The

PreOp-Guide

A Patient Guide to Surgery

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www.preopguide.com

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Forward

The information contained in this guide is designed to provide an informational foundation on which to base conversations with your personal physicians. This information is in no way intended to supersede the recommendations given to you by your medical caregivers. Medical care is a highly individualized art, and a therapy that is appropriate for one patient may be contraindicated for another. Therefore, you should not follow any suggestions in this text that contradict the advice given to you by your personal physician. If you have a question about your medical condition, or if at any time you feel you need the advice or treatment of a physician, you should seek it immediately. This text is in no way designed to serve as a surrogate for appropriate medical care by a licensed medical practitioner.

Chapter 1: Introduction

The PreOp-Guide is designed to be a helpful tool in your preparation for surgery. In it you will find useful information that will enable you to more fully understand the process associated with preparation for and recovery from general surgery. This guide is not intended to replace interaction with your health care providers, instead its purpose is to enhance this interaction by making you a more informed patient. Like it or not, in today's health care world, it is the rare physician who has the time to answer all of the many questions you are sure to have. Often, patients and family members are hesitant to ask even the most basic questions of their physicians for fear of alienating themselves from their doctors. At the same time, we now live in a world where information is power, and patients are no longer content to sit back and let the course of their care be dictated by someone else. By reading the PreOp-Guide and completing the PreOp-Worksheet contained within it, you will be better prepared going into surgery and, hopefully, will not have questions which remain unanswered.

This guide is divided into several simple chapters. It was developed to give patients who are scheduled for elective surgery a chance to have their questions answered prior to their procedure. The information in the guide is equally applicable to patients who have emergency surgery, but obviously they won't have the luxury of reading this guide before their operation. In writing it, I intentionally chose to avoid a lot of medical jargon you will hear before, during, and after your trip to the hospital. This was done to make it easy to quickly read the guide before your operation. However, over the course of your hospitalization, you are probably going to hear a number of medical terms that you are unfamiliar with, so the final chapter of the book is a glossary of medical terms. I suggest that you read the guide as far in advance of your operation as possible. This is not always easy, since often the time between seeing your physician and having your surgery is only a matter of days to weeks.

When the time comes to go to the hospital, put the guide in the bag you bring with you, and take it out whenever you run into a situation you don't understand. Most people find the process leading up to – and more importantly – following surgery to be hard to comprehend. You will often be asked to do things that are frankly unpleasant, and not knowing why they are important sometimes makes it difficult for you to comply. I have found, however, that when people know why they are doing things, and also why they should avoid doing certain things, it becomes easier for both the patient and the hospital staff to work together. Remember that no matter what type of surgery you are having, or where the procedure is going to take place, the bottom line of the entire process is your successful recovery. Surgeons are a dedicated group of highly trained professionals who cure disease by performing a carefully controlled injury. When doing so, we often run the risk of causing significant complications or further injury. It is crucial, therefore, that patients be very well studied and prepared before the operation and that no minor detail be overlooked after the operation.

Probably the most important chapter in the book is the one pertaining to your preoperative preparation. Most surgeons will give you a page or two of written instruction prior to your surgery. I would suggest that you follow those instructions to the letter. They were developed through years of experience, and your surgeon is telling you that following those instructions gives you the best chance of having a successful operation and quick recovery. I would like to make it very clear that surgical practices vary widely throughout the world, and people who practice surgery in different parts of the United States also use different techniques. It is believed

that the type of operation you undergo for any given illness is most related to where your surgeon did his or her training. There is nothing inherently wrong with this, as the expression goes, "there is more than one way to skin a cat." Therefore, if anything you read in this guide contradicts the specific advice of your surgeon, follow your surgeon's own guidelines.

Although most surgeons will tell you how far in advance you should alter your diet or what medicines you should or should not take, many neglect to advise you that a few simple (and some not so simple) measures can be taken to greatly diminish your chance of complications. These recommendations are all included in the chapter on preoperative preparation; and if you follow them, you will know that you have done all you could to go into the operating room in the best possible condition. I would like to stress one more thing about preparing for surgery, and this is crucial. You will be asked many very personal questions prior to your surgery, some of which you will find uncomfortable or perhaps downright offensive. I cannot stress enough the importance of your being honest with yourself and with your doctor when answering these questions. The preoperative period is a difficult, emotional time. No one has surgery these days unless there is a significant problem, and adjusting to the thought that you are ill is difficult to do. This may make you feel defensive or put upon, and it is tempting to gloss over other medical, social, or psychological problems in your quest to rid yourself of this disease. Just remember that surgeons do not treat diseases, but rather treat patients. Problems – such as heart disease, diabetes, obesity, alcohol or tobacco use, or drug dependency – all have an enormous impact on the outcome of your surgery. If you have any medical or psychological conditions, your surgeon needs to know that about them before he or she can best care for you.

Currently over 20-million major surgeries and over 70-million surgical procedures are performed each year in the United States. With the advancements in surgical technique, surgical instrumentation, intensive care units, and better anesthesia, surgery is safer today than it has ever been. Most of you reading this guide will pass in and out of the hospital without a problem, and your recovery process will be uneventful. You must keep in mind, however, that even the most minor procedure carries with it some degree of risk. You could develop and infection in your wound; the disease may be more extensive than initially thought, or you may have an allergic reaction to one of the prescribed medications. It is for these reasons that surgical procedures are not performed lightly. Your physician will have to weigh the risks posed by surgery against the expected benefit you will enjoy from undergoing the procedure. This is a discussion you should have with your doctor when he or she is outlining the treatment options available to you. In many cases there is no right or wrong answer; and the decision to proceed, and how to proceed, depends upon your wishes and your surgeon's abilities.

There are a few more things you should consider before going into surgery. The first is how you want the information about the operation and your state of health conveyed to your family and friends. Some people live very open lives, and do not mind that detailed information about their bodies is shared with family, friends, and neighbors. On the other hand, some people prefer to live very private lives, and the thought of their medical condition being shared with anyone is a repugnant prospect. Discuss this with your family or friends who will attend to you before and after your operation. This information should also be shared with your medical provider, who will ultimately be responsible for dispensing this data. The second issue you should discuss is what you would like to happen in the event that something goes wrong. I mention this not to scare you; but because realistically, there is always the possibility of death associated with even the most seemingly trivial operation. You should designate a close relative to be your spokesperson if you become unable to make decisions for yourself. Some people prefer to formalize this

relationship by obtaining a durable power of attorney, which is a legal document that gives someone else the authority to make decisions for you in the event you become incapacitated. Whatever method you choose, you should have this discussion with one or more of the people that are close to you. Frequently in the face of grave problems, family members find that they really have no idea what your wishes are.

With all of this said, it is now time to prepare you for your experience. In the upcoming chapters, you will learn more about the process you will face prior to surgery, what to expect when you arrive at the hospital, and what will happen to you after your surgery is over. If you find that you don't understand some of the information provided, remember to bring this guide with you to the hospital. Referring back to the guide while you are experiencing the pre- and post-operative situations described may answer your questions.

Chapter 2: The PreOp Evaluation

In general, the purpose of a preoperative evaluation is to determine if you are healthy enough to undergo an operation. As I mentioned, surgery is really nothing more that a controlled injury, and your body responds to surgery just as it would to any other stress. You will find that you may feel very frightened or anxious both before and after surgery. This is your body's fight or flight response in action. After surgery, you will also find that you retain fluids, and your weight may increase several pounds rapidly. This is simply another manifestation of your body's response to stress and will resolve as your recovery progresses.

Other organs are involved in the stress response as well, and it is for this reason that much of the testing is done. It is important to know that the function of your heart, lungs, liver, and kidneys are adequate. If not, you may need to have some medical "tuning up" prior to your surgery. It is not uncommon for someone who goes in to see the doctor for foot pain to wind up being treated for diabetes or even having an open-heart operation. If you have been good about seeing your doctor regularly, things like this probably won't happen to you, but there are many people who only see their physicians after problems become unbearable. These people often find that they are harboring more than the problem that brought them in to see their doctor.

