The Patient Survival Guide

8 Simple Solutions to Prevent Hospital- and Healthcare-Associated Infections

Dr. Maryanne McGuckin

With Toni L. Goldfarb

Foreword by Dr. Peter Pronovost

Avoid the worst mistake in hospitals
Signs you have a hospital/healthcare-associated infection
Daily care you must receive
Urinary catheters: When to say NO!
How to identify an infected IV site
The one question to ask your surgeon
Documents you need when discharged
What you should know about your medications

Foreword by Dr. Peter Pronovost

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…Dr. McGuckin sounds the alarm on deadly, costly infections and how to prevent them. Before you or a loved one heads to the hospital, reach for this guidebook. It could save a life.”

—Ceci Connolly, former national health correspondent, The Washington Post

“Following on from her pioneering work in championing patient empowerment in health care, Maryanne McGuckin goes a step further in The Patient Survival Guide to give the patient the knowledge needed to make the health care experience a safe one. This book is written in simple language to demystify the ‘coded’ jargon for the layman consumer, but with all the experience of a confirmed and respected healthcare infection control expert.”

—Didier Pittet, MD, MS, CBE, Director, Infection Control Program and World Health Organization Collaborating Centre on Patient Safety; Lead, World Health Organization Global Patient Safety Challenge

“Clean Care is Safer Care”

“Receiving medical care at a hospital without acquainting yourself with the important information in The Patient Survival Guide is like jumping out of an airplane with no parachute and then hoping you grow wings on the way down.”

—Victoria Nahum, Co-founder and Executive Director, Safe Care Campaign

“This is the best book I’ve ever read that explains everything a lay person needs to know about hospital-acquired infections. If you want to survive your hospital stay without an infection, read it.”

—Rosemary Gibson, Author, Wall of Silence and The Treatment Trap

About the Authors

Dr. Maryanne McGuckin, is an internationally renowned advocate for patient safety. She is the founder and president of McGuckin Methods International, Inc. (MMI), a healthcare advisory company that promotes research and programs for patient empowerment, hand hygiene compliance, and consumer education. A University of Pennsylvania alumna, she has over 35 years of experience as a faculty and staff member of the University of Pennsylvania.

Dr. McGuckin was lead author for the patient empowerment section of the World Health Organization’s Guideline for Hand Hygiene in Health Care (2009) and served on the 2002 Centers for Disease Control and Prevention (CDC) task force that developed the guidelines for Hand Hygiene in Healthcare Settings. Dr. McGuckin has published numerous articles in peer-reviewed journals and has lectured extensively in the United States and abroad.

Toni L. Goldfarb is a medical journalist who has contributed to Modern Medicine, Doctor’s Digest, Johns Hopkins White Papers, Medical Economics, and many other publications. She was the founding editor of Medical Abstracts Newsletter and co-author of the American Lung Association book 7 Steps to a Smoke-Free Life.
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“An informative book not only for patients and their families but also for the healthcare provider. This book should inspire us all to work together to prevent needless deaths from hospital-acquired infections . . . (and medical errors).”

—Sorrel King, Josie King Foundation and author of Josie’s Story
“Receiving medical care at a hospital without acquainting yourself with the important information in The Patient Survival Guide is like jumping out of an airplane with no parachute and then hoping you grow wings on the way down.”

—VICTORIA NAHUM, Co-founder and Executive Director, Safe Care Campaign

“The Patient Survival Guide empowers consumers to be active and effective advocates for themselves and/or loved ones navigating the complex healthcare system. A great resource for patient advocates and a valuable addition to every hospital waiting room!”

—BETH BOYNTON, RN, MS, Author, Confident Voices: The Nurses’ Guide to Improving Communication & Creating Positive Workplaces

“This is the best book I’ve ever read that explains everything a lay person needs to know about hospital-acquired infections. If you want to survive your hospital stay without an infection, read it.”

—ROSEMARY GIBSON, Author, Wall of Silence and The Treatment Trap
THE PATIENT SURVIVAL GUIDE

8 Simple Solutions to Prevent Hospital- and Healthcare-Associated Infections

by
Dr. Maryanne McGuckin
with Toni L. Goldfarb

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New York

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In memory of my parents,
John and Anna McGuckin.
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Wallet Card: Take This to the Hospital with You

Hand Hygiene Techniques
Healthcare is an extremely complex industry and patients often end up seeing a different doctor for every part and organ of their bodies, from a podiatrist for their feet, to a neurologist for their brains. In the context of the hospital setting, this equates to many different physicians, nurses, and other healthcare professionals caring for one patient. Compound this by the many patients each professional sees, and you will realize how easily mistakes can occur and memories fail. The one person who can best manage their care in today's complex health care system is the patient. There is no mistaking that people will err, and errors can kill, yet teams can perform flawlessly.

Far too many patients are still harmed rather than helped from their interactions with the healthcare system. While reducing this harm has proven to be devilishly difficult, we have found that checklists help. Checklists help to reduce ambiguity about what to do, to prioritize what is most important, and to clarify the behaviors that are most helpful. Nonetheless, there has been some hope in recent years with reductions in bloodstream infections contracted from central lines used in the intensive care unit. While these lines are used to provide life-saving treatments, they require specific practices to prevent infection—a checklist and collaboration among clinicians helped to dramatically reduce bloodstream infections at The Johns Hopkins Hospital, in hospitals throughout Michigan, and across the United States. Clinicians have begun to develop, implement, and evaluate checklists for a variety of other diagnoses and procedures.

