HEART-SMARTS: High school biology students from Hanover, N.H., and Hartford, Vt., got a chance in May to use a defibrillator in a cardiac simulation lab, to feel a real pig’s heart, and to hear a presentation by Dr. Alan Kono, a DHMC heart-failure specialist.

Initiatives show that the devil is in the details

Sometimes the best way to improve health care is not by prescribing fancy drugs or buying expensive equipment, but simply by paying attention to details. That seems to be the bottom line of two successful infection-reduction efforts at DHMC and of another that’s under way.

In 2003, Melissa Bennett, nurse leader of DHMC’s hematology-oncology special care unit (HSCU), set out to reduce infections among bone-marrow transplant (BMT) patients. She and her colleagues had noticed that a lot of BMT patients had to have their central lines removed because of infections. A central line is a catheter placed in a large vein, usually in the chest, instead of in a peripheral artery, such as in the arm.

“For this patient population,” says Bennett, “it is a huge problem not to have a central line because we give them high-dose chemotherapy through it, blood products, antibiotics, all sorts of things, along with the actual stem-cell reinfusion.”

Lines: Bennett found that 60% of BMT patients had to have their lines taken out. This translated into 17 bloodstream infections for every 1,000 catheter-days. Though they could find no national benchmarks for central-line infections in BMT patients, Bennett and her colleagues in the HSCU and interventional radiology—where the lines are inserted—agreed that they could do better.

Over the next two years, with the support of a quality improvement grant through DHMC, Bennett and fellow nurses Judy Ptak and Debra Hastings examined every aspect of central-line implantation and maintenance. They found that often patients weren’t getting the right kind of line because of miscommunication between the unit and interventional radiology. So they created a standard ordering system with common language.

They felt that dressing and maintenance procedures could be improved, too, so they designed a new protocol and trained staff in it. They also added an antimicrobial dressing that costs a mere $7.

These interventions were neither high-tech nor expensive, but they were extremely effective. “The goal,” explains Bennett, “was to get our catheter-related bloodstream infection rate less than 10 per 1,000 catheter-days. In fact, there has been just one in a year and a half.

Word of the HSCU improvement project spread quickly throughout DHMC and inspired other units to take similar action. While Bennett’s project was gaining momentum, physicians and nurses in the intensive care nursery (ICN) began working to reduce catheter-related bloodstream infections in their unit. They focused on such basics as regular and thorough hand-washing among staff and patients’ families, encouraging breast feeding (which strengthens babies’ immune systems), reducing the number of intravenous connections on a central line, and, whenever possible, shortening the length of time a line remains in.

The ICN gauged success by the number of consecutive days without a single infection in babies weighing less than three pounds or born more than 10 weeks early.

Run: “Previously, the average [run] had been around 10 to 15 days,” says Dr. William Edwards, ICN section chief. “When we started the project, after the first few months, we began to see runs that were up in the 30 to 40 days. Then between May and mid-December [2005], we had a run of over 200 consecutive days without an infection in this group of babies.” The ICN’s goal was to halve the infection rate for this group, but they far exceeded the goal, reducing the rate from 40% to 6% (for more on ICN quality improvements, see the feature starting on page 28).

Another bloodstream infection reduction initiative is now...
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“I'm still working with the Cardiothoracic Intensive Care Unit, of which Rassias is the medical director, and the Coronary Care Unit. Although in the past the ICU had central-line infection rates safely below national benchmarks, in 2005 its rates rose. So far, 2006 is tracking well but it will be several months before Rassias and Mroz can determine if their efforts are having an effect.

Yet the potential for making a difference is great—since hospital-acquired infections affect approximately 2 million people annually, according to the Centers for Disease Control and Prevention, and such infections can be avoided.

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