

The Patient Channel Presents: Hospital-Acquired Infections: What You Need to Know

Narrator:

Since their introduction 60 years ago, antibiotics have been the mainstay in fighting off bacteria and saving countless lives. But the germs keep coming up with new ways to protect themselves.

John Weigelt, MD:

“Every time we seem to develop a new antibiotic and we feel good about ourselves, the bacteria learn how to sneak around that antibiotic some way.”

Narrator:

Not so long ago bacterial infections were routine killers. In the 1940’s bacteria transmitted through unwashed hands caused serious, often deadly infections in hospitalized patients. Penicillin turned out to be just what the doctor ordered. Patients with infections were given this new wonder drug, and their infections were cleared up quickly and, for the most part, without serious side effects.

One of the real successes of penicillin was against a bacteria called *Staphylococcus aureus*, or simply referred to as “staph.” This troublemaker causes skin infections in healthy people and is one of the most common causes of serious infections around surgical incisions in hospitalized patients.

John Weigelt, MD:

“If you go all the way back to World War II when penicillin was introduced, it was a godsend to a lot of soldiers. It killed lots of staph and then the staph rapidly became resistant to the penicillin.”

Narrator:

In this back-and-forth war between bacteria and antibiotics, staph appeared with an enzyme that destroyed penicillin. Drug companies then responded by creating enzyme-resistant penicillins such as methicillin and related antibiotics to combat these bacteria that are not only common but easily transmitted between people.

Benjamin Lipsky, MD:

“Within a few years of the introduction of methicillin, *Staph aureus* learned to develop a new mechanism for becoming resistant to these semi-synthetic penicillins and we now have a methicillin-resistant *Staph aureus*.”

Narrator:

A few decades ago, methicillin-resistant *Staph aureus* - or MRSA – was rare... making up fewer than one percent of staph infections seen in hospitals. But the Centers for Disease Control and Prevention documented a dramatic increase recently.

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John Jernigan, MD, Centers for Disease Control and Prevention:

“Now we see that at least in intensive care units in the United States, probably about 65 percent of all the infections caused by staph tend to be resistant methicillin, tend to be MRSA.”

Narrator:

The best defense is for a patient to try to cut down on the amount of bacteria that he or she is exposed to. And in the hospital setting, bacteria are transmitted primarily from the hands of hospital personnel, people who have had contact with other patients. It may sound simplistic, but the most effective way to prevent getting an infection in a hospital is to insist that doctors, nurses, and other personnel use proper hand hygiene

Vicki Brinsko, RN. Vanderbilt University Medical Center:

“Handwashing is so simple. And bacteria have actually been around for billions of years. They practice survival of the fittest. And those little organisms are going to use every little opportunity they can to infect someone.”

Narrator:

Since healthcare workers must interact with dozens of patients in a day, for them to constantly wash their hands would eventually lead to dry, red hands with cracks in the skin. Cracked and chapped hands could actually transfer more infection. For that reason, proper hand hygiene for doctors, nurses, and hospital staff means using hand sanitizers before and after every interaction with a patient.

Benjamin Lipsky, MD:

“Every healthcare worker has to either wear gloves that they discard after touching the patient, or if they use their bare hands – even so much as to touch the hand rail of a bed or shake hands with a patient – they either need to wash their hands with soap and water or use some kind of agent that kills bacteria on their hands.”

Narrator:

Experts estimate that one in ten hospital patients will acquire an infection while staying in a hospital. These infections add an additional four or five days to a hospital stay and are responsible for approximately 9000 deaths a year.

Coming up, we'll meet a woman who knows all too well about hospital-acquired infections and hear her story... plus we'll see why patients should insist that nurses and other healthcare personnel always use proper hand hygiene.

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Narrator:

We like to think of hospitals as places of healing, but with many sick people in close quarters, hospitals can also be a haven for germs. Experts say the sickest patients are usually the most vulnerable, but even those who enter the hospital for a routine procedure may be at risk.

Maureen Daly always enjoyed this Staten Island Park with her mother, Johanna – a nature lover and former Girl Scout leader. Two years ago mother and daughter were shopping together when Johanna fell and broke her shoulder.