Yet, vigilance is unconsciously fickle; clinicians are distracted by competing priorities and unconsciously miss a vital step; too often patients suffer. Unfortunately, asking a physician or nurse to pay more attention is not
the answer. There are no quick fixes and healthcare professionals need an extra set of eyes from patients—patients who are the central focus of care.

Patients can also use checklists to defend themselves against the major causes of preventable harm. Here are a few you can use:

**Healthcare-Associated Infections**

- Ask what the current rate of central line-associated bloodstream infections is in your hospital’s intensive care unit. The best hospitals will have a rate of less than one infection per 1,000 catheter days (the definition provided by the Centers for Disease Control and Prevention). A rate above three should cause concern.
- Whenever clinicians enter your room, ask if they have washed their hands. Request that visitors also wash their hands often. Washing can be with alcohol gel or soap and water.
- If you have any type of catheter (tube), ask every day if it can be removed.

**Identify Errors**

- If you are admitted to the hospital, check your ID bracelet to make sure all of the information is correct. Every staff person should use this bracelet to confirm your name before any treatments or tests.
- If you are making an outpatient visit, staff should ask you to confirm your name and another unique identifier, such as your date of birth, before treatments or tests.
- Whenever blood or any other specimen is taken from your body, make sure it is labeled in front of you.

In this book, *The Patient Survival Guide*, Dr. Maryanne McGuckin provides an outstanding guide for patients. She details what patients can do to be part of the care team, to defend against errors, to help ensure they are helped rather than harmed by the healthcare system. Healthcare has a long way to go in reducing preventable patient harm; *The Patient Survival Guide* by Dr. Maryanne McGuckin points us in the right direction.

*Peter J. Pronovost, MD, PhD, FCCM*

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We all assume that going to the hospital will help us to recover from an illness or injury. However, going to any facility where a lot of other sick people are treated can result in patients actually getting worse before they get better, simply because they can catch someone else’s infections.

These infections are called healthcare-associated infections because they are caused by specific bacteria or viruses that are present in the hospital and are transmitted to patients during their hospital stay. The infections are often spread by healthcare workers as they move from sick patient to sick patient, or by visitors who may have touched unclean surfaces in the hospital before going into a patient’s room.

What most people don’t know is that healthcare-associated infections are preventable if people who come in contact with hospital patients practice simple, well-known precautions. But if those precautions aren’t followed and patients develop infections, the care they need is often difficult and costly.

I know this firsthand from my 35 years of experience as an expert in infection prevention. But when I began my career as a Medical Technologist at the University of Pennsylvania Healthcare System (UPHS), the field of infection control wasn’t part of healthcare. Patients got infections, nurseries had outbreaks of *Staphylococcus* bacteria, and my job was to identify the bacteria so that doctors knew what antibiotic should be used. We would often see that other patients were getting the same infections, but there was never any questioning or thought that this might be a preventable problem.
Then in late 1970s major university centers such as UPHS established Infectious Disease Departments. When the UPHS department began a close collaboration with the microbiology department, I became very interested in this new field. I saw how my microbiology background would be valuable in helping infectious disease physicians track down infections and patterns of transmission. Thus began my career to identify and prevent healthcare-associated infections.

Armed with my advanced degrees, I entered the world of academia at the University of Pennsylvania, teaching and doing research with a focus on infections. I offered courses on preventing infections and conducted many groundbreaking studies showing how healthcare workers’ unwashed hands might be the culprit in transmission of these infections.

In 1997, after 10 years of work on healthcare-associated infections, I realized that we were putting too much emphasis on simply identifying the problem. Each month we kept reporting how many infections we had found, thinking this would help to change the behavior of healthcare workers, in particular, physicians. As you will read in the book, it was then I knew that if we were to change behavior, we needed to involve patients, and we needed to begin with hand hygiene.

Why hand hygiene? We knew then, and unfortunately it continues to be true, that healthcare workers wash their hands less than 50 percent of the time that handwashing is required. We also knew that attention to these hand hygiene practices is the single most important way to prevent healthcare-associated infections.

During the next 10 years of my career, I conducted five major studies that were published in peer-reviewed medical journals, all sending the same message: “When patients ask their healthcare providers to wash or sanitize their hands before they have contact with them, hand hygiene increases and infections decrease.” I called this effort “patient empowerment.”

My message was quickly picked up by the media. (You can’t tell people you are a superstar; you need to show them.) This brought a great deal of publicity for the University of Pennsylvania, and I was pleased that national organizations like the Centers for Disease Control and Prevention, the Joint Commission, and the World Health Organization gave recognition to my work on patient empowerment.

I believed that my findings would have an impact on the medical community, and to some degree, they did bring attention to the importance of hand hygiene. However, there was always a missing link: How do we get this information to the people who need it most—people like you, the consumer?
Preface

That’s why I wrote this book. I want to empower you before you become a hospital patient. The power is in your hands to stop what has been often referred to as the silent epidemic—healthcare-associated infections.

I believe that the next significant change in healthcare will be driven not by laws, guidelines, standards, or programs, but by the demands of the consumer. I want you, the consumer, to know what I know about simple prevention steps you can take, so you don’t wind up as “the infected patient.” I want you to be “the empowered patient,” someone who speaks up and demands proper hygiene during your treatment in a hospital or any other medical facility.

