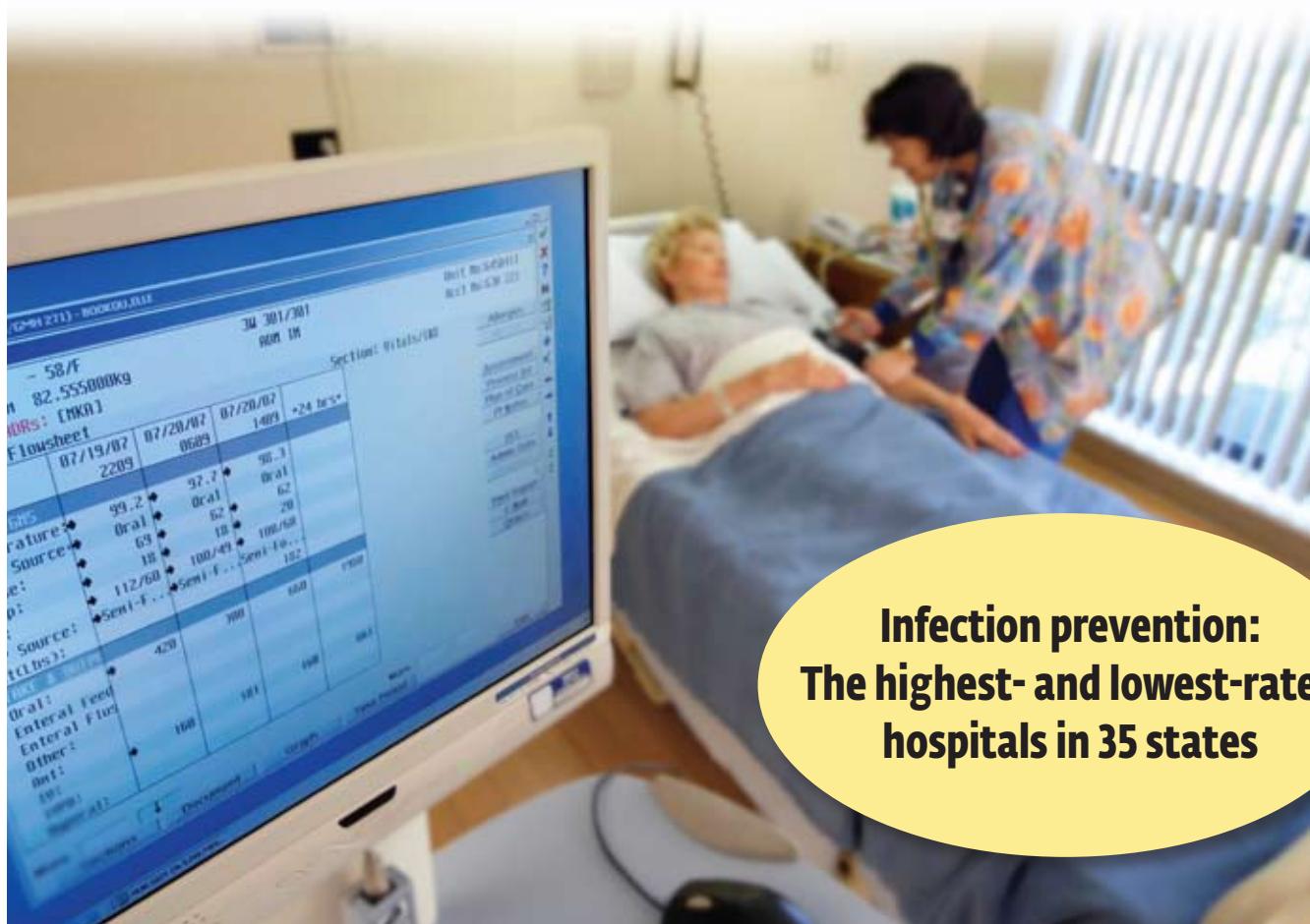


SPECIAL REPORT

Deadly Infections

Hospitals can lower the risk, but many fail to act



**Infection prevention:
The highest- and lowest-rated
hospitals in 35 states**

December 2011

Dear Employee,



Consumer Reports is excited to work with the National Business Group on Health and your employer to bring you some of the most important health stories we have recently published. For 75 years, Consumer Reports has published information that helps consumers make better choices about the things they buy. We think it's time that consumers approach health care in the same way. There are many things you can do to get better care. In these reports, we will share several of the most important ones.