Blood Work

You should expect to have your blood drawn on more than one occasion while preparing for surgery. It is likely that your primary care physician has drawn blood from you to determine what is causing the problem that brought you into the office. Once you are referred to a surgeon, you will probably have more blood drawn for tests that are more specific to the problem diagnosed. Beyond those tests, you will be given a battery of tests that assess the function of your vital organs. Blood will be drawn to determine the number of oxygen-carrying red blood cells (RBCs) that you have. This same test can also determine the number of infection-fighting white blood cells (WBCs) you have, as well as the number of clot-forming cells called platelets. You will probably hear your doctor talk about your hemoglobin (the amount of iron in your red blood cells), your hematocrit (the volume of RBCs in your blood), and your white count (the number of WBCs in your blood). Unusual values in these numbers may require a postponement of your surgery until it can be determined why you have abnormal results. In most otherwise healthy people, this test comes back normal. The next test is called a coagulation profile, sometimes referred to as a PT and PTT. This test is designed to determine if your blood clots in the normal fashion. As you can imagine, performing surgery on a patient whose blood does not clot normally can be quite a challenge. Medications can be administered to temporarily correct abnormal blood clotting; however, if you are scheduled for elective surgery and you have a disorder of coagulation, your surgeon will want to know where the problem lies and will try to correct the problem prior to your operation. At a minimum, you will also have blood drawn to determine your kidney (also called renal) function. These two tests measure the amount of protein breakdown products circulating in your blood, namely blood urea nitrogen (BUN) and creatinine; again, it is important to have normal kidney function prior to surgery. If your test shows abnormalities in this regard, you will probably be asked to see a nephrologist (kidney doctor) prior to surgery. Other common tests prior to surgery include a glucose level to determine if you have diabetes, and one to measure electrolyte levels.

Most of this testing will be done prior to your arrival at the hospital, so that the results are available before you enter the operating room. If you are having minor surgery, such as the removal of a growth from your skin, these tests may not be performed. When you arrive at the hospital, expect to have more blood drawn. This is sometimes done in conjunction with the placement of an intravenous (IV) catheter, but sometimes you will require more than one "stick" or needle insertion to accomplish this. The blood drawn on your admission is typically used to perform a type and crossmatch in the event that you require a blood transfusion. These tests can not be done earlier because the blood samples used for this are good only for a few days. If you have had any abnormal lab values on your initial blood testing, repeat levels may also be drawn prior to surgery.

Urine Testing

Along with the blood drawn at your preoperative visit, most physicians will ask that you submit a urine sample as well. Urine samples are useful for testing a number of things, as many of your body's metabolites are removed in the urine. A urinalysis (or UA) can indicate your state of nutrition, your level of hydration (or dehydration), the presence of diabetes, or the presence of an infection. If your UA shows that you have a urinary tract infection (that is, an abnormal number of bacteria in your urine), your doctor will prescribe antibiotics prior to surgery. This is because wound infections are much more common in patients who have an underlying infection at the time of surgery. For those going to the hospital to have a fistula or graft placed for dialysis access or a kidney transplant, you will have already had many more extensive tests performed to determine the function of your kidneys.

Chest X-ray

The preoperative chest x-ray (CXR) is not done on all patients, but it is fairly routine for those patients over the age of 50 or patients who have a history of smoking or lung disease. If you fall into one of these three categories and you have not had a CXR in more than three months, you will probably need to have one prior to surgery. In obtaining this test, your surgeon is looking for a number of things, including the presence of an infection, the indication of lung disease, or the presence of a lung mass. Additionally, chest x-rays let physicians look at the size of your heart and whether any fluid is accumulating in your lungs (a condition known as congestive heart failure). Abnormalities on the chest x-ray may mandate a trip to a pulmonologist (lung specialist) or cardiologist (heart specialist) prior to elective surgery.

Smokers or patients with known lung disease will need additional testing prior to surgery. If your CXR is abnormal or if you are going to have a lung resection, your surgeon may want you to have pulmonary function tests (PFTs). This series of tests determines how well you move fresh air in and out of your lungs. It also allows your surgeon to tell how well you absorb the oxygen that you inspire. Patients who have a mass in their lung will need a chest CT (or cat scan), which provides very high resolution images that will aid your surgeon in determining which procedure to perform. In some parts of the country, an MRI will also be performed in the preoperative period. Finally, your doctor may order an arterial blood gas (ABG) prior to surgery. This test requires that a needle be inserted into one of your arteries (usually in your wrist or groin), and determines the amount of oxygen and carbon dioxide in your blood, it also determines the pH. (or acidity) of your blood. This information is important in determining whether you are able to withstand an operation, and is also necessary for your postoperative care.

Electrocardiograms (EKG, also known as an ECG)

Obtaining an EKG prior to surgery is an important part of the preoperative work-up. As mentioned before, surgery causes tremendous stress on the body, and one of the organs most important in the stress response is the heart. Just remember back to the last time you were frightened or upset, and think about the pounding feeling you had in your chest. This is the effect that the stress hormone epinephrine (adrenaline) has on your heart. In response to stress, your heart not only beats faster, but it also beats more forcefully. If you have a normal heart, this is no problem, but if your heart has a poor blood supply (as you see in patients with coronary artery disease), this added work can cause serious problems. The EKG is not a forward-looking test, in that it can not predict what will happen to your heart in the future. People with normal EKGs have heart attacks every day. What the EKG can do is look at the electrical activity generated by your heart. The pattern of the heart's electrical activity can tell your doctor if you have ever had a heart attack in the past (which you may not even have known about). It also shows if your heart is in a normal rhythm, how well the conduction system of the heart works, and if any of the chambers of the heart are working too hard (a condition call hypertrophy).

An abnormal EKG will usually trigger a series of other tests, including echocardiography and stress testing. In severe cases, you may be asked to have a cardiac catheterization immediately. An echocardiogram is a noninvasive (i.e., non-painful, requiring no needles) test which uses sonar waves (similar to those on submarines) to create an image of the heart. Using this test, a well-trained cardiologist can determine the heart's size, the function of its valves, any abnormal thickening of its walls, and the pressures inside the chambers of your heart. A stress test does what its name implies, it puts your heart under stress either by exercise or by injection of drugs, which in turn alters the heart's perfusion (blood supply). The heart's response to this stress is then measured by EKG or by radioisotope scanning. This will let your doctor know if any area of your heart has a poor blood supply, and if you are at risk of having a heart attack during, or immediately after, your surgery. Please note again that a normal stress test or echocardiogram does not rule out the possibility of a heart attack, but normal results suggest that your heart is in good enough condition that a heart attack is unlikely.

For those of you who have abnormal results on the preceding tests, or those of you who are being considered for coronary artery bypass graft (CABG) surgery, the next step is a cardiac catheterization. This is an invasive test in which a cardiologist will pass a long, thin tube through one of your arteries (usually in your groin or upper arm) into the blood vessels that supply your heart. A contrast material, which shows up on x-ray, will then be injected into those arteries, and the results of these injections will be captured on film. By reviewing this film, a cardiologist or cardiac surgeon can tell whether you have narrowing or blockages in any of the arteries supplying your heart. If a problem is found, you may need to have an angioplasty (dilation of the narrowed artery, usually with a balloon) or bypass.

Prior Medical Conditions

It should come as no surprise that as people get older, they develop more medical problems. As surgical techniques have evolved, surgeons have gained the ability to operate on patients who only a few years ago would have been considered "too sick" for an operation. In order for this to occur, it is becoming more and more important for surgeons to optimize the medical treatment of the non-surgical diseases that patients have. For this reason, your surgeon may refer you to one or more medical specialists prior to your surgery. Your heart, lungs, kidneys, immune system, liver, and endocrine system all must be in the best shape possible prior to surgery. If every organ

is working as well as it possibly can, this will minimize the chance that something will go wrong once you are subjected to the stress of surgery. Evidence of prior medical conditions will show up on the preoperative testing your surgeon performs; however, it is ultimately your responsibility to keep your surgeon informed of your past problems and treatments. After all, it is your health we are working to restore.