I assure you this is not a scary book about media-driven topics like killer super bugs and grisly descriptions of healthcare-associated infections that end with tragic deaths. Actually, it’s mostly about people—consumers like you who generously shared their stories with me. Their lives were changed by healthcare-associated infections, but they all said one thing, “I wish I knew before I was a patient what I needed to do to prevent infections.”

Many of these people expressed a sincere desire to inform others and help to make our healthcare system safer. In putting this book together, it was important for me to share their messages. My life has been enriched by their stories. I hope yours will be, too.
This book is the culmination of efforts of many colleagues, collaborators, and friends, who share the commitment to improve healthcare quality. It is through their time and enthusiasm that this patient survival guide was nurtured from concept to finished product.

I thank my colleague John Govednik, MS, for applying his technical and organizational skills to help the manuscript meet publication standards. It has been a tremendous help to have someone on my team who can turn publication technospeak into a set of in-house instructions for our team to digest.

I acknowledge the contributions of the following members of my advisory panel for consumer education: Eileen Cahill, Dorothy Daly, Joseph M. Govednik, Margaret Govednik, Joseph Karlesky, Margot Kleinschmidt, Michael Kutch, Thomas Malatesta, Lisa McGiffert, and Daniela Nunez. This team represents a wide range of professionals from the public and private sectors, which provided insight for chapter discussions and key points for readers. I was lucky that these collaborators provided me with ten different viewpoints to help perfect the message of the book.

I also thank my healthcare professional colleagues who reviewed the content of the material for completeness and accuracy: Jessica L. Bunson, MS, CIC; Lorri Goergen RN, BSN, CIC; Kathleen G. Julian, MD; Lynne V. Karanfil, RN, MA, CIC; Yves Longtin, MD, FRCP; Karen Ray, MT, CIC; Gwen Stewart RN, BSN, CIC; Julie Storr, BN, MBA; and Kathleen M. Vollman, MSN, RN, CCNS, FCCM, FAAN. They are the doctors, nurses, infection

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Acknowledgments

prevention and control experts, and colleagues from the World Health Organization, who bring patient safety to the forefront of healthcare quality training and education. They are the team who fortified this book with years of theory, practice, compassion, and empathy for the thousands of patients and their families who have been in their care.

Finally, I am most grateful for the contributions of my family. Thanks to my husband, John L. “Jack” Guinan, for his enduring and endearing support of my teaching, consulting, and now writing endeavors and our children (so called though quite adults now) John L. Guinan, Jr., Esquire, who so willingly advised me on contractual aspects of health writing and publishing, and Maryellen E. Guinan, Esquire, who contributed materials and manuscript writing for the chapter on law and healthcare for the book. It is truly rewarding that I, having always played the role of mother, professor, and referee, have now come to rely on their good counsel and perspectives for the benefit of my work in patient safety.

Of course, I would be remiss if I didn’t acknowledge Buddy, our beloved Golden Retriever, who wears many hats around our house: entertainer, exercise reminder, and when accompanying me to the office, occasional foot warmer. With companionship like his through the seasons of writing this book, I can complete this project with my stress level normal and my heart warmed.
Did you know that as many as 1 out of every 20 people develop an infection while they are in the hospital? These are called "healthcare-associated" infections or "hospital-associated" infections. People didn't come into the hospital with these infections; they got infected during their hospital stay.

The U.S. Centers for Disease Control estimates that 1.7 million patients developed healthcare-associated infections in 2010 alone, resulting in almost 100,000 deaths per year. Patients with these infections need extra days of care in the hospital, which adds up to $35–45 billion in extra costs.

Those are just cold, hard statistics. But when someone whom you know and love develops a healthcare-associated infection, it’s a very different story. My friends and family know that I’m an infection control specialist, so I hear these stories all the time. Not just family, but often family members of patients would reach out to me at the University of Pennsylvania where I worked on research involving hand hygiene and healthcare-associated infections. That’s why a woman named Teri called me in 2007, several years after her mother's death. She told me that an autopsy had been done, but she never received a report, and she still could not understand why her mother died. She was grief-stricken, worrying that she might have waited too long to take her mother to the hospital.

I told her how to get the autopsy report, and as I suspected, it showed that the cause of death was a fatal healthcare-associated infection, most likely sepsis (bacteria in the blood), which may have started at the site of her surgery. I can remember Teri’s relieved call to me, saying how she finally could stop blaming herself for her mother's death.
Introduction

To help you understand the drama and heartache of healthcare-associated infections, I asked Teri to tell the story in her own words:

**TERI’S STORY: GUILT TO EMPOWERMENT**

“I’ll never forget Thanksgiving 2004, because it was the last Thanksgiving we shared with my mother, Barbara. She died the next day from a healthcare-associated infection. However, it took me three years of living with guilt until I would find out that was the cause of her death.

Two months before that Thanksgiving, she had been diagnosed as having bladder cancer, for which she underwent surgery six weeks before her death. The surgery was a complete success, so there was no need for either chemotherapy or radiation therapy afterwards.

Before her cancer surgery, my mother was the picture of health. She was a registered nurse who had worked at a blood bank for the last 14 years of her career. She walked daily for exercise, enjoyed gardening, and was a very active 70-year-old woman.