The first article focuses on hospital infections, especially the most deadly kind: bloodstream infections caused by central-line intravenous (IV) catheters. Central lines can be life saving medical devices, providing needed medications, nutrients, and fluids to hospital patients. But they can also spread life-threatening infections when hospitals don't take the proper steps to keep the catheters clean.

Tens of thousands of people die of central-line infections every year. But you can help prevent them by avoiding hospitals with high infection rates, insisting that health-care workers wash their hands, and reminding doctors to remove devices like IVs and bladder catheters that you might no longer need.

Starting next year, hospitals will be required to publicly report more information on hospital infections. That will provide consumers with even more information when choosing hospitals. It might also motivate hospitals to work harder at preventing infections. We will include that information, when it becomes available, in our updated hospital Ratings.

Here at Consumer Reports we take the same approach to health care that we do to other kinds of products and services. Start with our own independent experts. Present meaningful comparisons along with examples from real people. Focus on safety. Give consumers simple tips to avoid problems and improve results.

We look forward to hearing any thoughts you have about this article or others you will see in the future. Contact us by sending an e-mail to HealthImpact@cr.consumer.org.

Sincerely,

A handwritten signature in black ink, appearing to read "John Santa".

John Santa MD MPH
Director, Consumer Reports Health Ratings Center

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SURVIVOR Carol Bradley, of Nashville, Tenn. (with her new dog, Teyla), developed infections after surgery for stomach cancer.

Deadly infections

Hospitals can lower the risk, but many fail to act

ALTHOUGH SOME HOSPITALS are doing an excellent job of preventing hospital-acquired infections, others are not, according to our recent analysis.

We focused on one of the most dreaded types of infections that occur each year in U.S. hospitals. They are bloodstream infections introduced through the large intravenous catheters that deliver medication, nutrition, and fluids to patients in intensive care. There are about 80,000 of these so-called central-line infections each year, and up to a quarter of people who develop them die as a result.

Even for those who survive, a central-line infection means weeks or months of debilitating treatments and side effects.

"I certainly did not expect to go through the torture that happened to me," said Carol Bradley, a registered nurse from Nashville, Tenn., who developed several types of infections, including a bloodstream infection, after surgery for stomach cancer in August 2008. As a result, she spent about three weeks in intensive care hooked up to feeding and breathing tubes and central-line catheters, and more than a year on antibiotics.

For decades, doctors considered

central-line infections an unavoidable risk of intensive care. But determined reformers have now shown that hospitals can cut their infection rate to zero or close to it. Want proof? See our list of hospitals on page 7 that report zero central-line infections.

Citizen activists across the country, including those working with Consumer Reports, have helped to enact laws in most states forcing hospitals to publicly disclose their infection rates as a first step, it's hoped, toward improving them. Many of the states have made that information publicly available. And as part of the Affordable Care Act, all hospitals must

now report infection data to the Centers for Medicare and Medicaid. That data is expected to be made public sometime in 2012 and will be incorporated into our future Ratings.

For our analysis, we compared central-line infection data for intensive-care units at over 1,000 hospitals across the country. (Among the nation's roughly 5,000 acute-care hospitals, about 3,300 provide intensive care, but in many, there wasn't

individual hospitals. The Leapfrog information, which the hospitals submit voluntarily, includes rates of central-line infections in ICUs. Our analysis adjusts for the fact that Leapfrog and the states have data from varying mixtures of ICUs, such as cardiac, medical, pediatric, and surgical.

Central lines: Boon and peril

Most adults have probably had a standard intravenous line at some point in their lives. Central lines are nothing like those.

"When people are as sick as they are in intensive care, you need a way to get things into them in large volumes, and very fast, such as nutrition, fluids or a blood transfusion," explained John Santa, M.D., director of the Consumer Reports Health Ratings Center. "If you put medication into a central line, it gets into the system much faster than if you put it into a regular IV."

The lines are long, flexible catheters that thread through a large vein that leads to the heart. Unlike regular IVs, which

usually stay in for only a few days, central lines can stay put for weeks or even months. It's not unusual for a patient to have something put into a central line many times a day.

