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**HEALTH CARE**

## **Sepsis project raises bar for ICU Collaborative**

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It's a nightmare scenario that is all too common: A patient comes into the hospital with an infection, or with a serious injury prone to infection, and instead of getting better, plunges into an ever-deeper crisis culminating in organ failure and even death.

It's called sepsis, and it involves the body going into a kind of "overdrive" in response to infection, leading to symptoms such as fever, vomiting, diarrhea, rapid heart rate and breathing, very low blood pressure, altered kidney or liver function and confusion.

Every year, about 750,000 patients in U.S. hospitals develop severe sepsis, according to the Institute for Healthcare Improvement, in Cambridge. At least 210,000 die from it. And due to demographic trends and aggressive medicine, the numbers are rising.

Since 2002, an international effort called the Surviving Sepsis Campaign has been working to improve hospitals' management of sepsis, aiming to reduce sepsis mortality by 25 percent by 2009. Now, through the Rhode Island ICU Collaborative, local hospitals are joining that effort.

The collaborative, launched three years ago by the Rhode Island Quality Institute and the Hospital Association of Rhode Island, has already succeeded in reducing catheter-related bloodstream infections and ventilator-associated pneumonia – two major issues in ICUs.

But sepsis is the biggest killer in non-cardiac ICUs, and it accounts for roughly one in five ICU admissions to begin with. So while the ICU Collaborative's work so far is already credited with saving lives, this new project could make an even bigger impact.

Rhode Island has a head start in this project because one of the Surviving Sepsis Campaign's leaders, Dr. Mitchell M. Levy, is based right here: He heads Rhode Island Hospital's medical intensive-care unit and is a professor at Brown University's Warren Alpert Medical School.

Under Levy's leadership, the Rhode Island Hospital MICU has been tracking sepsis patients and applying the campaign's guidelines for about four years, and while he said he's not ready to share data, he did say the effort has reduced sepsis mortality at the hospital.

Yet it's not easy work – and in fact, a study coauthored by Levy that was published last week in the Journal of the American Medical Association shows how hard it can be.

The study looked at the campaign's work in Spain, one of about 30 participating countries. Starting in early 2006, doctors and nurses in 59 hospitals' ICUs,

emergency departments and wards were trained to better identify and treat sepsis patients, following two “bundles.”

The study found that at the outset, only three of the 10 “bundle” items were done more than half the time. And while the campaign improved compliance and reduced mortality from 44 to 39.7 percent, a year later some of the “bundle” items were being neglected just as much again.

“So the message is, we have a long way to go, and we can do much better,” Levy said.

Rhode Island Hospital’s experience has been similar in some ways, Levy said. Here too, some widely accepted practices were still not always followed – such as doing a blood culture but also starting the patient on broad-spectrum antibiotics while the infection is identified. And here, too, it turned out that flagging at-risk patients wasn’t as tricky as some might think.

As with the Spanish project, Rhode Island Hospital’s effort has gone beyond the ICU itself, Levy said, because 85 percent of sepsis patients in the MICU are admitted through the ER.

That’s also the approach that the ICU Collaborative will be taking. For the last two months, the hospitals have been setting up teams that include ER and ICU doctors and nurses, and they’ll not only train together, but also communicate with their colleagues through a listserv, said project manager Margaret Cornell, of Quality Partners of Rhode Island.

Levy, of course, is a key player in the effort, along with Dr. Sean R. Townsend, a pulmonologist at Rhode Island Hospital and Brown professor who is also involved in the Surviving Sepsis Campaign.

And while joining the initiative at this point means reducing sepsis mortality by 25 percent by next year isn’t feasible (the collaborative is aiming for 15 percent by August of next year), the flip side is that the hospitals can learn from others’ experiences, Cornell noted.

So far, the collaborative has sponsored two educational conference calls for the teams, Cornell said, and in September, it will host a half-day session focusing on how the quality improvement model – a specific approach that involves planning, implementation, reviews and revisions – can be applied to the sepsis effort.

Asked how he expects smaller hospitals to do compared with Rhode Island Hospital, Levy said the results will likely be harder to measure because their numbers will be much smaller; his ICU has 100 to 110 admissions per month, including 25 to 30 percent with sepsis.

At the same time, he added, the sepsis bundles are designed “so they could be practiced anywhere in the world,” so every single element can be administered at any hospital.

But given the results of the Spanish study, can we expect the improvements to stick?

“Sustainability is a whole science in and of itself,” Levy said. “Protocol fatigue is a much-recognized phenomenon; we target a goal, we achieve the goal, and then

we relax – it's sort of human nature." That's why Rhode Island Hospital periodically does refresher sessions, he said, "just to remind us why we're doing this." •

*Additional information about the Rhode Island ICU Collaborative and its founding is available from the Hospital Association of Rhode Island at [www.HARI.org](http://www.HARI.org).*