Anesthesia Evaluation

Unless you are scheduled for a minor surgical procedure not requiring anesthesia or sedation, you will be under the care of more than one physician while in surgery. Anesthesiologists or nurse anesthetists, their partners in anesthesia care, play an essential role in the success of your operation. Many advances in surgical technique have followed advances in anesthesia care; as such, the anesthesia you receive is as important as the procedure you undergo. Prior to surgery, a professional from your anesthesiologist's department will assess your medical condition and anesthetic risk. The questions they ask will be largely identical to the ones asked by your surgeon (and probably your primary care physician as well). It is easy to become frustrated when asked the same questions over and over again, but rest assured that the redundancy built into the system is for your own benefit. If you can, fill out the PreOp-Worksheet before you go in for preoperative testing or anesthesia evaluation. I assure you it will save you both time and effort.

PreOp-Worksheet

The PreOp-Worksheet, which is included in this guide, will give you the opportunity to provide your physician with all of the information he or she will require to give you the best care possible. You should look at the worksheet soon to get an idea of the types of questions it asks. Most of the questions are self-explanatory, and Chapter 10 of this guide will help you complete the complicated ones. It will require a small investment of time and effort in order to complete the worksheet, but I guarantee that it will be time well spent. The questions in the worksheet are the ones I struggle to answer on a daily basis while caring for surgical patients. Yet the information required to fill in the questionnaire is all at your fingertips while you are sitting in your home. Reading this guide will hopefully provide you with the answers you are looking for regarding your surgery. Completing the worksheet will increase the likelihood that your health care providers have the information they need to best help you.

Chapter 3: Inpatient Surgery

Inpatient surgery is rapidly becoming a thing of the past in the current medical-economic climate. Operations that routinely required a 2-day hospitalization only 10 years ago are now being performed on an outpatient basis. Consequently, people who require admission following their surgery tend to have had major procedures. Hopefully, by this time your physician has told you whether or not you are going to be admitted to the hospital after your operation. If this has not been discussed yet, ask the next time you talk to your surgeon or one of his or her staff.

In reality, the trend toward outpatient surgery is not all bad. There are many benefits to recovering at home. The hospital is basically a building full of sick people, many of whom are carrying dangerous viruses and bacteria. In this day and age, if you absolutely don't need to be in a hospital, you shouldn't be. On the other hand, there are obviously services provided in a hospital that cannot be provided anywhere else. Additionally, nearly all hospitals are staffed 24 hours a day, 7 days a week, 52 weeks a year by physicians, nurses, respiratory therapists, radiology technologists, and numerous other allied health professionals. For surgical patients, the decisions regarding hospital admission are based on the issues of pain control, ambulation (that is, the ability to get around), nutrition, respiratory function, and surgical drain management. Typically, surgical patients will have issues in one or more of these fields, and once all of the problems have been addressed, it will be time to go home to complete the recovery phase of the operation.

When talking with your surgeon about your admission, you should ask how long a typical patient remains hospitalized after operations of the type you are having. You must take into consideration you personal attributes as well when you consider the answer. I have known many patients who left the hospital of their own volition when I would have preferred they remain in bed. I have also known people who virtually had to be chased out of the hospital with a stick despite having recovered quite well. Your surgeon will be able to assess your condition and give you a fairly accurate picture of your estimated length of stay. This presupposes that the operation will go technically well and that you will recover without any complications. Since this is the case in the overwhelming majority of procedures, you can rest assured that almost everyone will be home within a day or two of the doctor's estimate. You should also ask you doctor how long it will be until you are well enough to resume work or your favorite leisure activities. Frequently you will be home days to weeks before you are feeling up to a game of golf or a day at work.

Once you have an idea how long you are going to be in the hospital, you can begin to plan what you need to bring with you. The first thing you should remember to pack is your completed PreOp-Worksheet. Keep it where it is easily accessible; in fact, you may even want to make a few copies of it so that you can give it directly to the numerous nurses, administrators, discharge planners, and physicians who will be attending to you during your stay. Beyond that, you should bring a few of the most basic necessities of comfort and hygiene. Remember that even if you show up with nothing but a smile, the hospital will be able to provide everything you need to complete your stay. I personally prefer my own toothbrush to a disposable brand, so I suggest bringing your own. If you wear dentures, bring the cleaners and bonding agents you need. Hearing aids with fresh batteries are important for those who need them, as they will improve communication with the hospital staff. If you wear glasses, bring the oldest pair you have that still allows for adequate vision. You will find that small objects such as glasses have a way of

losing themselves during your hospital stay. An inexpensive watch or travel clock is always nice, but unfortunately things of value have a tendency to disappear from hospitals as well. For traveling around the building, a light robe and a pair of slippers are welcomed additions; the outfits provided for hospital patients tend to be flimsy and leave you somewhat exposed. A pair of sweat pants and a sweatshirt are reasonable items to bring, particularly in cold weather. If you have a tendency to feel cold, an extra shawl or blanket may also be useful. Some people like to bring their own pillows; but beware, they will always leave stained with blood, sweat, and other body fluids. The recovery period following surgery can be pretty messy. Underwear is a luxury you may not be allowed to enjoy, depending upon the site of surgery; but bring an extra pair or two and I guarantee you won't regret it. Some women also find that a very basic makeup kit allows them to manage their looks at a very stressful time. A common joke among hospital staff is that once a woman patient feels well enough to apply makeup, it's time for her to go home.

If you enjoy reading or playing cards, bring along a book or deck of cards to pass the time. The small hand-held electronic games seem to be a particular favorite these days, but again remember that you should not bring anything that you do not want to lose. In terms of money, you will find that having a little pocket cash comes in handy. Most hospitals will provide you with a personal telephone and television set, but increasingly you will find that there is an up-front daily charge for the use of each. Additionally, there are newspapers and magazines for sale, as well as snack foods (for those of you who have and appetite or will be allowed to eat). A fair estimate for daily expenses is dependent upon where in the country you live, but $10-15.00 a day should be adequate for most patients. I would advise that you have the money brought in to you on a daily or every- other-day basis, as you would not want to keep a large sum of money lying around. Remember that you will be sleeping for most of the days and nights following surgery, and no fewer than a dozen people will pass by your bedside each and every day. I am not implying that hospital staff cannot be trusted. Remember there also will be other patients and their visitors wandering the halls. I can recall more than a few con artists and petty thieves who've made their own rounds on the wards, preying on the ill and defenseless.

Perhaps as important as what to bring to the hospital is a list of the things you should not bring. As I mentioned above, objects of value tend to disappear in the hospital. For this reason, there is absolutely no reason to bring jewelry of any kind with you, this includes rings. In fact, if you develop severe swelling postoperatively, you may find that someone will actually cut the rings off your fingers so you don't lose circulation (this happens all the time). In order to avoid the loss or destruction of valued personal items, just leave them at home. Purses and wallets also have no place at the bedside. Of course, you will need a form of identification and your insurance and/or Medicare/Medicaid cards, so plan to bring these in an envelope or small change purse. Finally, you will have little need for street clothes and shoes (except on the day you are discharged). If you will have friends or family members visiting, have them bring in your clothes the day prior to discharge (or when they come to pick you up for that matter).