The problem is that every time a doctor, nurse, or medical technician touches that line or the skin surrounding it, or the catheter's dressing is dislodged, there's a risk of introducing bacterial contamination unless the strictest sterile conditions are observed. If that happens, the central line's biggest virtue—the ability to spread its cargo throughout the body quickly—becomes its biggest vice. Bacteria, including the antibiotic-resistant "superbugs" present in most hospitals, can quickly multiply, causing sepsis, an infection of the entire bloodstream.

"Sepsis produces high fevers, rigors—violent shaking chills—and the high fever could induce delirium," said Peter Pronovost, M.D., Ph.D., critical-care specialist at the Johns Hopkins School of Medicine in Baltimore. "Imagine the

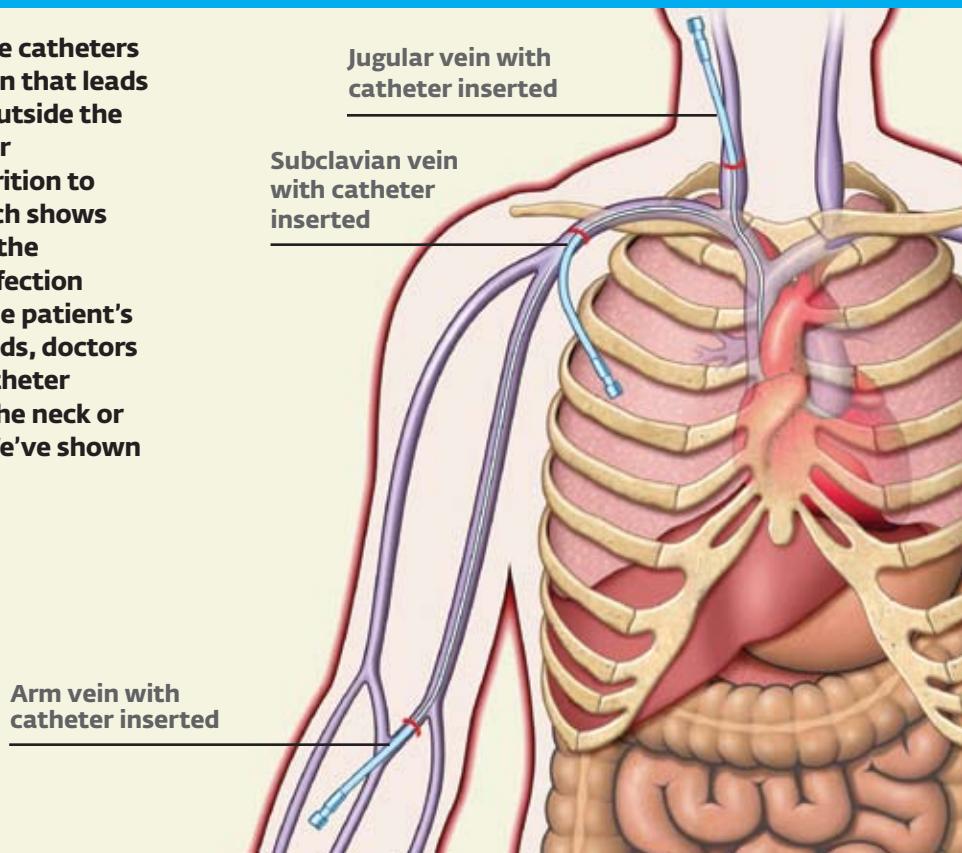
Even the sickest patients can be spared infection.

enough data to yield statistically meaningful results, and many are still not reporting publicly.)

Our information comes from state reports and from the Leapfrog Group, a nonprofit organization based in Washington, D.C., that since 2000 has collected and disseminated quality information on

What's a central line?

Central lines are long, flexible catheters threaded through a large vein that leads to a large blood vessel just outside the heart. They're used to deliver medications, fluids, and nutrition to critically ill patients. Research shows that putting the catheter in the subclavian vein is best for infection control, but depending on the patient's particular condition and needs, doctors may choose to insert the catheter through the jugular vein in the neck or through a vein in the arm. We've shown all three locations here.



worst you ever felt from the flu, multiplied by 10."

Pearl Gelman, was admitted to a Florida hospital in May 2007 with bronchitis symptoms, according to her daughter, Susan Denenberg of Merrick, N.Y. "She couldn't get antibiotics through her arms because the veins were very bad," Denenberg said. "That's why they had to do it through the neck." Later, she said, the hospital called for permission to replace the central line. "She was getting weaker and weaker, and then they told us she had the MRSA," Denenberg said, referring to the superbug methicillin-resistant staphylococcus aureus. "And it was just downhill. She couldn't fight back. She died at the hospital."