Maureen Dailey, Patient's Daughter:

"She entered the hospital as a healthy 63-year old woman. She walked in with only a fractured shoulder."

Narrator:

Johanna returned home after surgery to fix the fracture, and a week later, she woke up in terrible pain. Maureen brought her back to the doctor.

Maureen Dailey, Patient's Daughter:

"When he removed the dressing, I saw something I never seen before. The room got filled with this horrible smell of rotten flesh and liquid just started pouring out of my Mom – pus – it was the most horrible thing."

Narrator:

Johanna had an emergency incision and drainage. But the infection had already entered her bloodstream and quickly made its way to her lungs.

Maureen Dailey, Patient's Daughter:

"She was actually running 106-degree temperature. We could feel the heat coming off the bed when we went near it."

Narrator:

Cultures revealed that several disease-causing bacteria were to blame – among them MRSA.

Maureen Dailey, Patient's Daughter:

"It was horrible. This woman who had been such a great communicator, always loving, always telling us how she loved us, was unable to lift her finger or say anything."

Narrator:

Four months after surgery to fix her shoulder, Johanna Daly died at the age of 64.

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Maureen Dailey, Patient's Daughter:

"I had no idea that postoperative infections can do this and completely ravage a body and eventually kill a person."

Narrator:

Although Maureen's mother was an extreme case, hospitals across the nation continue to implement infection-control procedures to combat the spread of infection and improve the conditions of healthcare facilities.

Narrator:

The skin is the body's first line of defense against bacterial invasion, and this protective covering provides the major barrier for prevention of infections. But, during a hospital stay, common invasive procedures can provide a pathway for bacteria to skirt that defensive barrier and make us vulnerable to infections.

For example intravenous or IV catheters are needles inserted through the protective skin barrier into a vein, allowing a pathway that can transmit bacteria directly into the bloodstream.

Surgical incisions expose patients to potential infection. Urinary catheters, plastic tubes inserted into a patient's urethra to drain the bladder, can cause infection by allowing bacteria direct access to the urinary tract.

And when hospitalized patients are given a ventilator tube to help them breathe, the tubes keep the patients from coughing up phlegm and can provide a direct path allowing potentially harmful bacteria into the lungs.

Often there are warning signs to alert doctors if an infection has taken place.

William Schaffner, MD, Vanderbilt University Medical School:

"The intravenous site can start looking a little red and if that continues you might even get a little bit of pus that comes out of the insertion site and that's why they have to be inspected absolutely every day. Generally speaking, if a patient gets an infection, they may develop, first of all a fever and that's always noted because it's charted on a daily basis, so if a patient develops a fever, that's immediately investigated."

Narrator:

The good news is hospitals have become ever more vigilant in their quest to reduce hospital-acquired infections.

Vicki Brinsko, RN, Vanderbilt University Medical Center:

"So our job is to break the train of transmission, and one way you can do that is to wash your hands. The bacteria, they don't have feet and legs and they can't walk from patient to patient. But the healthcare worker comes in and touches the

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patient, so if we can wash those bacteria off in between patient care activities, we can literally wash those germs down the drain.”

Narrator:

For hospital workers, actual hand washing is usually reserved for cases where there is blood or other fluids or debris on the hands. Otherwise, proper hand hygiene for hospital employees generally means using hand sanitizers that are available in most patient rooms and at several places around most hospitals.

Next, how what was first thought to be a spider bite, led to a frightening experience - and a lengthy hospital stay.

* * *

Narrator:

Marshall Jones is a business consultant. He lives on a ranch in College Station, Texas, with his wife and children. His brush with Community-Associated MRSA began with a simple haircut.

Christina Jones, Patient's wife:

“Right after we cut his hair, the next day we noticed just a tiny ingrown hair right there where we shaved his neck and it got uglier and uglier.”

Marshall Jones, Patient:

“And after two or three days it wasn't any better so I went to the doctor because it was starting to get hardened under that. The doctor lanced it – thought it was a spider bite.”

Narrator:

Dr. John Weigelt, professor of surgery at the Medical College of Wisconsin, says MRSA skin infections are often mistaken for spider bites.