When planning your arrival to the hospital, you should check with your doctor's staff to determine what time to arrive. In a bygone era, patients were admitted a day or two before their operations to complete the preoperative preparations. Intravenous lines were established, bowel preparations were administered, and laboratory tests were drawn. Today most of the preparation will be completed before you arrive at the hospital. Most institutions require you to arrive several hours prior to the procedure so that you may complete the admission paperwork and get changed. Admitting centers typically have a place for you to store your belongings during surgery and allow you to change. If possible, it is nice to have someone accompany you to the hospital for this

process, as there are always things that need to be returned home, and frequently there is a fair amount of waiting time before going to surgery.

There are several things you should keep in mind when you get to the hospital. The first is that the admitting staff does not bear any responsibility for the delays you may possibly face. Surgeons schedule cases to follow one another, and unless you are the first case of the day, it is highly likely that your operation will not begin precisely at the time scheduled. When planning operative schedules, operating room personnel allocate a standard amount of time for each type of operation. The law of averages holds that in half of the cases it will take less than that amount of time to complete the operation, and half of the time it will take longer. Therefore, be prepared to have you operation occur hours earlier or later than scheduled. On occasion, operations are also canceled, opening holes in the OR schedule. In order to make the most efficient use of operating room time, you may be asked to come in early for your surgery as well. Remember also that in most communities surgeons are a scarce commodity, and unfortunately emergency situations arise every day that require the unique skills of a surgeon. If you are unlucky enough to have your elective surgery scheduled at the same time that a person develops appendicitis or a major auto accident occurs, you may find that your case is postponed for hours or perhaps canceled outright. This can be a frustrating experience, but remember that if the emergency were happening to you or one of your family members, you would want immediate life-saving attention from a surgeon. Second, there is a fair amount of lag time between when you leave for the operating room and when the operation actually begins. If not already in place, intravenous access will have to be obtained; you will have to be properly positioned on the operating table (a very important step to avoid complications); surgical instruments and monitors need to be applied to your body; anesthesia must be induced; and a sterilizing procedure must occur before the surgeon may begin the operation. Problems with one or more of these routine events occur daily. Optimal surgical care requires perfect integration of services provided by ten or more people. A problem in any phase of this care can lead to frustrating delays, but again, perfection is the only option when performing surgery.

I hope this chapter has provided you with an idea of what to expect when you show up for your inpatient surgery. The bottom line, I suppose, is that you are embarking upon a journey with many variables. You will be in a state of heightened anxiety, and small frustrations will undoubtedly cause you major stress. If you head in to the situation aware of the possible pitfalls and eventualities, you may be able to better manage your worries and concerns, and understand what is happening to you. If all else fails, bring an enjoyable pastime, and do your best to relax and remember that when you get into the operating room you want everything going your way.

Chapter 4: Outpatient Surgery

If you are scheduled for an outpatient surgery, you are among the first in what will assuredly prove to be the wave of the future. Although outpatient minor surgery has been performed for decades, it is only in the past few years that major operations are being performed on an outpatient basis. There is much rationale for outpatient surgery, but the truth of the matter is that it is less expensive to perform surgery outside of the hospital. Outpatient surgery can be performed at a stand-alone institution that does not have the expense of 24-hour nursing staffs, food preparation and delivery services, radiology departments, physical and occupational therapy departments, social workers, and more. Yet, because it is less expensive, does not mean it is of lesser quality. As the focus of surgery has shifted to outpatient procedures, many benefits to patients have been noted. For one, surgery is more affordable, and people who once were not able to have needed surgery because of monetary considerations are finding themselves able to have needed operations. Many of the indignities of hospitalization can also be avoided. It is nice to be able to show up for surgery in comfortable clothing, and to leave the same day in that same outfit with your operation behind you. No one will ever wake you up in the middle of the night after surgery to take your pulse, temperature, and blood pressure; yet this happens to every single patient who spends the night in a hospital. The food at home, even if it is take-out, is probably better than the meal your unfortunate hospitalized neighbor is eating; and your own bed is more comfortable than any hospital bed I have ever seen. Finally, and perhaps most importantly, the outpatient surgical revolution has forced surgeons to rethink the way they perform their operations. Less painful, less invasive techniques have been developed, and recovery from surgery has improved dramatically in response to these changes. Improvements in oral pain medications have also allowed patients to remain as comfortable at home as those receiving intravenous medication in the hospital.

Don't forget to bring your completed PreOp-Worksheet when you leave for the hospital or surgery center. Although you are staying for only a few hours, several people will need the information you have collected, so having it will speed your admission and interview process. Also, people who are initially scheduled for outpatient surgery sometimes require hospital admission, and if this happens to you, you will want the information on the worksheet available to you and your physician. When you arrive at the hospital or surgery center for your outpatient operation, expect to fill out some paperwork. Once you have registered, you will be directed to a waiting room filled with other surgical patients, as well as their families and friends. As the time comes for your operation to begin, you will be asked to change into a hospital gown, and you will probably be given a locker to store your belongings. You will then be taken to the preoperative area where you may need to have some blood drawn and an intravenous line will be started. A person from the anesthesia department and/or a nurse will interview you to make sure you are ready for the operation; and if all is in order, you will be taken to the operating room.

There are several things to keep in mind when you arrive for your procedure. The first is that the admitting staff does not bear any responsibility for the delays you may possibly face. Just as with inpatient surgery, surgeons schedule cases to follow one another, and unless you are the first case of the day, it is highly likely that your operation will not begin precisely at the time scheduled. When planning operative schedules, operating room personnel allocate a standard amount of time for each type of operation. The law of averages holds that in half of the cases it

will take less than that amount of time to complete the operation, and half of the time it will take longer. Therefore, be prepared to have you operation occur hours earlier or later than scheduled. On occasion, operations are also canceled, opening holes in the OR schedule. In order to make the most efficient use of operating room time, you may be asked to come in early for your surgery. Remember also that in most communities surgeons are a scarce commodity; and unfortunately, emergency situations arise every day that require the unique skills of a surgeon. If you are unlucky enough to have your elective surgery scheduled at the same time that a person develops appendicitis or a major auto accident occurs, you may find that your case is postponed for hours or perhaps canceled outright. This can be a frustrating experience, but remember that if the emergency were happening to you or one of your family members, you would want immediate life-saving attention of a surgeon. Second, there is a fair amount of lag time between when you leave for the operating room and when the operation actually begins. You will have to be properly positioned on the operating table (a very important step to avoid complications), surgical instruments and monitors will be applied to your body, anesthesia will be administered, and a skin sterilizing procedure will be performed before the surgeon may begin the operation. Problems or delays with one or more of these very routine events can occur for a number of reasons. Optimal surgical care requires perfect integration of services provided by numerous, and a problem in any phase of this care can lead to frustrating delays, but again, perfection is the only option when performing surgery.

All of the care you receive up to this point is similar to what you would experience were you to have inpatient surgery. The real difference in outpatient surgery is noticed after completion of the operation. You will likely find yourself in a recovery room after surgery, and depending upon the type of operation performed, you may be lying on a stretcher or sitting up in a chair. Outpatient surgery utilizes numerous types of anesthesia, and the type chosen for your particular case will determine how your recovery progresses. If you had only local anesthesia with mild sedation, you will be monitored for a brief period of time, and then allowed to go home. Before you leave, your medical condition will be assessed, and you will be given instructions on what to expect and when to follow up with your surgeon. You may also be given a prescription for pain medication, antibiotics, or other medications your surgeon feels you will need in the recovery period. In almost all cases you will not be released from the center until someone comes to pick you up. In circumstances where no one is available to bring you home, expect to spend several hours in the recovery room until the effects of the anesthetic have completely worn off. My suggestion is that you make sure you will be picked up after surgery. You can then be driven home, climb into bed, and relax and sleep while the residual effects of the anesthesia wear off. You will then also have someone who can take you to the pharmacy to pick up your needed medications, as well as monitor you for any problems associated with your operation. In a worst case scenario, you will have someone there to take you back to the surgery center, your doctor's office, or an emergency room should a complication develop.

