

ICU physicians BELA PATEL, MD, *and* KHALID ALMOOSA, MD



Unnecessary patient days in the 16-bed MICU during 31-day test period

Reason for Extra Day	Number of Days
Delay to extubation.....	3
Adverse drug event or oversedation.....	4
End-of-life discussion.....	21
Awaiting procedure.....	20
Awaiting imaging.....	2
Awaiting other test or results.....	2
Awaiting consult.....	7
Total:	59

Staff at Memorial Hermann are uncovering waste in the system and addressing it. Drs. Bela Patel and Khalid Almoosa are part of a team rooting out waste in the ICU — saving time, energy, and money, while also improving care and the patient experience.

Finding and testing tomorrow's health care solutions

While politicians and other public figures debate whether or not there is waste in the US health care system, an energetic improvement team in Houston is moving past the rhetoric to uncover waste in their own institution. Using the IHI Hospital Inpatient Waste Identification Tool — a tool recently developed and tested by IHI with support from the Health Foundation in the United Kingdom — this team from Memorial Hermann–Texas Medical Center is not only identifying waste, but quantifying it as well. The data reveal surprising waste and opportunities for greater efficiencies.

The Waste Identification Tool — developed through two cycles of research and development at IHI — is designed to provide a snapshot of actual and potential areas of waste within a hospital, as identified by front-line clinical staff. Initially tested by eight hospitals, six in the United Kingdom and two in the US (including Memorial Hermann), the tool includes five modules that focus on identifying waste in inpatient wards, patient care, diagnosis, treatment, and from the patients' perspective.

Seeing Things in a New Way

IHI Director Katharine Luther is working with Memorial Hermann as they use the Waste Identification Tool. “The tool helps you see things you might not see, or might not see as quickly,” she says. For example, the Waste Identification Tool revealed early on that a new type of catheter was resulting in a higher rate of complications. “I think the tool

helped us recognize this earlier than we might have otherwise.” The hospital discontinued use of the catheter after only 18 days.

Luther says that the organization is using the Waste Identification Tool to create snapshots across the medicine service line. Waste categories already identified and evaluated include repeat reference testing for known conditions (such as HIV); repeated labs on transfers from the Emergency Center to the Medical ICU (MICU); redundant blood panels with arterial blood gas (ABG) testing in the MICU, particularly on patients being weaned from a ventilator; end-of-life decision making in the MICU; and inefficient care processes for certain patient populations such as those with sickle cell anemia or non-cardiac chest pain.

Waste in the ICU

Bela Patel, MD, Director of Critical Care Medicine, decided to use the tool every day for a month to measure waste in the 16-bed MICU. The tool does not invite users to make value judgments about care delivery; rather it provides clear, standardized definitions of how and what to measure, such as patients who experience adverse events, infections, unnecessary hospitalizations, or delays in care (all forms of waste). The 31-day test

revealed that there are two days of wasted bed space in the MICU every day. “Waiting for a tracheostomy to be placed is costing us 20 days a month,” says Luther.

Using the Waste Identification Tool, staff have estimated that reducing unnecessary arterial blood gas testing in the MICU can save \$15,000 a year. This is a drop in the financial bucket compared to two other projects the hospital is targeting, thanks to the Waste Identification Tool: streamlining evaluation and treatment of patients with non-cardiac chest pain, with an estimated \$400,000 annual savings; and standardizing treatment plans for patients with sickle cell anemia, with an estimated annual savings of \$450,000.

Roger Resar, MD, IHI Senior Fellow, says that Memorial Hermann is using the tool exactly as it is intended. “The tool creates a kind of bridge from the snapshot of waste in the system to the financial discussion where you decide if it is a big enough problem to resource. The staff looked at waste in the care of chest pain and sickle cell patients and discovered a huge amount of money can be saved. Now they know they have to work on these processes. That's exactly what the tool was meant to do.”

“IHI has made a significant investment in R&D and our team has developed a highly reliable process to rapidly identify and test promising innovations. Our goals are to develop innovations internally and to celebrate and spread effective new approaches to improving health care wherever they have been developed.”

DON GOLDMANN, MD, IHI SENIOR VICE PRESIDENT