The checklist revolution

The way hospitals think about central-line infections has changed in recent years, said James J. Gordon, M.D., chief of infectious diseases at Huron Valley-Sinai Hospital in Commerce, Mich. "If best practices are utilized, the vast majority of line infections can be avoided," he said. Medicare agrees: It no longer pays the extra costs associated with those infections.

One important breakthrough came when Pronovost, at Johns Hopkins, distilled years of research on effective steps in infection control into the unlikely form of a simple five-step checklist. The checklist (see the box on page 6) translated the most effective known approaches into a common-sense series of precautions to follow when inserting, using, or removing a central line.

The steps require equipment no more complex than hand soap, an antiseptic solution, and sterile drapes and garb. Other key steps in preventing infections include giving nurses the authority to make doctors follow all the steps, measuring and reporting infection rates, improving communication and team-

work among hospital staff, and making sure that hospital executives buy into the effort.

Research suggests that those steps can cut infections linked to central lines by two thirds, and save thousands of lives and millions of dollars.

What this kind of experience suggests, said Richard P. Shannon, M.D., professor of medicine at the University of Pennsylvania School of Medicine, is that "all central-line infections have a root cause that can be understood and prevented." Even the sickest patients, he said, can be spared such infection.

Though the solution seems straightforward, it does demand time and attention in the high-pressure environment of an ICU.

What you can do

One important step in trying to avoid hospital infections is looking for a hospital with low infection rates. The table on the

following page lists the highest- and lowest-rated hospitals in the country at preventing bloodstream infections. For details on more than 1,000 hospitals across the country, subscribers can go to www.ConsumerReports.org/Hospital Ratings.

Even if you don't have a choice of hospitals, you can at least see how your hospital performs and, if it's not good, prepare yourself for taking an active role in monitoring infection-control practices. Specifically, patients, friends, and family members should insist that caregivers:

- Wash their hands with soap or an alcohol-based solution before touching a patient. They should also don sterile gloves before touching any catheters and check to see that dressings are in place.
- Follow the Pronovost checklist in cases where a central line is needed.
- Remove devices that enter the body, including central lines and urinary catheters, as soon as they're no longer needed.

DID YOU KNOW?

\$42,000

Average added cost when an ICU patient gets a central-line infection.



VICTIM'S DAUGHTER Susan Denenberg, of Merrick, N.Y., holds a picture of herself with her mother, Pearl Gelman, who died after contracting an infection that she said may have been introduced via a central-line catheter.

A life-saving checklist to take to the hospital

A program that includes this checklist has been proved to prevent hospital-acquired infections from central-line catheters.

But not all hospitals have adopted it. If a family member or friend has to be hospitalized in intensive care, take this list with you and ask whether the intensive-care unit uses it, says checklist developer Peter Pronovost, M.D., Ph.D., critical-care specialist and patient-safety researcher at the Johns Hopkins School of Medicine.

Caregivers should:

- 1** Wash their hands using soap and water or alcohol gel. Do so before and after examining the patient, inserting the catheter, and replacing, accessing, repairing, and dressing the catheter. **Why it helps:** It prevents bacteria from the caregiver's hands from entering the catheter directly or getting into the vein through the opening in the skin.
- 2** Disinfect the patient's skin. Use a 2 percent chlorhexidine-based preparation or other appropriate antiseptic before inserting the catheter and during dressing changes. **Why it helps:** It prevents bacteria from the patient's own skin from getting on the catheter and into the bloodstream.
- 3** Use full-barrier precautions. Maintain aseptic technique by wearing a mask, cap, sterile gown, and sterile gloves when inserting the catheter. The patient should be covered with a large sterile sheet. **Why it helps:** It prevents bacterial contamination from all sources when the catheter is being put in.
- 4** Avoid placing the catheter in the groin, if possible. A subclavian site is preferred because it's less likely to become infected than sites in the groin or elsewhere. **Why it helps:** The groin area is inherently difficult to keep clean.
- 5** Remove unnecessary catheters. Evaluate daily whether any catheters or tubes that are no longer essential can be removed. **Why it helps:** The risk of infection increases the longer the catheter is in place.



Peter Pronovost, M.D., Ph.D.

Behind the Ratings

Where does the data on bloodstream-infections come from?

