapacity and increase the hospital’s risk of going on divert. He envisions a day when front-line providers get instantaneous data on length of stay per patient, number of patients seen per hour, their acuity, and so on.

“That would allow us to identify the chokepoints and address them in real-time,” Zane said. “Today, we suspect why they occur, but we can’t know for sure without the analytics.”
In Zane’s view, the hospital has no choice but to learn how to sharpen its view of patient ebb-and-flow if it is to become a top-tier academic medical center. The “best in class” institutions, including Mayo, Geisinger, Virginia Mason, Intermountain Healthcare and others, collect data that is “truly actionable” and allows providers and administrators to respond to patient surges before they produce gridlock, he said.

“These institutions have shown dollars returned in multiples, from efficiencies gained and waste exposed,” Zane said.

So even if the word “divert” is forever banished from the hospital’s vernacular, the road to further improvements stretches ahead.

“The work will never be done,” Zane said. “We are proud of the progress we have made, but the hard part is sustaining the changes and continuing to innovate. Now is the time that we have to be truly creative.”