Change consultants often share an urban myth about boiling a frog. If you drop a frog into a pot of boiling water, it will jump out. But if you drop a frog into a pot of cool water and then slowly raise the temperature to boiling, it will not notice until it is too late. The lesson? Don’t ignore the gradual change happening around you because, over time, it becomes dramatic change.

I had a similar feeling when reviewing the technologies in ECRI Institute’s 2015 Top 10 Hospital C-suite Watch List. In the last decade, information technology topics and breakthroughs have dominated the headlines. But somewhat behind the scenes, clinical medical technology evolved, too. Our Top 10 list for 2015 highlights some of these important developments, which could lead to advances in the next five or 10 years that save thousands of lives and improve the quality of life for millions.

As health care leaders, we spend so much time thinking about the broken parts of our health care system that perhaps we miss the amazing discoveries and exciting opportunities that new medical technology may soon bring.

**Germ Killers on Wheels**
The Ebola outbreak was one of the biggest health care stories of 2014. While the urgency of the crisis has somewhat abated, it highlighted an important weakness in our current health care system — infection control. In a survey of acute care hospitals, the Centers for Disease Control...
and Prevention found that on any given day, one in 25 hospital patients has a health care-associated infection. It also estimates that these infections cause 75,000 deaths each year. While Ebola represents more of a potential, rather than actual, threat in the United States, we already have a crisis if 75,000 people are dying each year from more mundane, common infections like methicillin-resistant Staphylococcus aureus and Clostridium difficile. For this reason, the No. 1 technology on our C-suite watch list is high-tech cleaning machines, also known as disinfection robots.

Unlike the already common surgical robots, these new robots perform the less glamorous task of disinfection. Several types of robots are available, but all of the devices we highlight are used to clean a hospital room after patient discharge. Two of the systems use ultraviolet light. Once positioned in a room, the robots are activated remotely and emit UV light to disinfect all surfaces in the room.

A third robot uses a different methodology. Like the other two systems, it is positioned in a room after patient discharge and must be activated remotely, but it releases a 35 percent hydrogen peroxide solution into the air followed by aeration to disinfect surface areas.

While these systems alone cannot eliminate HAIs, they offer a more intensive approach to disinfection. Coupled with other techniques like better hand washing and the use of antimicrobial materials, disinfection robots offer real promise in reducing the number of deaths each year related to HAIs.

New Obesity Fighters
Another area of technological development that made our list is a trio of new minimally invasive devices to combat obesity. According to the CDC, nearly 35 percent of U.S. adults are obese, which puts millions of people at risk for obesity’s health consequences. While bariatric surgery is an effective option for many, it is not necessarily a practical or suitable alternative for everyone. In addition to a growing number of emerging drugs to treat obesity, there are now several devices on the forefront of treating obesity.

The first technology uses low-level electrical pulses to block vagus nerve signals in the abdomen. Somewhat like a pacemaker, this device is implanted under the skin and is wirelessly programmed by a clinician.

This technology represents an important step on the road to an artificial pancreas.

Blocking vagus nerve transmissions reduces appetite, increases satiety and cuts calorie uptake by limiting secretion of digestive enzymes.

Another technology uses two balloon-like devices that are filled with saline and inserted into the stomach. The balloons restrict the amount of food intake and increase the feeling of satiety. This outpatient procedure is done under conscious sedation with clinicians inserting and removing the balloons through the mouth.

The third technology involves placing an impenetrable sleeve into the small intestine. The sleeve is intended to act as a barrier to food absorption, thus lowering caloric intake. Though this procedure requires general anesthesia, the sleeve is delivered through the mouth using a specialized catheter delivery system.

The pacemaker-like device was approved by the Food and Drug Administration in January, and the latter two technologies are in late-stage development. Given the range of obesity-related illnesses and the number of adults suffering from them, these new devices could improve the overall health and quality of life for millions of adults.

Revolution in Diabetes Care
Finally, the watch list envisions a better future for those with type 1 diabetes, many of whom have difficulty maintaining optimal blood sugar levels and require intensive management. Not only does this burden patients and caregivers, it also puts these patients at increased risk of potentially life-threatening hypoglycemia.

Clinical advances have led to a new technology that combines an insulin pump with high-tech glucose sensors and software that stop insulin delivery when glucose levels become too low. The goal is to prevent significant and dangerous hypoglycemic events in the first place. This technology represents an important step on the road to an artificial pancreas and brings the vision of a new era for diabetes management into focus. If and when a true artificial pancreas becomes reality, it will signal a switch from evolution to revolution in diabetes care.

Eyes Open to Change
The recent changes in the business of health care have been enormous and disruptive. They have led to worry and frustration and likely rightly so. Change is not easy for anyone or any institution. However, like the boiled frog, we may be overlooking something else that is happening around us. Advances in medical technology on many fronts are closer than ever to improving the quality of life for millions of people. The oft-repeated refrain that health care is troubled and broken is not the whole story. We just need to look over the horizon a bit, where the future is still bright.

Anthony J. Montagnolo, M.S. (amontag@ecri.org) is executive vice president and chief operating officer of ECRI Institute, Plymouth Meeting, Pa.