The recovery period for patients who required deep sedation, general anesthesia, or a regional or spinal/epidural anesthesia is not much different from that outlined above, with the exception that a longer period of observation follows the procedure. Depending upon the operation, you can also expect to have to pass one or more simple tests before being released. For example, a common problem after hemorrhoid and hernia surgery is the inability to urinate, particularly in men. This is due to stimulation of nerves in the vicinity of the urinary bladder in combination with bladder distention (the filling or overfilling of the bladder). The solution to this problem is simple,

but requires the intervention of a nurse or physician; therefore, you will not be allowed to leave the hospital after these surgeries until you have demonstrated your ability to urinate.

If your surgery involved the placement of a drain or the application of a complicated surgical dressing, you will need training and instruction on how to care for yourself at home. It is nice to have a friend or family member (who, by the way, did not just have anesthesia) receive the training with you. That way, there will be a resource at home should questions arise. You may also require training on the use of crutches, traction devices, or splints after your surgery. Most surgeons will go over your postoperative instructions with you prior to the procedure and give you a written set of instructions when you leave. A technique I find very useful is to provide instructions and prescriptions for all of the postoperative medications several days in advance of the surgery. This way the patient has the opportunity to ask questions and fill prescriptions before hand, thus having the medication available immediately after surgery. If your surgeon doesn't offer this option, ask about it. Maybe your doctor will consider trying something new.

When you get home, the best thing to do is go to bed. There are very few anesthetic agents that are so short acting that all of their effects are gone within hours of surgery. Therefore, you will probably not be functioning at full mental capacity after surgery. A few good hours of sleep will enable your body to rid itself of the remaining anesthesia and will let you sleep off the onset of the postoperative pain. If your surgery was on an extremity (i.e., arm, leg), it is usually a good idea to elevate that extremity to prevent the development of swelling. Some surgeons will also recommend the application of ice or warm packs to the surgical site (ask your surgeon for the specific type of wound care he or she prefers for your individual operation).

Pain is a common theme postoperatively, and as I stated before, you should think of surgery as a controlled injury. Pain at a surgical site (sometimes even severe pain) is not unusual. Do not hesitate to take the pain medicine prescribed by your surgeon. Many people worry unnecessarily that by taking pain medication (particularly those medications containing narcotics) that they will become "addicted" to them. This concept is completely false and there is plenty of good scientific evidence that people who take narcotics or other pain killers to control postoperative pain <u>do not</u> become addicted to the medications. In fact, the best way to control your pain and ensure a swift recovery is to take the painkillers before your pain becomes severe. The medication you are given will attain a certain level after every dose you take. When the medications are taken on a regular schedule, the level of painkiller will not reach zero before the next dose is given, thereby establishing a baseline drug level in your body. This prevents the development of severe pain, thus reducing the need for higher doses of medication. On the other hand, if you take your pain medication only when you are in severe pain, you will require a much higher dose to control your discomfort because no level has built up in your body. This leads to future episodes of pain, which again require high doses of pain medicine to alleviate. With this in mind, my suggestion is that you begin by taking the dose of the pain medicine prescribed at the shortest time interval allowed. If after several doses of the medication you remain comfortable, slowly begin to increase the interval between doses. Once you are able to tolerate the increased dose interval comfortably, you may begin to decrease the dose of the medication you are taking (i.e., from 2 pills to1 pill, perhaps even to ½pill). At some point you will be able to stop taking the medication all together, although you may find that you will need 1 pill after particularly strenuous activity or when going to bed. When a week has gone by with no need for the medication, safely throw the remainder away. This will prevent the temptation to take the pills after a bad day or a "minor" injury for which you do not seek medical attention; it also prevents the medication from falling into someone else's hands or being accidentally ingested.

There are several common after effects of surgery that you should be aware of. An obvious one is your impaired mental capacity and judgment immediately postoperative and while you are taking pain medication. Do not plan to make any important legal, business, or personal decisions in the early postoperative period. This probably means you will need to take a few or more days off from work after your operation. This is something you should discuss with your surgeon before the operation and let your friends, family, and employer know beforehand. Invariably some patients feel the need to return to work or hobbies the day after (or sometimes the day of) surgery, I strongly advise against this. If you need an operation, you deserve a day off as well. Another thing many people experience is nausea, vomiting, or lack of appetite. This is usually a side effect of the anesthesia or the pain medication you have been given. If this happens, continue to drink plenty of liquids, preferably those without caffeine, and certainly avoid any beverages containing alcohol. If the nausea and particularly if vomiting does not resolve within 24 hours of your operation, call your surgeon and let him/her know what is going on. You may find that a new type of painkiller is prescribed, or depending upon your symptoms your surgeon may ask you to come in for a quick check up. Loss of appetite usually resolves itself within a few days. If it doesn't, you should mention it to your surgeon at the time of your first follow-up visit.

Another issue to be discussed is constipation. Narcotic painkillers can be very constipating, and in combination with decreased appetite and poor fluid intake, a small constipation problem can quickly turn into a difficult situation to manage. For this reason, many surgeons will put you on a high fiber diet or recommend that you take Metamucil™, Citrucel™, or some other similar product for a week or two postoperatively. Given that the average American eats a diet low in insoluble fiber to begin with, this is a good recommendation to follow. Another safe and inexpensive medication that you can buy over the counter is the stool softener Colace™ (doccusate sodium). If you have trouble locating this in the drug store, ask your local pharmacist for a stool softener. Follow the directions on the label, and you will find that you bowel movements will not be as hard or difficult to pass. Beyond this, there are a thousand over-the-counter medications and home remedies for constipation. For patients on non-restricted diets, I suggest Milk of Magnesia, which is available under several different brand and generic names. Patients with renal failure or electrolyte imbalances should avoid these medications, and once again ask your surgeon or pharmacist for recommendations that suit your particular medical condition. Constipation is a problem best treated before it develops, and if you faithfully take these medications while on narcotic analgesics, you should have no problems. If, however, you find yourself having fewer bowel movements after your surgery than you did before surgery, let your surgeon know sooner rather than later. You'll both be glad you did.

The final issue in this chapter pertains to postoperative problems that require immediate medical re-evaluation. The problems I will discuss would have been picked up immediately had you remained hospitalized. They are infrequent occurrences, but since you will be recovering at home, you need to recognize these problems early so they can be dealt with swiftly.

The first category is hemorrhage, or blood loss. You probably have a surgical dressing that covers the area of the incision. It is normal for this dressing to become damp with a yellow to pink fluid. In some cases, you may even see a circle of blood develop, which is a dark red to nearly black. Don't worry about these developments, they represent a trivial blood loss which will spontaneously resolve. If, however, the dressing becomes saturated with bright red blood or if the skin under the dressing begins to swell rapidly and appears obviously elevated (relative to the skin around it), you probably have a small bleeding vessel which can often be fixed simply

with pressure or the placement of a stitch. In these cases, apply pressure directly over the wound and call your surgeon. You may be instructed to remove your dressing and re-apply a fresh one, or your surgeon may want to have someone in his or her office take a look at it. In either case, this does not constitute an emergency, but it should be addressed promptly. If you begin to feel lightheaded or short of breath, or if it feels like your heart is beating rapidly, you may have lost a more significant amount of blood. In this case, you should take your pulse by placing your index finger on your neck just below the corner of your jawbone (below your ear). Using a watch or clock with a second hand, count the number of pulses you feel in 60 seconds. This is your heart rate, and if it is over 100, you should inform your surgeon. If you or one of your friends or family has an automatic blood pressure machine, or if you know someone trained in taking blood pressures, have this number available for your surgeon as well. A rapid heart rate in conjunction with a low blood pressure is a worrisome thing. An additional way to assess if you have lost too much blood is to measure your output of urine. If you find that you have not had to go to the bathroom for an abnormally long period of time, this too is troublesome.