Some states require hospitals to report data publicly, often through the federal Centers for Disease Control and Prevention (CDC). And some hospitals voluntarily report data to The Leapfrog Group, an independent organization that collects information on hospitals.

What do the scores mean?

Each state and The Leapfrog Group report data on bloodstream infections for a particular selection of ICUs, such as cardiac, medical, and surgical. We include data for all ICUs reported (except burn, trauma, and neonatal), which often differ from one source to another.

Since the risk of infection can vary among different kinds of ICUs, we use a measure that compares each ICU to national data on infection rates for that type of ICU, and then combine those scores. That method takes into account the different risk of infections in different types of ICUs, and then gives a single score for each hospital.

In our full Ratings, found at www.ConsumerReports.org/HospitalRatings, we report our findings as a hospital's percentage difference from national rates, given the particular set of ICUs reported for that hospital. The scores for each hospital are based on those percentage differences from national rates.

How often are the Ratings updated?

Several times a year based on when the various state agencies and The Leapfrog Group post new data.

What are the limitations?

The Ratings come from recent data but it's possible that updates will show improvements or declines in performance. The Ratings are based on only those ICUs that states or The Leapfrog Group ask hospitals to report on, not every bloodstream infection in the hospital. Though research suggests that bloodstream infections can be reduced and even eliminated, comparisons between hospitals that care for very different patient populations should be done cautiously. Data are reported by each hospital to either its state or to the Leapfrog Group. Although some states, such as New York and Tennessee, audit the data, most don't.

Where can I get more information?

Go to www.ConsumerReports.org/HospitalRatings and click on "What's behind our Ratings?" That includes detailed information about how we rate hospitals, as well as a link to a PDF that fully describes our methodology.

Bloodstream infections: Highest- and lowest-Rated hospitals

Shown below are the hospitals around the country that scored highest and lowest in preventing bloodstream infections in their intensive-care units, from our most recent hospital Ratings. The Ratings are based on the most recent data available (generally a one-year period between July 2008 and June 2011) that hospitals reported either to state databases or The Leapfrog Group, a nonprofit group that focuses on improving hospital quality. The highest-Rated hospitals (), which include 144 facilities in 35

states, all reported zero bloodstream infections. The lowest-Rated hospitals (), which include 73 hospitals in 16 states, reported bloodstream-infection rates in their ICUs more than twice as high as the national average. Note that some states might report data but did not have a hospital earning our highest or lowest Rating. For detailed Ratings on more than 1,000 hospitals nationwide, go to www.ConsumerReports.org/HospitalRatings.