On Thanksgiving, six weeks after her surgery, my mother began complaining of nausea. She didn’t have fever, diarrhea, or vomiting, so I thought she might have food poisoning. I called her surgeon, who didn’t seem alarmed. He never suggested that I should take my mother to a hospital, but the next morning, I took her to the hospital myself. She died there 10 hours later from a massive infection.

This began my search to find out what went wrong. How bad she acquired that infection? How could it have been prevented? It was only
after I requested her autopsy report that I learned the results from her laboratory culture. It was a MRSA infection that took my mother’s life, not the cancer for which she sought treatment. MRSA stands for methicillin-resistant Staph aureus, or what we now know as a “super bug,” because of its resistance to antibiotic treatment.

Looking back at my mother’s ordeal, I now realize many things that would have been helpful to know and steps that could have been taken to prevent the tragedy of her untimely death. Like most people, we assumed that reputable hospitals take every precaution necessary to ensure that their patients are cared for in a safe and sanitary way. After our mother’s death, we found that this is not always the case.

In retrospect, I now understand what should have been done to reduce her risk of MRSA infection. She had an incision from her surgery that required dressing changes. Knowing what I know now about the dangers of healthcare-associated infections after surgery, particularly MRSA, I would have insisted that greater precautions be taken to ensure that proper sterile techniques were used during each step of her care. We would have insisted that each person entering my mother’s hospital room would be required to wash or sanitize his or her hands and that all equipment in my mother’s hospital room be adequately disinfected.

Had I been informed about the dangers of that type of infection, I was convinced that my mother would be alive today. Knowledge is power, and unfortunately, I wish that I had the knowledge then, so that I could have protected my mother from the thing she feared the most: a hospital error. I appreciate this opportunity to share her story.”

**SO MANY SICK PATIENTS, SO MANY GERMS**

After reading Teri’s story, you’re probably wondering what causes all these serious infections. Sick people spread infection-causing bacteria and viruses into the air and onto anything, or anyone, they touch.\(^3\) Hospitals are full of sick people, many with very serious illnesses, and all packed into a small area. This means that dangerous germs are everywhere. They hide on the surfaces of walls, trays, toilets, cups, instruments, and even ductwork. But the place they hide best is on people’s hands.

Every time a doctor, nurse, medical technician, food server, or visitor touches an object, lots of germs go along for the ride. So, preventing healthcare-associated infections means preventing these germs from reaching other people. Hands down, the best prevention is handwashing and hand sanitizing. There’s just one problem: Even though they know better, doctors, nurses, and other medical personnel frequently forget to wash their hands.
Introduction

Three Ways to Reduce Your Risk

Being in the hospital is risky business. Nothing drives this point home more than knowing that thousands of hospital patients each year develop healthcare-associated infections. If you’re hospitalized, you can reduce some of the risk just by knowing what to do:

• Every time hospital staff members or visitors come into your room, ask them to wash their hands.
• Always wash your own hands after using the toilet or touching hospital food trays, medicine containers or cups, or medical equipment.
• When someone enters your hospital room, don’t shake hands. Do you really know where that hand has been?

BUG WATCHING

As a professional in infection prevention, I’ve spent over 30 years of my professional life trying to get healthcare workers to wash their hands. You’d think it would be easy to just say, “Remember to wash your hands!” But research shows that’s not enough. Busy healthcare workers are often so rushed that they forget to do what they know they should do. I’ve even seen this happen in the intensive care unit, where patients’ lives hang in the balance.

When I joined the teaching faculty at the University of Pennsylvania, I also served as a member of the hospital epidemiology team at the Hospital of the University of Pennsylvania. In 1979, I saw the need to train healthcare professionals in infection control. As a result, in my work at University of Pennsylvania, I developed the first national Master of Science/Doctoral (MS/PhD) program in infection control in the United States.

My training and experience prepared me for the challenge of finding better ways to prevent healthcare-associated infections. First, I focused on identifying the sources of these infections. Next, I had to find ways to eliminate anything and everything that contributed to their transmission.

I wanted to help Infection Preventionists know where to look, if they suspected that poor infection control practices were to blame so that the Infection Preventionists (IP) could take preventive measures before the infection could be transmitted to other patients. You will read throughout

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this book about the IP, the name used for the healthcare worker that leads the work of the teams to help prevent healthcare-associated infections.\textsuperscript{5}

**CHANNELING DR. SEMMELWEIS**

I received many awards for these microbiology and infection control studies, including the American Society for Microbiology-Clay Adams Research Award. I was also the recipient of the Association for Professionals in Infection Control and Epidemiology’s first national Bac Data Research Award, presented for the most innovative research in infection control. But, regardless of these accolades, those “bugs” kept spreading.

Then I remembered my medical history lessons. Back in the 1800s, doctors couldn’t figure out why so many women were dying soon after childbirth. Dr. Ignaz Semmelweis, a Hungarian obstetrician practicing in Vienna, found the answer: dirty hands. Hard to believe, but in those days, doctors didn’t wash their hands before treating patients. When Dr. Semmelweis insisted on handwashing, the death rate plummeted, simply because many fewer women developed infections.

With Semmelweis as my model, I dedicated myself to handwashing. Because I’m a research scientist, I designed studies to test several practical ways to increase handwashing, such as installing more sinks so they would be easily accessible to every healthcare worker.\textsuperscript{6} I also tried posting bright-colored handwashing reminder signs in hospital care areas.

