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THE INFORMED PATIENT By LAURA LANDRO



Hospitals Combat an Insidious Complication

Delirium in ICU Patients, Once Thought Temporary, Can Inflict Lasting Damage October 17, 2007; Page D1

Gravely ill with pneumonia and sepsis, Sarah Beth Miller was heavily sedated and on a ventilator for 10 days in 2002. She suffered several complications in the intensive-care unit -- including delirium, a severe state of temporary confusion and disorientation that frequently occurs in critically ill patients.

But even after she returned to work, Ms. Miller, now 54 years old, was unable to concentrate or organize her thoughts. She had to retire early from her job as a manager at BellSouth. Tests showed her IQ scores had fallen to 110 six months after her ICU stay from 145 before her hospitalization, and an MRI scan showed atrophy in her brain similar to what might appear in an 80-year-old woman with dementia, the progressive and permanent loss of memory and cognition.



A test of patients who copied a geometric design six months after an ICU stay shows impairment in some who otherwise had no detectable cognitive deficits. At top left is the original figure. Figures from left: From an unimpaired 69-year-old; A moderately to severely impaired 89-year-old; A severely impaired 72-year-old

"I was a highly functioning individual, but when I went back to work the first day, I had to call in one of my associates and ask her what I was supposed to do," says Ms. Miller, who has since participated in research on delirium at Vanderbilt University in Nashville, Tenn., where

she was treated.

Delirium was once thought to be an unavoidable complication without lasting effects, but a growing body of evidence indicates that the condition can have devastating long-term consequences -- and that it is preventable with simple changes in care. Researchers are exploring the links between delirium and long-term mental impairment, including whether hallucinations and delusions that happen during delirium can cause a form of posttraumatic stress disorder. Studies also show that delirium prolongs hospital stays, increases treatment costs and poses a threefold risk of death within six months for patients in the ICU, compared with patients without delirium.

Now, hospitals are turning to new strategies to prevent delirium

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from happening in the first place -- and to reduce its duration and severity when it does. That means sedating patients less deeply; weaning them more quickly from ventilators; removing catheters, tubes and restraints faster; and training nurses and other staffers to quickly assess patients' mental state. VHA Inc., a purchasing cooperative of 2,400 nonprofit hospitals and other health-care institutions, is sponsoring a delirium-prevention program as part of an effort to improve care in the ICU.

While patients on ventilators have traditionally been kept heavily sedated at all times to keep them comfortable, experts say it is now clear that heavy sedation can also trigger or exacerbate delirium, so they must strike a balance between easing the suffering of critically ill patients and preventing further harm. One of the most important prevention strategies is the "wake up and breathe" protocol, which calls for turning off sedation temporarily and allowing patients to wake up so their state of mind and comfort can be determined, and then unhooking them from the ventilator to test their ability to breathe on their own.

Patients and families should be aware of the potential for delirium, and ask hospital staffers what protocols are in place to recognize, prevent and treat it, says Wes Ely, a pulmonary and critical-care specialist and founder of Vanderbilt's ICU Delirium and Cognitive Impairment Study Group. "When someone is in the hospital, it is common to get confused and delirious, but the tradition in medicine has been to say, 'Don't worry if Grandma or Grandpa is confused, it's no big deal,'" Dr. Ely says. "But it is a major public-health problem that has to be addressed."

Preliminary evidence shows that each day spent in a delirious state increases the risk of long-term cognitive impairment by 35%. While many factors can contribute to such impairment, several studies have shown links between delirium, declining mental function and eventual dementia, says Dr. Ely. Patients can end up "in their own little hell," he says, where they have trouble thinking straight or doing simple tasks like balancing a checkbook. The causes of so-called acquired long-term cognitive impairment after ICU stays are being investigated in two large studies funded by Veterans Affairs and the National Institutes of Health.