 HIGHEST-RATED HOSPITALS  LOWEST-RATED HOSPITALS

ALABAMA

Providence Hospital, Mobile

Walker Baptist Medical Center, Jasper

ARIZONA

Scottsdale Healthcare Thompson Peak

CALIFORNIA

Brotman Medical Center, Culver City

El Centro Regional Medical Center

Fresno Medical Center

Glendale Memorial Hospital and Health Center

John F. Kennedy Memorial Hospital, Indio

La Palma Intercommunity Hospital

Manteca Medical Center

Marin General Hospital, Greenbrae

Mercy General Hospital, Sacramento

Mercy Hospital of Folsom

Paradise Valley Hospital, National City

Presbyterian Intercommunity Hospital, Whittier

Redwood City Medical Center, Redwood City

Riverside Medical Center, Riverside

Saint Francis Memorial Hospital, San Francisco

San Gorgonio Memorial Hospital, Banning

San Ramon Regional Medical Center

Santa Rosa Medical Center

Sharp Chula Vista Medical Center

Sonora Regional Medical Center

St. John's Pleasant Valley Hospital, Camarillo

St. Joseph's Medical Center, Stockton

St. Mary Medical Center, Long Beach

St. Mary's Medical Center, San Francisco

St. Rose Hospital, Hayward

Sutter Coast Hospital, Crescent City

Sutter Medical Center of Santa Rosa, Chanate Campus

Torrance Memorial Medical Center

Vista Hospital of San Gabriel Valley, Baldwin Park

Woodland Hills Medical Center

Alvarado Hospital, San Diego

Barlow Respiratory Hospital, Los Angeles

Barton Healthcare System, South Lake Tahoe

Clovis Community Medical Center

Community Hospital of San Bernardino

Dameron Hospital, Stockton

Hollywood Community Hospital, Los Angeles

Kern Medical Center, Bakersfield

CALIFORNIA continued

Los Angeles Metropolitan Medical Center

Montclair Hospital Medical Center

NorthBay Medical Center, Fairfield

NorthBay VacaValley Hospital, Vacaville

Riverside County Regional Medical Center, Moreno Valley

Sherman Oaks Hospital

Shriners Hospitals for Children, Northern California, Sacramento

South San Francisco Medical Center

Valley Presbyterian Hospital, Van Nuys

White Memorial Medical Center, Los Angeles

COLORADO

Longmont United Hospital

St. Anthony North Hospital, Westminster

CONNECTICUT

Bristol Hospital

MidState Medical Center, Meriden

The William W. Backus Hospital, Norwich

FLORIDA

Brandon Regional Hospital

Florida Hospital Memorial Medical Center, Daytona Beach

Homestead Hospital

South Bay Hospital, Sun City Center

Plantation General Hospital

GEORGIA

Spalding Regional Medical Center, Griffin

WellStar Douglas Hospital, Douglasville

IDAHO

West Valley Medical Center, Caldwell

ILLINOIS

Advocate Condell Medical Center, Libertyville

Advocate Trinity Hospital, Chicago

Alton Memorial Hospital

Blessing Hospital, Quincy

Centegra Hospital - McHenry

Heartland Regional Medical Center, Marion

Memorial Hospital, Belleville

MetroSouth Medical Center, Blue Island

Proctor Hospital, Peoria

Resurrection Medical Center, Chicago

Riverside Medical Center, Kankakee

Saint Anthony's Health System, Alton

ILLINOIS continued

- Decatur Memorial Hospital
- NorthShore University HealthSystem-Skokie Hospital
- Norwegian American Hospital, Chicago
- Sacred Heart Hospital, Chicago

INDIANA

- La Porte Regional Health System
- Saint John's Health System, Anderson
- St. Vincent Heart Center of Indiana, Indianapolis

KANSAS

- Menorah Medical Center, Overland Park

MAINE

- MaineGeneral Medical Center-Waterville Campus, Waterville

MARYLAND

- Carroll Hospital Center, Westminster
- Howard County General Hospital, Columbia
- Atlantic General Hospital, Berlin
- Bon Secours Baltimore Health System, Baltimore
- Doctors Community Hospital, Lanham
- Laurel Regional Hospital, Laurel
- Memorial Hospital at Easton Maryland
- Peninsula Regional Health System, Salisbury
- Shady Grove Adventist Hospital, Rockville
- Sinai Hospital of Baltimore
- Union Hospital, Elkton

MASSACHUSETTS

- Beverly Hospital
- Caritas Holy Family Hospital and Medical Center, Methuen
- Cooley Dickinson Hospital, Northampton
- Mount Auburn Hospital, Cambridge
- Saints Medical Center, Lowell
- Jordan Hospital, Plymouth

MICHIGAN

- Allegiance Health, Jackson
- Battle Creek Health System
- Huron Valley-Sinai Hospital, Commerce Township
- MidMichigan Medical Center-Midland
- Northern Michigan Regional Hospital, Petoskey
- St. John Macomb-Oakland Hospital, Warren
- Dickinson County Healthcare System, Iron Mountain
- Mercy Memorial Hospital System, Monroe
- Sinai-Grace Hospital, Detroit

MINNESOTA

- Children's Hospitals and Clinics of Minnesota, Saint Paul

MISSOURI

- Barnes-Jewish St. Peters Hospital, Saint Peters
- Hannibal Regional Hospital
- Missouri Delta Medical Center, Sikeston
- Phelps County Regional Medical Center, Rolla
- SSM St. Clare Health Center, Fenton
- Saint Luke's East-Lee's Summit
- Skaggs Regional Medical Center, Branson

MISSOURI continued

- Saint Louis University Hospital

MONTANA

- Billings Clinic

NEVADA

- Desert Springs Hospital Medical Center, Las Vegas
- Southern Hills Hospital and Medical Center, Las Vegas

NEW HAMPSHIRE

- Wentworth-Douglass Hospital, Dover

NEW JERSEY

- Christ Hospital, Jersey City
- East Orange General Hospital
- Lourdes Medical Center of Burlington County, Willingboro
- St. Francis Medical Center, Trenton
- St. Joseph's Wayne Hospital, Wayne
- Virtua Berlin
- Warren Hospital, Phillipsburg
- Cape Regional Medical Center, Cape May Court House
- Capital Health Regional Medical Center, Trenton
- Kimball Medical Center, Lakewood
- Riverview Medical Center, Red Bank