Despite all of these efforts, we found, as others have, that you can increase hand hygiene, but the effect is always short term. When the education efforts stop, staff members go back to old habits. These old habits continue. Today, we still find healthcare workers washing their hands less than 50 percent of the time.\textsuperscript{7}

**POWER TO THE PATIENT**

Did I give up, or did I continue to follow my role model, Dr. Semmelweis? Even short-term improvement in hand hygiene might have satisfied some people, but not me! And it certainly provided no comfort to the many hospitalized patients who still were contracting infections.

What else could we do? Obviously, we needed more monitors, people who could always be there, who could serve as a constant reminder. Or as we like to say, 24/7. That was our “aha!” moment: We already had many more monitors: the patients themselves. What we needed to do was to teach patients how to be monitors. We wanted to empower them to become active partners in their care.
The solution: We told patients to remind healthcare workers to wash or sanitize their hands before touching you. And we told doctors, nurses, and other healthcare workers to heed those reminders and to thank patients who spoke up. When we tested this approach in our first four hospitals, we found that in just 6 weeks, we could increase handwashing by at least 34 percent. We then tested our idea at many other sites in the United States and abroad and found that our approach could increase handwashing by over 50 percent, and in some sites, up to 90 percent.

That’s why I wrote this book. I want you to know facts like this before you become a hospital patient. I also want to empower you to protect yourself by reminding nurses and doctors to wash or sanitize their hands before they reach your hospital bedside.

Your Reminder to “Bug” a Healthcare Worker

When you go to the hospital, take a little handwashing reminder that healthcare workers will see at your bedside. Here’s what I designed to help patients “bug” their nurses and doctors.

WHAT ARE THE RISKS?

Did you or a family member or a friend ever come down with an unexpected infection during a hospital stay? Unfortunately, many can answer “yes” to that question. People have numerous stories about relatives and friends...
who entered the hospital for simple procedures and wound up with serious infections that kept them hospitalized for weeks. According to the Centers for Disease Control and Prevention (CDC), more than 290,000 surgical site infections occur in U.S. hospitals each year. That’s equivalent to 2 out of every 100 surgeries, which is 20 percent of all healthcare-associated infections. The CDC also reported over 8,000 deaths in 2002 in patients with surgical site infections. An estimated 77 percent of these deaths were directly caused by the infection. I don’t want that to happen to you!

Infections occur even in the best hospitals. That’s why all hospitals, big and small, are mandated by law to develop written procedures to prevent such infections and to take quick action whenever patients develop a healthcare-associated infection. They must also keep written records. What many people don’t realize is that you can ask to see these infection records at all hospitals. In the pages ahead, I’ll tell you how to obtain and compare infection reports from hospitals in your area to help you choose the safest hospital before you’re admitted. That’s empowerment in action.

But it’s just a start. Once you enter the hospital as a patient, every procedure you have, everyone who treats or touches you, and every person who enters your room is a potential source of infection. If you’ve never been hospitalized before, you may be surprised at how many doctors, nurses, food delivery people, cleaning crews, and visitors come in and out of your room 24/7. It’s hard to get sleep, but it’s easy to feel vulnerable.

You can’t let this information keep you from checking into a hospital. You have a greater risk of getting a serious infection while riding on a city bus or eating at a restaurant than you have sitting in a hospital bed. The difference is that you know simple ways to avoid infections in everyday situations. You wouldn’t sit down on the bus next to a person who’s continually sneezing and coughing. You wouldn’t eat half-finished pizza crusts from plates left on a table next to you at a restaurant.

Of course, it’s not quite that easy to avoid infections in complicated hospital situations like hip replacement surgery, childbirth, kidney dialysis, or the many other procedures that doctors and nurses perform. My job as an infection control educator is to make sure that these medical professionals are careful about preventing infections. The hospital staff members caring for you know what they should do, but they may be so busy that they don’t take time to do it. You can help them.
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Relax!

You have a greater risk of getting a serious infection while riding on a city bus or eating at a restaurant than you have sitting in a hospital bed.

YOU CAN DO IT!

Remember how guilty Teri felt 3 years after her mother died? There are so many scary books and reports about hospital deaths, medical errors, and massive infections that no antibiotics can cure. It's no wonder that people feel vulnerable and fearful of hospitals and healthcare providers. I don't want that to happen to you! I wrote this book to give you the knowledge and understanding to become an empowered patient and a partner in the fight to prevent healthcare-associated infections.

You need to think of yourself as a parent of a newborn. Remember how protective you were of your child, reminding people not to visit if they were sick, or how often you washed your hands and reminded others to do so? Why do I say that? It's because we have shown that hand hygiene compliance and the ability to empower patients are very successful in newborn nurseries and pediatrics units. Healthcare workers learn the habit of washing their hands more often, and parents, in turn, become empowered to monitor closely to make sure hand hygiene is occurring. You or someone who helps you as your advocate must take on this role.

You can do it! I know you can, because I've helped hundreds of hospitals in the United States and other countries to lower their infection rates by teaching patients a few simple steps about hand hygiene. You can take action to help yourself or to act as a spokesperson for someone else, so that you or a family member won't be added to the list of infection victims.