John Weigelt, MD, Medical College of Wisconsin:

“People would come in and literally they'd say, 'I think this is a spider bite' and they would remember it as a small lesion that then turned black in the center and then got this reaction around it. And everybody thought they were spider bites, and they ended up being Community-acquired MRSA infections.”

Narrator:

While this type of MRSA can strike anyone, the CDC has recorded outbreaks in children, military recruits, prison inmates, and athletic teams.

John Jernigan, MD, Centers for Disease Control and Prevention:

“There's lots of skin to skin of contact, there's lots of opportunities for breakage in the skin.”

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Benjamin Lipsky, MD, University of Washington:

“When they get a break in the skin, the Staph aureus can get into the subcutaneous tissue under the skin and start an infection. Most community-acquired Staph aureus infections are of the skin.”

Narrator:

But sometimes a skin infection can progress into something far more serious. Several weeks after the wound on Marshall’s neck closed, his back began to hurt.

Christina Jones, Patient’s wife:

“He started throwing up in the middle of the night and we went to the hospital at about four o’clock in the morning.”

Marshall Jones, Patient:

“So the doctor came in and said well let’s try a sonogram and I was laying on the gurney waiting to go in for the sonogram and the next thing I knew it was 12 days later.”

Narrator:

The infection that had started as an ingrown hair had spread to Marshall’s bloodstream and the space surrounding his spine. The bacteria attacked one of his heart valves, shut down his kidneys and nearly took his life.

Christina Jones, patient’s wife:

“It was very, very scary to see him laying there in ICU on the ventilator. Every time I went in there, I would whisper in his ear, ‘Fight those bugs. Come on, you are the strongest person I know.’”

Narrator:

Marshall’s doctor says he’s lucky to be alive. It turned out Marshall was allergic to one of the antibiotics available to fight resistant staph, so doctors had to turn to the few available alternatives. After 33 days in the hospital and various antibiotic cocktails, he beat the infection. But MRSA had taken its toll.

Marshall Jones, Patient:

“I went from being a healthy, middle-aged man to somebody that came out as an invalid. Basically, my brother had to carry me and put me in the car like I was a baby.”

Narrator:

Marshall and his family had no idea they were at risk for infection and, in fact, the risk of infection can never be completely eliminated.

Some patients are at higher risk than others. They include infants and sick children. The elderly, especially those who are frail or have underlying diseases

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such as cancer or diabetes, any patients with serious chronic diseases, patients with extensive burns or skin diseases, patients with compromised immune systems, and any patients being treated with chemotherapy or prednisone.

Hospitals have procedures in place to decrease infections. We'll take a look at some of them next.

* * *

William Schaffner, MD, Vanderbilt University Medical School:

"Before the surgeon makes an incision, the skin is disinfected and the rest of the body is carefully draped, and the whole surgical team undergoes rigorous hand scrubbing even more elaborate than what we do on the wards... and as everyone knows the surgeon and the surgical team are garbed, they have masks, they have special caps, they wear special gowns, all designed, gloves of course, all designed to prevent bacteria from entering the surgical wound and complicating the surgery."

Narrator:

There are other infection-control procedures that patients should be aware of: for example...when a patient is having a central intravenous line inserted to receive chemotherapy or for other medical treatments the doctor must strictly comply with hand washing and wear a cap, mask, sterile gown and gloves, and the patient is covered from head to toe with a sterile drape with a small opening for the site of insertion. Central lines are usually inserted near a patient's collarbone or in the neck. IVs inserted in the hand or other locations do not require gowns or drapes.

If a urinary catheter is necessary, make sure the catheter is inserted using a sterile technique, including sterile gloves, a sterile drape, and an effective skin antiseptic. The collection tubing and bag should always remain below the level of the patient's bladder, to avoid backflow into the patient's bladder that can easily result in an infection. Also, patients can request that their need for a catheter be evaluated on a day-by-day basis.

Though the main burden of infection control is on the medical care facilities in which patients are treated, patients can insist on proper hand hygiene with everyone who walks into their room.

Vicki Brinsko, RN, Vanderbilt University Medical Center:

"We try and empower our patients to be advocates for themselves. The nurse is their advocate too. But just like you would point out to a restaurant if they gave you the wrong change, or if you have some sort of issue with a receipt in a department store, you would speak up and say something's wrong with this, so we think that it is essential for patients to do the very same thing.