NEW YORK

- Cayuga Medical Center at Ithaca
- Glen Cove Hospital
- Hudson Valley Hospital Center, Cortlandt Manor
- Newark Wayne Community Hospital
- Nyack Hospital
- Peninsula Hospital Center, Far Rockaway
- Rome Memorial Hospital
- Saint Francis Hospital and Health Centers, Poughkeepsie
- Unity Hospital, Rochester

- Vassar Brothers Medical Center, Poughkeepsie

- Columbia Memorial Hospital, Hudson

- Coney Island Hospital, Brooklyn

- Lawrence Hospital Center, Bronxville

- Mercy Medical Center, Rockville Centre

- Metropolitan Hospital Center, New York City

- Phelps Memorial Hospital Center, Sleepy Hollow

- Queens Hospital Center, Jamaica

- Southampton Hospital

- St. James Mercy Health System, Hornell

- St. John's Riverside Hospital, Yonkers

- St. Joseph's Hospital, Elmira

- St. Joseph's Medical Center, Yonkers

- St. Mary's Hospital, Troy

- Woodhull Medical and Mental Health Center, Brooklyn

OHIO

- Blanchard Valley Health System, Findlay

- Mount Carmel St. Ann's, Westerville

OHIO continued**Southern Ohio Medical Center**, Portsmouth**Mercy St. Anne Hospital**, Toledo**OREGON****Salem Hospital****PENNSYLVANIA****Lehigh Valley Hospital-Muhlenberg**, Bethlehem**Moses Taylor Hospital**, Scranton**RHODE ISLAND****Memorial Hospital of Rhode Island**, Pawtucket**St. Joseph Health Services of Rhode Island**, North Providence**SOUTH CAROLINA****Baptist Easley Hospital**, Easley**Bon Secours St. Francis Health System**, Greenville**Springs Memorial Hospital**, Lancaster**Aiken Regional Medical Centers****Carolina Pines Regional Medical Center**, Hartsville**Carolinias Hospital System**, Florence**Colleton Medical Center**, Walterboro**Mary Black Memorial Hospital**, Spartanburg**Summerville Medical Center****TENNESSEE****Indian Path Medical Center**, Kingsport**Regional Hospital of Jackson****Takoma Regional Hospital**, Greeneville**Centennial Medical Center at Ashland City****Gateway Medical Center**, Clarksville**Horizon Medical Center**, Dickson**Regional Medical Center at Memphis****TEXAS****Baylor Medical Center at Garland****Baylor Regional Medical Center at Grapevine****Cypress Fairbanks Medical Center**, Houston**Heart Hospital of Austin****Huguley Memorial Medical Center**, Fort Worth**Lake Pointe Medical Center**, Rowlett**Mainland Medical Center**, Texas City**Texas Health Arlington Memorial Hospital**, Arlington**Texas Health Harris Methodist Hospital Hurst-Euless-Bedford**, Bedford**Texas Health Harris Methodist Hospital Southwest Fort Worth****Texas Health Presbyterian Hospital Denton****Texas Health Presbyterian Hospital Plano****St. David's Georgetown Hospital****UTAH****Timpanogos Regional Hospital**, Orem**VIRGINIA****Carilion New River Valley Medical Center**, Christiansburg**Inova Alexandria Hospital**, Alexandria**Inova Fair Oaks Hospital**, Fairfax**Riverside Walter Reed Hospital**, Gloucester**VIRGINIA** continued**Rockingham Memorial Hospital**, Harrisonburg**Sentara CarePlex Hospital**, Hampton**Sentara Leigh Hospital**, Norfolk**Clinch Valley Medical Center**, Richlands**Halifax Regional Health System**, South Boston**Pulaski Community Hospital****University of Virginia Medical Center**, Charlottesville**WASHINGTON****Kadlec Medical Center**, Richland**Northwest Hospital and Medical Center**, Seattle**Tacoma General Hospital****Yakima Valley Memorial Hospital**, Yakima**Providence Regional Medical Center Everett****WEST VIRGINIA****Monongalia General Hospital**, Morgantown**WISCONSIN****Saint Clare's Hospital**, Weston**WYOMING****Wyoming Medical Center**, Casper**ConsumerReports Health****Consumer Reports**

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