Another possible problem in the immediate postoperative period is infection. You should take your temperature at home if you feel at all hot or uncomfortable. A slight temperature is normal after anesthesia and surgery, so any temperature below 100.4 degrees Fahrenheit (38 degrees Celsius) is nothing to worry about. Temperatures over 102 degrees Fahrenheit (39 degrees Celsius) begin to be of concern, and should be reported. Temperatures between these marks (100.4 – 102 F) are probably not important, but you should take a look at the operative site and dressing to see if there are other signs of infection. The most important finding suggestive of infection is redness. If the area around your incision (or your dressing, if you have one on) is hot and red, this is indicative of an infection and your surgeon should be informed. A small margin of redness is OK, but it should not extend more than half an inch from any part of the wound. Other findings that are suggestive of infection include tan drainage from the wound, and a foul smell from the wound. If you notice either of these, especially in association with a fever, let your surgeon know immediately. Finally, and most unusually, some infections spread rapidly and need immediate treatment, usually with intravenous antibiotics. If you notice red streaks extending away from your incision, or if you feel bubbles of air under your skin (it feels like pressing on a pile of Rice Krispies, and sounds like the snap, crackle, pop of milk going over the same cereal), you need to get to an emergency room as soon as possible.

If you have any of the problems described above, and you feel uncomfortable about your situation, call your surgeon. Even if you have the feeling that something is wrong, but you can't quite put your finger on it, you should let someone know. Remember that you no longer have a trained medical professional looking after you, and if you have any problem or concern about your procedure or recovery, you should contact your surgeon for an answer. Most surgeries occur without any problems, and most recoveries are uneventful and routine, but with outpatient surgery becoming more and more popular, there are bound to be occasional complications. When addressed in a timely manner, almost all complications can be quickly resolved and have no long-term consequences; however, small problems which are ignored can rapidly turn into life-threatening situations. The basic rule of thumb for those of you who have outpatient surgery should be: "If you are not sure if there is a problem, ask you surgeon."

Chapter 5: PreOp Preparation

If you read only one chapter in this guide, make it this one. It is my belief that the majority of surgical complications could be eliminated if a few simple rules were followed preoperatively. This chapter spells out these rules. If you follow this advice, I am certain you will enter the operating room in the best possible condition for your surgery. That is not to say these rules will assure a good outcome; there are too many variables out of a patient's control for anyone to make that guarantee. Think of it this way, you expect your surgeon and your anesthesiologist to do everything possible to ensure a good result from your operation, should you expect anything less from yourself ?

The PreOp-Worksheet

Take the 30 minutes required to complete the PreOp-Worksheet accurately and completely. I know that the last thing you want to do is run around looking up drug dosages and searching through the telephone book for the phone numbers and office addresses of all of your medical practitioners; but if the information you find is needed in an emergency, you'll be glad you spent the time now instead of having your surgeon doing it under pressure. Furthermore, an accurate medical history is the most important data your surgeon needs to plan your operation.

Tobacco Use

When I tell you to quit tobacco use, I am specifically referring to smoking cigarettes; however, the advice to give up tobacco pertains to those who indulge in pipe, cigar, or smokeless tobacco products as well. I can tell you for a fact that the use of tobacco has no beneficial effects on your health. Its use has been associated with an increased risk of lung cancer, emphysema, head and neck cancer, esophageal cancer, stomach cancer, heart attack, stroke, high blood pressure, and hardening of the arteries. There is no disputing these facts, and I will not waste your time or mine pretending that if you don't inhale, or if you feel better after smoking that you are an exception to the rule. Nicotine, which is a major component of cigarette smoke, is an addictive drug; and breaking the nicotine habit is admittedly very difficult. It is not unusual, nor is it shameful to need medical or psychological assistance in quitting a tobacco habit. Since we are specifically referring to preoperative preparation in this chapter, I will give you some information and advice pertaining to that subject, and hopefully giving up cigarettes before your operation will help you stay off them for good.

Smoking cigarettes causes a change in the makeup of the cell layer that lines your trachea (windpipe) and major airways. This change eliminates the ciliated cells that remove mucus and dust from your lungs. As a consequence, mucus, dust, smoke particles, and bacteria that would otherwise be removed from your lungs remain within your airways. To clear this junk from the lungs, smokers develop a cough. Under anesthesia, this cough is suppressed, and the result is a plugging up of the airways with potentially infectious mucus. This results in a higher incidence of pneumonia and airway collapse (called atalectasis) in smokers. It also results in a violent awakening from anesthesia due to an intense stimulus to cough. It is not an exaggeration to say that I have seen smokers rip all of their stitches out when they wake up from anesthesia due to the massive increase in abdominal and thoracic (chest) pressure generated by postoperative coughing fits. Fortunately, it takes only two smoke free weeks for most of this danger to be eliminated. If you can't make the major step of quitting cigarettes for your lifetime, take off two weeks before

your surgery, and save yourself the terrible postoperative complications of atalectasis and pneumonia. You will find that after refraining from smoking for two weeks and having a major operation, quitting for good is much easier.

Alcohol

Behind smoking, alcohol consumption is the next most important cause of preventable postoperative complications. You need not be an alcoholic for your alcohol consumption to present a problem in the postoperative state; in fact, you need not even be a problem drinker. Ethyl alcohol is another drug that causes a physical dependence, just like the nicotine in cigarettes. Anyone who drinks alcoholic beverages on a daily basis risks developing an alcohol withdrawal syndrome postoperatively. This means that even if you have a single glass of wine with dinner or a glass of brandy before bed each night, you are at risk of developing a potentially life-threatening complication. To prevent this possibility, I advise giving up all forms of alcohol for two full weeks before any operation.

For most social drinkers, this poses no problem and carries virtually no risk. If you are a heavier drinker or have ever experienced the symptoms of anxiety, tremor, rapid heartbeat, or confusion when you stop drinking, then simply stopping cold turkey is not an option for you. First, it needs to be emphasized that people who are dependent on alcohol can die when they stop drinking. The brain can become dependent on ethyl alcohol. If this happens and a person just stops drinking alcohol, he/she will experience alcohol withdrawal, ultimately leading to seizures and death. Therefore, anyone scheduled for elective surgery who drinks alcohol on a daily basis should discuss this with his or her surgeon. Medically supervised alcohol cessation programs are available and should absolutely be utilized before any operation. Alcohol dependence need not be a shameful or embarrassing condition, and it does not imply that a person is bad or sinful. It simply indicates that the brain has adapted to the daily intake of alcohol and that medical supervision is required to discontinue daily alcohol use.

When asked about alcohol use by your surgeon or anesthesiologist, and when filling out the PreOp-Worksheet, be honest about your alcohol consumption. These questions are not being asked to embarrass you or delve into your personal life, they are being asked because it has long been recognized how important alcohol dependence can be. If the possibility exists that you may be alcohol dependent, this issue must be explored and resolved prior to surgery. Unrecognized alcohol withdrawal in the postoperative state carries with it a 50% chance of death, even in the nation's best intensive care units.

Obesity/Dieting

A surgical risk factor that receives little attention these days but continues to contribute to a large number of postoperative complications is obesity. Depending upon the type of surgery scheduled, you may not have the luxury of putting off surgery for several weeks to several months for a weight loss and exercise program to be effective. If you are overweight and not under time constraints for surgery, it would be wise to seek professional help from a dietitian before having your operation. Obesity itself increases the likelihood of pulmonary complications and wound infections. It also makes many types of surgeries more technically difficult and dangerous. If you feel your weight may be a problem, ask your surgeon if losing weight would be in your best interest preoperatively. If he or she agrees that weight loss would improve your chances of a successful and uncomplicated operation, then a supervised weight-loss program is the thing for you. Remember you should not take matters into your own hands and put yourself on a strict diet

prior to surgery. Wound healing requires adequate body stores of vitamins, carbohydrates, and protein intake. You could seriously impair your ability to heal the operation site properly if your body is depleted of the materials needed in wound healing. So, if you need to loose weight, do it slowly, safely, and while maintaining the proper balance of vitamins and minerals in your diet.