COMING ATTRACTIONS

Here's what this book will teach you. Each chapter explains common medical procedures that you may encounter in a hospital, such as surgical wound care, urinary and venous catheter use, tube feeding, and many others that present opportunities for infections to occur. The more you know,
Introduction

the more you’ll know what to look for and what actions you can take to minimize your infection risks.

As you read, you’ll probably have lots of questions. To make it easy, I’ve included FAQs in every chapter, along with simple answers that you don’t have to be a doctor to understand.

I’ve also included four- or five-step prevention checklists at the ends of many chapters. These will jog your memory about simple actions you can take, such as reminding caregivers to wash their hands before they put on surgical gloves. Like airplane pilots, doctors and nurses also use checklists so they won’t forget important steps in your care. As an empowered member of the professional care team, you deserve a checklist, too.

One more thing. Just as you take along clothes and personal items you may need in the hospital as well as your health insurance cards, now I want you to take along another kind of insurance card. It’s a wallet-size card I developed to remind you about the 8 solutions to preventing healthcare-acquired infections that you’ll read about in this book. You will find the card on the back inside cover of this book. Take the card to the hospital to quickly remind you about seven important things you need to do as a patient.

SHARING THE MESSAGE

From what you’ve read so far, you might think that this book is only about medicine and science. In fact, it’s mostly about people. Over the past three decades, I’ve had the rewarding experience of talking to people like Teri and other patients and families who were victims of healthcare-associated infections. In putting this book together, it was important for me to share their messages. I also contacted several medical consumer groups and asked if their members were willing to include their infection reports. The response was overwhelming. The responders were grateful that medical professionals wanted to hear about their loss and apply those lessons to preventing similar tragedies in the future.

You’ll read some of their stories in the following chapters. I also invite you to view my blog at http://www.drmcguckin.blogspot.com where you can share your own story and post infection prevention tips that may help other readers and their families.
Did you ever have a cut that took a long time to heal? The skin around the cut probably looked red and even felt a little warm. And when you picked part of the scab off—admit it, that’s what everyone does—some yellowish pus oozed out. Yuck! An infection.

If you’re a healthy person, your cuts usually heal without a problem. So, what went wrong this time? “Germs” got into the cut, and your body’s defense system didn’t fight them off fast enough. That’s the simple, plain-English explanation. Scientifically, it’s more complicated.

First, you need to know that trillions of microscopic bacteria (germs to you and microorganisms to scientists) live on your skin, in your mouth, in your gastrointestinal tract, and in other areas inside your body. Most of them cause no harm, and in fact actually help you maintain good health. Some of these bacteria hitch a ride into our bodies by living in the foods we eat. For example, some yogurts contain “live cultures” of bacteria called Lactobacilli that live in your gastrointestinal tract and aid digestion. Other harmless bacteria help you by just multiplying so much that they don’t leave room for harmful microorganisms to survive.

A Word About Bacteria

Not all bacteria are harmful. Many are even helpful.

That’s why some yogurts you eat are made with “live cultures” of Lactobacilli, which aid digestion.
Second, you're protected because your body’s immune system works 24/7 to keep harmful bacteria, viruses, and other disease-causing invaders (“pathogens”) from multiplying and causing problems.

Here are the basic facts about those germs living inside you:

**Q: What exactly is a microorganism?**

**A:** A living thing that is so tiny that it can be seen only with a microscope. Bacteria and viruses are microorganisms. They are also called microbes.

**Q: Are there other types of infection-causing microorganisms?**

**A:** Yes, fungi (plural of fungus), which are microscopic plants, and protozoa, which are microscopic single-celled organisms. If you bake bread, you probably use yeast—that’s a fungus. If you’ve ever had athlete’s foot, you can blame it on a fungus, tinea pedis. If you travel abroad, you probably know about the protozoa, *Plasmodium falciparum*, which causes malaria in people who are bitten by an *Anopheles* mosquito, the species that transmits the disease.

**Q: What do bacteria look like?**

**A:** Bacteria consist of only one cell, but they exist in colonies containing numerous bacterial cells. They reproduce by growing and then dividing into two. Bacteria are in three shapes: balls (“cocci”; for example, *Streptococci*, the cause of strep throat), rods (“bacilli,” such as *Escherichia coli*, a common cause of urinary infections), and spirals (for example, *spirochetes*, most notably *Borrelia burgdorferi*, which causes Lyme disease).

**Q: What do viruses look like?**

**A:** Viruses are much smaller than bacteria. They’re not even cells. They consist of molecules of DNA or RNA, which contain the virus’ genetic code, all held together by a thin coating of protein. Most viruses are shaped like rods or spheres. They can’t divide and reproduce. Instead, viruses act by getting inside the normal cells in the body and taking them over. Then the DNA or RNA of the virus causes the host cell to make copies of the virus. You’ve probably heard of the influenza virus, which causes flu, and the human immunodeficiency virus (HIV), which causes AIDS, and almost
everyone is personally familiar with rhinoviruses, which cause the common cold.

Q: **What’s more dangerous, bacteria or viruses?**

A: Although both bacteria and viruses can be deadly, serious viral infections are more dangerous because they’re more difficult to treat. Most—but not all—bacterial infections can be cured by readily available bacteria-killing drugs (antibiotics) that travel in the bloodstream to reach the infected areas. (In Chapter 3, you’ll read about some bacteria that are especially deadly because they are resistant to antibiotics.) In contrast, viruses live inside cells, so it’s hard for drugs to reach them. That’s why it’s been so difficult for scientists to develop effective antiviral medicines. Fortunately, vaccines are available to prevent some, but not all, viral diseases. For example, people with AIDS, caused by the HIV, must take many powerful drugs to control their disease. But as yet, medication has not been able to cure the disease, and no effective vaccines have been developed to prevent it.

