Blood Test Can Help Identify Risks Of Death

A simple, inexpensive blood test performed on trauma patients upon admission can help doctors easily identify patients at greatest risk of death, according to a new study by researchers at Intermountain Medical Center in Salt Lake City. The Intermountain Medical Center research study of more than 9,500 patients discovered that some trauma patients are up to 58 times more likely to die than others, regardless of the severity of their original injuries.

Researchers say the study findings provide important insight into the long-term prognosis of trauma patients, something not previously well understood. "The results were very surprising," said Sarah Majercik, MD, an Intermountain Medical Center surgeon and trauma researcher, whose team discovered that a tool developed at Intermountain Medical Center, called the Intermountain Risk Score, can predict mortality among trauma patients. Dr. Majercik will present the findings at the 27th annual Scientific Session of the Eastern Association for the Surgery of Trauma in Phoenix.

The Intermountain Risk Score is a computerized tool available to physicians that combines factors like age, gender, and common blood tests known as the complete blood count (CBC) and the basic metabolic profile (BMP) to determine an individual's mortality risk. All of the components of the tool have been helpful in evaluating individuals with medical problems like heart failure or chronic pulmonary disease. But until now, the benefit of the tool had not been tested for trauma patients hospitalized due to an accident or traumatic injury, rather than an underlying condition.

"As surgeons, we don't often use all of the CBC results in evaluating a patient who needs surgery for a bleeding spleen or after a motor vehicle accident, said Dr. Majercik. "There are certain values, such as hemoglobin, hematocrit, and platelets that we scrutinize closely as part of good clinical care, but then other parts, such as the red blood cell distribution width (RDW) that we pay no attention to at all in the acute setting. These factors are generally overlooked, even though they are part of the CBC that every trauma patient gets when he or she arrives in the emergency room."

Data from the Intermountain Risk Score tool will allow physicians to take additional precautions with patients who are at greatest risk, and also give doctors important information to consider when talking about prognosis with patients and families. Dr. Majercik and her colleague Benjamin Horne, PhD, director of cardiovascular and genetic epidemiology at the Intermountain Medical Center Heart Institute, reviewed the cases of 9,538 patients who had been admitted to the hospital with trauma during a six-year period. Using the tool, the Intermountain Medical Center categorized patients according to high, moderate, and low risk levels. Some surprising findings emerged:

- High-risk men were nearly 58 times more likely to die within a year than low-risk men. Men with a moderate risk were nearly 13 times more likely to die than those with low risk.
- High-risk women were 19 times more likely to die within a year than low-risk women, and women with moderate risk were five times more likely to die than those with low risk.

"Some risk factors will be already apparent for physicians, but others aren't intuitive," said Dr. Horne. For example, a trauma patient may look completely healthy apart from his or her injury. But if the Intermountain Risk Score tool uncovers an irregular red blood cell distribution width — a common sign of anemia — that will increase his risk of dying.

"It's a standard part of the CBC test, but it's not usually taken into consideration when treating a patient with injuries," said Dr. Horne. "Based on the findings of our research, it's something that should be looked at as part of the care plan model." Dr. Majercik and Dr. Horne believe their research will give physicians a simple, fast way to better understand their patients' condition, and may lead to new treatment approaches that could reduce the risk of death.

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