Vitamins

There are more inconclusive studies on the role of individual vitamins on immune function, wound healing, and postoperative recovery than anyone could read in a lifetime. My opinion here is based more on common sense than on hard scientific evidence, but I still believe it to be true. Wound healing is a complex process requiring a multitude of cell types to produce a wide variety of complex protein products that create a strong, permanent bond between injured tissue. This process will be most efficient when all of the necessary materials are present at the time of the incision. I suggest that you take any of the over-the-counter multivitamins available at your local pharmacy for as long as possible preoperatively, and that you continue taking the multivitamin for at least 6 months after your operation (at which time the wound will be almost completely healed). Personally, I use a generic multivitamin, which saves me quite a few dollars a month.

A quick word about other vitamin combinations and trendy vitamin cocktails. There always seems to be a "vitamin of the month" that is suggested for improved wound healing or better immune function. The combinations are too numerous to mention, although there is pretty good data to support the use of some of them, at least in animal models. If you have heard about one of these combinations, use common sense and follow FDA guidelines regarding maximum drug dosages. Remember that you can overdose on vitamins as well as suffer from vitamin deficiencies. Although the FDA tends to be conservative from an evidence standpoint, its daily recommended allowances for vitamins have been pretty well researched.

Exercise

I have never heard of anyone being in too good shape for an operation. Surgery is a stressful situation, and your body responds to it just as it would to any other stress. This means you will have a catecholamine response (i.e., the fight-or-flight response), which is associated with increased demand on the heart. If you are involved in a regular exercise program, continue it right up to the time of your surgery. If you have not been as vigilant about keeping in shape, the weeks before your operation would be a good time to resume an exercise program. If you can walk up two flights of stairs without experiencing chest pain or shortness of breath, you should be able to begin a program of distance walking safely. If you can't make it up two flights of stairs or if you have any history of coronary artery disease, peripheral vascular disease, carotid artery stenosis, diabetes, or a family history of heart disease, ask your primary care physician if it would be safe for you to begin an exercise program.

You don't need to be Charles Atlas to have surgery, but you should be able to walk a mile at a brisk pace without feeling winded or tired. Current recommendations hold that you should exercise vigorously enough to elevate your heart rate to 60-70% of its maximum rate (which can be calculated by subtracting your age from 200) for 20 minutes a day, 4 or more days a week. So if you are age 60, your maximum heart rate should be 140, and your exercise program should elevate your heart rate to between 84-98 beats per minute for 20 minutes a day, 4 days a week. Achieving this before your operation will improve your heart performance under stress and will also put you in a better position to exercise during your recovery phase. Again, as with all the

advice presented in this chapter, check with your physician before initiating any exercise program, especially if you fall into one of the high-risk groups noted above.

Bowel (Colon) Preparation

Those about to have surgery involving the abdomen or any portion of the digestive tract (including the esophagus, stomach, duodenum, liver, pancreas, intestines, rectum, and anus) have probably been given instructions on taking a bowel (colon) preparation. This preparation is undoubtedly one of the least favorite parts of the preoperative experience but also one of the most important. As you can imagine, your bowels are full of a variety of ingested material, and as it makes its way from the stomach toward the anus, the character of this material changes from a watery, green liquid to nearly solid stool. As the digested food makes its way toward the anus, the amount of bacteria in this liquid material increases dramatically. The goal of a bowel preparation is twofold: one is to empty the digestive system of this ingested material, and the other is to decrease the amount of bacteria living within the bowel. This is important for a number of reasons. First, if your operation involves the removal of a segment of bowel, it is technically much easier to reconnect clean and empty intestine than it is to reconnect an intestine that is oozing contaminated material. Second, probably the greatest source of potentially infectious bacteria in the human body is the large bowel. Eliminating these bacteria before they are released from an opening in the bowel greatly decreases the chance of developing an infection postoperatively. This is especially true in operations in which prosthetic (man-made) material is going to be placed permanently in the body (as in large hernia repairs and abdominal aortic aneurysm repairs). Third, if your surgeon is trying to locate a mass present within the bowel, it is much easier to feel it from the outside if no other material exists within the bowel to fool him or her. The bottom line is that a good bowel preparation makes most operations much easier. Conversely, a poorly prepped bowel can make the surgery more difficult and increase the risk for postoperative complications.

The next question is, what constitutes a good bowel preparation. The answer to that question is dependent upon your surgeon. Different physicians have very different ideas on how to best prepare the bowel. For simplicity sake, we will break the preparation down into two components. The first is the mechanical preparation (cleaning out the ingested material). To accomplish this, the basic principle is to administer a drug that stimulates the bowel to contract and expel all of its contents in the form of stool and/or diarrhea. This can be done with large volume preparations such as Golyte™, which require you to drink a gallon or more of fluid over the span of several hours, or it can be done with smaller volume preparations such as Fleet Phospha-soda™ or magnesium citrate. Another option is to cleanse the bowel with laxative tablets, and some surgeons prefer the use of enemas. In practice, many surgeons use a combination of these products, and they let their own personal experiences dictate which methods they prefer. For your information, there is no right or wrong method, and there are scientific studies (usually funded by the makers of these products) which suggest that each of them works best. Keep in mind that no matter which technique you surgeon prescribes, all of these products will dehydrate you. To prevent this, you should consume at least 6 full glasses of water or other clear liquid (apple juice, lemon-aid, caffeine-free iced tea, or a sports drink) the day before and the day of your bowel preparation. Also, if you have kidney disease or a known electrolyte disturbance, let your surgeon know prior to taking the bowel preparation. There are several preparations which can disturb your body's chemical balance if you have pre-existing conditions. Finally, if you are

given a large volume preparation (you will know because you will have a large jug of fluid sitting across the table from you for a good portion of the evening prior to surgery), remember to continue drinking the medication as directed on the label or by your surgeon until you are passing clear fluid from your rectum. Typically this requires that you consume at least half, and usually more like three-quarters of the container.

The second portion of the bowel preparation is the antibiotic portion. Two methods seem to be equally effective. The first requires the oral administration of a non-absorbable antibiotic the evening before surgery. Most surgeons consider this the gold standard and prefer to give an oral antibiotic prep. The problem with this preparation is that it typically produces an upset stomach, and some patients fail to complete the prep due to stomach cramps. The second method involves the administration of intravenous antibiotics in the period immediately before surgery. This avoids the upset stomach problem, but some surgeons still prefer the oral method. Again, many surgeons will use a combination of the two techniques. No one preparation is clearly superior to another, so I suggest you follow your surgeon's advice on this matter, with this caveat: if you fail to complete the preparation as ordered, let your surgeon know prior to your operation. Then he or she can decide to proceed or if a late adjustment in technique is required.

One final note on your bowel preparation. This step used to be accomplished in the hospital the day before your surgery. Current economic considerations do not allow this to occur today; however, if there is a medically sound reason why you should have your bowel preparation as an inpatient, some insurance companies will allow it. Typically, healthy, vigorous people do not have a problem with outpatient prep. If you suffer from congestive heart failure, renal failure, or have lost a significant amount of weight in the months before your operation, check to see if you are permitted to have your preparation as an inpatient with the support of intravenous hydration and electrolyte monitoring.

Antibiotic Usage

If you have used any type of antibiotic in the 6 months prior to your operation, you should let your surgeon know. Even if the antibiotics were prescribed to treat a urinary tract infection, bronchitis, or some other infection not related to your present surgery, antibiotics can alter the composition of the bacteria that reside on and within your body. Chances are this will have no effect on your operation or postoperative care, but if a problem does develop, it is helpful to know which antibiotics were taken in the recent past.