Q: **Can antibiotics help people with AIDS and other virus infections?**

A: Remember, viruses live inside your cells, where antibiotics can’t get to them. So an illness caused by a virus absolutely should not be treated with antibiotics. However, many people with AIDS and other severe viral illnesses often develop concurrent (that is, developing at the same time) bacterial infections that antibiotics can help to control.

Q: **Then why do doctors sometimes prescribe antibiotics for people who just have a bad cough or cold?**

A: Most doctors know that they shouldn’t prescribe antibiotics for otherwise healthy people who have a new-onset (“acute”) cold, bronchitis, or sinusitis (an “upper respiratory tract infection”). That’s different from a long-term (chronic) infection. But even when doctors explain that antibiotics won’t help some infections, patients often pressure them to prescribe antibiotics, and doctors give in to keep patients happy. Studies show that concurrent bacterial infections occur in only a very small proportion of people who develop acute upper respiratory tract viral infections. So skip the antibiotics when you have a cold, unless you have related medical problems.
Antibiotics

Antibiotics don’t work against viral infections.

A cold is a viral infection, so don’t ask your doctor to prescribe an antibiotic when you have a cold.

YOUR IMMUNE DEFENSE TEAM

Getting back to your cut, the break in your skin allowed swarms of bacteria to enter an area of your body where they’re not supposed to be. Some of those bacteria are the kind that are always present on your skin without doing any harm (they’re called resident bacteria). Many other types of bacteria that don’t live there permanently also land on your skin (they’re called transient flora). When an opening in the skin gives bacteria—especially the transient ones—a pathway to get inside, there’s trouble ahead.4

These invading bacteria attach themselves to healthy cells where they grow and multiply, causing damage to the surrounding cells. That’s what an infection is: a condition in which harmful microorganisms start to multiply and interfere with the body’s normal functioning.

If you have a healthy immune system that isn’t weakened by illness or by side effects of drugs, it will immediately send out several kinds of infection-fighting white blood cells called leukocytes. These specialized leukocytes—neutrophils, monocytes, T and B cells, and natural killer cells—surround and destroy harmful bacteria and viruses. Sometimes this happens so fast that you never realize that you had an infection.5 When you are in the hospital, your white blood cells sometimes don’t work as strong fighters, so the bacteria aren’t killed. These bacteria then will be able to multiply and cause an infection.

YOU’VE BEEN COLONIZED!

In earlier times when explorers arrived on distant shores, they often faced challenges such as harsh climate, illness, or famine. But explorers can be a hardy bunch, and soon their colonies started growing and expanding. Bacterial infections actually start in a similar way.

The first stage of infection is called colonization, during which bacteria find a way into the body (a “portal of entry”) and attach themselves to cells (for example, the skin cells around your cut) or to tissues (such as
the urinary tract, the digestive tract, or the respiratory tract). If the initial barrage of infection-fighting leukocytes doesn’t kill the first bacterial “settlers,” they continue to grow and multiply into increasingly larger colonies.\(^6\) The time taken is called the incubation period.

Depending on the type of bacteria and the area that’s colonized, it could take days, weeks, or even months before the spreading infection causes any symptoms. With your cut, you had classic symptoms of inflammation: redness, heat, swelling, and pain. Other types of infection could cause fever, nausea, muscle aches, sneezing, or coughing, to name just a few possible symptoms.

At the point when symptoms appear, you no longer have a simple infection; you now have an infectious disease that could possibly spread to other areas of your body. It’s definitely time to see a doctor for an examination, perhaps some tests, and most likely, an antibiotic prescription.

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**It’s Greek—or Latin—to Me!\(^7\)**

Trying to wrap your tongue around the names of bacteria and viruses can be a challenge. Understanding the names is even more difficult. After all, most of them come from Greek and Latin words and from personal names of people who first identified the pathogens.

The following clues should help:

- Most names have two parts: a genus (the kind of pathogen) and a species (appearance) name. For example, *Escherichia coli* (better known as *E. coli*). The term *Escherichia* honors Theodor Escherich, who identified this bacterium. *Coli* comes from colon, the large intestine; *coli* means “of the colon.”

- Some names are formed by combining two or more Latin or Greek words into one compound name. For example, *Rhodospirillum rubrum*. Rhodo is derived from the Greek word rhodun meaning rose; spirillum is from the Greek word spira meaning spiral; and rubrum is Latin word meaning red.

- Why are all the names of bacteria printed in italics, but not all virus names? Well…that’s just the way it’s always been done.\(^8\)
WHY ME?