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We'd like to demonstrate exactly how to wash your hands. You want to make sure you first put water on your hands, then get some soap, then be sure to soap up your hands, be sure to get in between the fingers - rubbing – friction is also very good make sure you get under the fingernails very good, constantly rubbing, and 15 to 30 seconds – about the time it takes for you to sing 'Happy Birthday' twice, or the 'ABC' song, and then rinse. If you don't have motion-activated faucets, you would take your paper towels and then you would shut off the water valve, throw your paper towel away, and you're set."

Narrator:

Using an alcohol-based hand sanitizing gel is usually a 3-step process according to the Centers for Disease Control and Prevention: Step one: apply the gel to the palm of one hand. Step two: rub hands together. Step three: rub the gel all over all surfaces of hands and fingers until the hands are dry.

Patients must also be sure not to touch surgical sites and be alert to common warning signs of infection: redness, swelling, or worsening pain around a surgical incision and a fever.

Doctors say if you do notice an infected cut or sore with more than minimal redness, swelling, or pus, seek medical help. Patients will also want to keep visitors aware of the risks and make sure they, too, wash their hands after touching potentially contaminated surfaces, such as door knobs, toilet bowl handles, and table tops.

Vicki Brinsko, RN, Vanderbilt University Medical Center:

"Soap and water, of course, your mother said wash your hands and she was referring to wash your hands with soap and water and she's absolutely right, nothing beats soap and water. Just the pure friction of rubbing the soap and washing it off with the water, that's what really washes those germs down the drain."

William Schaffner, MD, Vanderbilt University Medical School:

"For all of these infection control procedures there are no silver bullets or magic catheters. Doing it right on the front end, doing it right absolutely every day and as quickly as possible removing the catheter, removing the intravenous line, getting the patient off the machine so they can breathe on their own so that we use these devices for as brief a period as is absolutely necessary. We don't want these devices to linger on the patient."

Marshall Jones, Patient:

"Don't dismiss little things, because it can start in the most innocent, smallest way possible and it can kill you."

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Narrator:

It took Marshall ten months of rehabilitation before he returned to his everyday activities.

Marshall Jones, Patient:

“The infection caused a lot of damage to my spine, and so I still have lower back pain that I get if I do strenuous activity.”

Narrator:

Marshall is riding his horse again... and he hopes he'll eventually return to running and skiing, too. While he was at the hospital, Marshall learned he had diabetes, which may have weakened his defenses and allowed his infection to spread. Usually, community-associated MRSA infections are limited to the skin. In the future, doctors hope to fight bacteria in the same way they fight many viruses – with vaccines.

Benjamin Lipsky, MD, University of Washington:

“There have been people working a number of years on developing a Staph aureus vaccine and there have been some preliminary successes in that field.”

Narrator:

While the single most important factor in infection control is good hand hygiene there are other steps you can take to protect yourself:

Keep your hands clean by washing thoroughly with soap and water for at least 30 seconds or by using an alcohol-based hand sanitizer and make sure healthcare staff and visitors do the same.

Keep cuts and scrapes clean and covered with a bandage until they have healed, and avoid contact with other people's wounds or bandages.

If you know you will be having surgery, shower before you come to the hospital.

Avoid sharing personal items such as towels or razors – and wipe down shared gym equipment before using it.

If you know you are going to be admitted to a hospital for any invasive procedures, ask to be tested for MRSA at least a week prior to admission.

If something seems wrong, insist that your concern be addressed. You know yourself better than anyone else.

William Schaffner, MD, Vanderbilt University Medical School:

“While you're here with us, we may have to do some serious kinds of treatment for you, and some of that will entail a small but defined risk of infection. Know

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that every hospital is trying to keep that infection risk as absolutely low as possible.”

Vicki Brinsko, RN. Vanderbilt University Medical Center:

“We should empower ourselves to take care of ourselves through practicing all sorts of things, exercise, healthy living, but first and foremost – washing your hands.”

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For more information on Hospital-acquired Infections please visit the following websites:

Centers for Disease Control & Prevention: www.cdc.gov
Agency for Healthcare Research & Quality: www.ahrq.gov
www.safecarecampaign.org

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