The efforts are part of a wider movement to improve care in the ICU. Dr. Ely says studies show that 60% to 80% of ICU patients on ventilators experience delirium. Older patients are at higher risk because they often have multiple risk factors such as high blood pressure, congestive heart failure, infections and diabetes.

But delirium can also occur in younger patients during medical emergencies or surgery, or be triggered by drug abuse, illness, severe pain, or even prolonged lack of sleep. When a patient is conscious, the symptoms of so-called hyperactive delirium are more obvious, such as agitation, inattention and combativeness. However, hypoactive or "quiet" delirium in older patients or those heavily sedated such as Ms. Miller isn't recognized as much as 85% of the time, because it is invisible unless actively monitored, Dr. Ely says.

Many hospitals are turning to research conducted by Dr. Ely and

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colleagues at Vanderbilt, who make resources for families and hospitals available free on the group's Web site, [icudelirium.org](http://icudelirium.org), including special "confusion assessment" questionnaires and instructional videos, including one featuring Ms. Miller. To assess patients who are conscious, for example, nurses may ask them to copy a geometric drawing or answer simple questions like "are there fish in the sea?" Families can help alert nurses and other staffers to changes in a patient's mental state, and talk to patients frequently to orient them, reminding them what day it is and where they are, for example.

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At VHA member Centra Health in Lynchburg, Va., 23% of the patients in its medical ICU and 18% in the surgical ICU were delirious in 2001; by educating staff, families and patients and following the "wake up and breathe" protocols, the hospital was able to virtually eliminate cases of delirium in its medical ICU and cut the incidence of cases today to 1.2% in the surgical ICU.

"In the old way of doing things, we thought it was best for patients to be heavily sedated and medicated so they wouldn't remember anything," says Patty Bumgarner, a nurse and director of critical-care and emergency-care services. While patients will always be medicated to prevent pain, she notes, "research has shown that the less sedation the better." She recalls one overly sedated patient who was so confused that, when he saw nurses moving back and forth on rolling chairs behind their station, he thought someone was cutting their heads off and rolling them up and down the counter.

Key to the effort is getting families involved and making no bones about the fact that the patient is at risk for delirium, without using euphemisms like "confused." Families are also asked to observe patients for signs of disorientation; because sleep deprivation is a delirium risk, staffers and families are urged to let patients have uninterrupted sleep between 11:30 p.m. and 5 a.m.

Another VHA member, Bryan LGH Medical center in Lincoln, Neb., has also all but eliminated cases of delirium over the past two years, training nurses who often weren't aware of the serious long-term risks to use formal measurement tools and scoring methods to assess patients' pain and their level of sedation. "We did find that there was more delirium than we were recognizing," says Denise Moeschel, the hospital's clinical care data coordinator.

At Lakeland Regional Hospital in Lakeland, Fla., staffers from hospital departments including pharmacists formed a prevention team in October 2006. They launched a formal protocol that included keeping patient rooms quiet and even providing back rubs to help patients relax.

Troy Batterton, critical-care pharmacist at Lakeland, says one problem is that hospitals often suspend patients' regular prescription drugs when they are hospitalized. This can make the chances of delirium worse, especially if they are on medications for sleep, depression, smoking cessation or pain management and suffer from withdrawal. Then drugs used to treat those symptoms can "push patients into delirium," Mr. Batterton says. "We try to keep patients on what they have been on and try not to give them too much of something else."

While no drugs are approved specifically for delirium, hospitals use medications such as the antipsychotic Haldol, which can have difficult side effects of its own such as disorders of the heart's rhythmic beating. Vanderbilt and other hospitals have conducted clinical trials of another drug, Precedex, and are evaluating whether it has fewer side effects and can relieve agitation without causing excessive sedation, Dr. Ely says.

Ms. Miller, the Vanderbilt patient, says recent tests show her IQ has risen slightly to 118, but it is far from where she was before her illness. She has trouble with short-term memory and still recalls nightmares she had in the hospital. She has started to work with a program to teach disabled children horseback riding. "It's one thing that helps calm me down," she says.

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