You eat nutritious foods. You do plenty of exercise. You sleep well. You are the picture of good health. So why did you suddenly get an infection from a simple cut? As Shakespeare might have answered, “Let me count the ways!” There are plenty!1,9

- First, you have to encounter a pathogen. The most common way that happens is through your skin, when someone touches you or you touch someone or something, and bacteria is passed on to you. Before you have a chance to wash off the bacteria, you may touch your mouth, nose, or eyes, which provides an entry point for the bacteria.
- Maybe someone standing close to you coughs or sneezes and bacteria fly directly into your eyes, nose, or mouth, or onto your hands.
- Do you have a new love interest? More than 500 kinds of bacteria live in people’s mouths. Perhaps one of them got passed along while you were kissing. During sexual intercourse, you may have been exposed to the herpes simplex virus (herpes type 1 causes mouth sores and herpes type 2 causes genital sores). If you had unprotected sex, there’s also a risk of transmission of gonorrhea bacteria or HIV.

Clean Your Hands!

Your mouth, nose, and eyes are good entry point for bacteria to get into your body. That’s why you need to wash or sanitize your hands often.

If bacteria get on your hands—as often happens—and you don’t wash them, guess where those bacteria end up when you put your fingers in your mouth, or touch your nose, or rub your eyes? They end up in your respiratory system, your circulatory system, and internal organs very quickly!

- Perhaps you didn’t keep your hamburger on the barbecue grill long enough to kill harmful bacteria. Several hours after eating, you started to feel nauseated.
- Another possibility is you’re visiting a friend in a city far from home or you’re sightseeing in a foreign country. Although you’ve developed immunity to many pathogens common in your geographic area, you’re now exposed to new pathogens to which you’re more susceptible.
Did you consider the season or the altitude? Some bacteria and viruses thrive in certain climates and locations. That could increase your risk of infection.

Were you hiking in the woods? Check yourself for ticks. A tiny deer tick can transmit bacteria causing Lyme disease. Mosquitoes can also transmit pathogens.

What about emotional factors? Are you under stress at work? Did a good friend die recently? Are you feeling depressed? Stress and emotional upsets can lower your immunity.

THE DOCTOR WILL SEE YOU NOW

One more thing. Didn’t you have a doctor's appointment last week for your yearly physical examination? Doctors' offices are loaded with bacteria, viruses, and other pathogens because so many sick people are there spreading their germs around. Not to mention germs on the doctor's examining table, the stethoscope, thermometer, blood pressure cuff, and other equipment, and on the doctor, too. The longer you stayed in the office waiting room—and possibly reading old magazines that have passed through many patients' hands—the greater was your risk of picking up an infection. Look at the doctor's hands below and on the next page and you'll see what I mean.

If a doctor's office presents so many infection risks, just imagine what might happen in a hospital. You'll find out in the next chapter, but first read Deborah Shaw’s story about what actually did happen to her father when he developed a healthcare-associated infection.

Deborah Shaw’s Story: The Last 3½ Days in the Life of My Father, Gene Shaw

I wish I had known what to do to save my father. He was admitted to the hospital on midday Wednesday, November 10, 2004, suffering from a severe blood infection (sepsis) that was due to leukemia. Less than 24 hours later, after being given intravenous antibiotics and a blood transfusion, he was walking around again, joking, and entertaining visitors.

However, by Friday, he was noticeably tired and coughing. Doctors were not alarmed by his cough. I was. By 7 p.m. that night my father was also alarmed, because he knew what it felt like to have pneumonia—he had a bout of it that spring.
Also, along with his bad cough, he had pain in his shoulder blade. That often occurs from a lung infection.

We had the nurse contact the on-call doctor repeatedly, but the doctor refused to come in to the hospital. By 2:30 a.m. Saturday morning, I had given up, after pleading, threatening, and cajoling the Nursing Supervisor. Nothing helped. We were watching my father die.

Finally, the regular doctors and nurses came in on Monday, but they could not work fast enough to reverse the damage that occurred over the weekend. My father, just barely 73 years old, was dead by 1 p.m. Tuesday, only 3½ days after our first plea for help, 2½ days of which we relied on weekend and night-shift personnel. Those doctors, nurses, and the hospital had completely failed us.

Some healthcare-associated infections are not preventable, even when the hospital staff and family members do everything possible. Mr. Shaw’s leukemia weakened his fighting cells, so bacteria in his blood weren’t killed and continued to multiply—that’s what sepsis means. Sepsis is very difficult to treat. The death rate is very high, especially when the patient’s disease-fighting cells aren’t helping, as happened with Mr. Shaw. When the bacteria spread to his lungs, he developed the pneumonia that caused his death.

Was the hospital responsible for Mr. Shaw’s infection? Did they do everything to prevent his death? You might argue that they did fail him by not responding over the weekend in a timely manner. But you can also argue that his immune system just could not provide support for him to survive, even if the staff had responded earlier.

So what could Deborah Shaw have done differently? In Chapter 5, you will learn what your rights are as a patient or as someone helping a patient (an advocate) and how to take matters such as this into your own hands. For example, you or your advocate can request what’s known as a “rapid response call,” which immediately summons a Medical Emergency Team of critical care doctors to the patient’s bedside. Most patients don’t know about this, but now you do. It is your right to request a rapid response, when necessary.

Although the outcome may not have been different for Mr. Shaw even if Deborah had known this technique, at least the guilt of not knowing how to get help or to be heard would not be part of her grieving process.
**Enemy Invaders**

Doctor's hands showing germ areas (black dots).
(WHO Guidelines on Hand Hygiene in Healthcare.\textsuperscript{10})

Same doctor's hands showing how bacterial contamination increases with time during patient contact.
( WHO Guidelines on Hand Hygiene in Healthcare.\textsuperscript{10})