Aspirin and Other Over-the-Counter Pain Killers

In the good old days, only a few over-the-counter drugs were available to control the pain from arthritis, gout, or minor injuries. Today the list is too long to consider each drug individually. These drugs, which are closely related to aspirin in that they control pain by reducing inflammation, are typically referred to as anti-inflammatories. They are used to treat a wide variety of disease processes and all have one common property, the inhibition of platelet function. Platelets are the cells in your circulation that are responsible for clotting your blood. Obviously if you are about to undergo an operation, you want your blood to clot as well as possible; therefore, it is essential that you avoid all anti-inflammatory drugs for a period of 1 to 2 weeks prior to surgery. Failure to stop taking these drugs may lead to excessive blood loss at surgery, which may necessitate the administration of blood or platelet transfusions. Even patients who are taking an aspirin a day to prevent heart attack or stroke should stop in the week prior to surgery.

Your primary care physician should have a list of all of the prescription drugs you are taking, so you should ask if there are any you should stop prior to surgery. If you take over-the-counter medications, drop by your local pharmacy to determine if any of the products you use contain one of these drugs. It is important to know that many medications have more than one active ingredient, so you may not even know that you are taking one of these drugs unless you read all of the fine print on your medication bottles or ask a medical professional. If you are forced to stop taking a product you use to control pain, you may consider switching to Tylenol™ preoperatively. Of all the over-the-counter medications designed to control pain, the active ingredient in Tylenol™ is the only one that does not inhibit platelet function. Of course, if you have an allergy to Tylenol™ or have a known liver disorder, this drug should be avoided as well.

Coumadin

Another common blood thinner in use today is Coumadin (warfarin). This is another drug whose use must be discontinued prior to surgery. If you are taking this drug, your surgeon may simply ask you to stop taking it a week before surgery, or he or she may ask you to enter the hospital several days early to allow the Coumadin to exit your system while you have your blood thinned with an intravenous medication called Heparin. Both Coumadin and heparin act to inhibit blood clot formation independent of the function of your platelets. They work by blocking the proteins in your blood that help hold the platelets in a blood clot together. There are many differences between the two drugs, but the important point is that Coumadin takes a long time to take effect, and once stopped, it takes days to weeks for its effect to be reversed. In contrast, heparin is effective immediately, and its effect is terminated within hours of its discontinuation. Therefore, sometimes it is necessary to allow the effect of Coumadin to wear off while preventing blood clot formation by the use of heparin. Just prior to the operation, the Heparin will be stopped, your blood will clot normally during surgery, and once the operation is over, the heparin (and/or the Coumadin) can be restarted.

Narcotic Pain Killers

A large number of people take prescription painkillers on a frequent basis. The active ingredient in many of these drugs is one of several synthetic derivatives of morphine, and commonly these drugs are known as narcotic analgesics. Again, there are too many brand names to mention, but if you are taking pain killers on a regular basis (that is if you have been taking them for more than several days), there is a good chance you will have problems with pain control postoperatively. I find that many people who take these medications are hesitant to discuss their use for fear of being branded addicts. Of course, there are people who are addicted to narcotic pain pills, but there are also plenty of people who take these drugs for very good reasons. Whatever the case, the use of narcotics on a regular basis induces a tolerance to their effect. In plain English, if you use narcotic painkillers regularly, you will need much higher doses of pain medication postoperatively to control your pain. To save yourself significant discomfort, inform your surgeon and anesthesiologist prior to your operation if you fit into this category. You will be glad you did.

Shaving the Operative Site

People frequently ask if they should shave the area which is to be operated on before coming to the hospital. The answer to this question is simple and straightforward: no you should not.

Shaving tends to release bacteria that normally reside in your hair follicles; this increases the incidence of wound infections postoperatively. If your surgeon needs the area of the incision shaved to perform the operation, it will be done after you have entered the operating room. In short, don't worry about it.

Worst Case Scenarios

This is a topic that is not much fun to talk about; but I will state a simple fact that is designed not to alarm you but rather to inform you. There is no such thing as a minor operation.

What this means in a practical sense is that even routine operations, which are safely performed hundreds of thousands of times each year, will occasionally result in an unexpected death. This may be the result of an unknown drug allergy, a severe transfusion reaction, a heart attack during the operation, a technical error by the surgeon or anesthesiologist, or any number of fluke occurrences. My point is, take a few minutes to consider what you would like to have done if a worst-case scenario arises.

The easiest way to do this is to simply discuss it with a friend or loved one. That way there will be at least one person beside yourself who knows your opinions about death and dying, prolongation of life, use of mechanical life support, placement of breathing tubes and feeding tubes, artificial feeding, organ donation, etc. To formalize this process, you may wish to discuss this with your attorney, who can draft a living will or durable power of attorney for healthcare. This conversation will be superfluous for nearly everyone who reads this book. Unfortunately, accidents do occur in the business of surgery; and to be fully prepared, you must understand all of the possible outcomes.

The Night Before Surgery

You will probably be asked to eat or drink nothing after midnight the evening prior to surgery. This is done so that your stomach will be completely empty before you are given anesthesia. Rarely, anesthesia and endotracheal intubation (the placement of a breathing tube in order to apply inhalation anesthesia) is complicated by vomiting. While sedated, you are unable to protect your airway and lungs, and run the risk of inhaling the stomach juices into your lungs (known as aspiration). If this happens, you run a high risk of developing pneumonia; and this particular type of pneumonia can be hard to treat. The simplest way to prevent it is to have an empty stomach prior to administering anesthesia.

This is a precaution that is taken very seriously by anesthesiologists; so you can be sure that if you do not follow this directive, your operation will be canceled and will have to be rescheduled. The only exception to this rule is that certain medications may be taken with a small sip of water the morning of your surgery. This is a point that should be specifically addressed by your surgeon or anesthesiologist at the last visit before your operation. If you are taking any medications at all, you should ask which to take and which to avoid the morning of surgery. If you have had a bowel preparation before your operation, you may end up having nothing to eat for up to two days before your operation. Again, you should ask which of your medications to take while you are taking the bowel preparation.

If you have diabetes and are taking insulin injections, skipping meals can be very hazardous. However, diabetics run the same risk of aspiration as the rest of the population, and must follow the directive to have nothing to eat or drink after midnight on the evening prior to surgery. It is important, therefore, that the evening insulin dose the night before surgery and the morning dose the day of surgery be adjusted. Please take note: make no adjustment without discussing this

issue with your surgeon; and if an endocrinologist treats you, you should get his/her advice as well. Depending upon the insulin preparation you are taking, this can be done in several ways. You will be advised that you should not skip a dose of insulin completely, particularly if your diabetes is difficult to control or you are on high doses of insulin. By the same token, your surgeon or endocrinologist will likely advise you that a regular dose should not be taken on an empty stomach. It is a wise idea to carefully check your blood sugar levels the evening before and the morning of surgery if you have a home blood-glucose meter.

Managing Expectations

Before undergoing surgery, you should have a very clear understanding of the goal of the operation. Beyond that, it is important to understand the risks associated with the operation and the benefits you hope to achieve. There are very few absolutes in medicine, and this is particularly true when it comes to surgery. Almost no operation can guarantee a cure 100% of the time. Similarly, almost no operation is risk free 100% of the time. Before any operation is performed, your surgeon will weigh the risks and benefits of the procedure in his or her mind. This is done so automatically that you may not realize that it has occurred. It is essential that you understand what you will be subjected to and the goal of the operation. If the goal is to completely cure you of your disease, ask what the chances are that this will actually occur. You may find that you are not willing to undergo an operation with possible debilitating effects if it results in a cure only 30% of the time. Conversely, you may find that you are willing to risk your very life in an operation for even a small chance at a cure.

When talking about the management of expectations, the most important ingredient is knowledge. Fortunately for all of us, tools are now available that allow for the rapid dissemination of information. A few years ago, the advice of a physician was seen as an absolute. In the rare instance when a patient was not comfortable with the treatment options presented, the only recourse was to seek a "second opinion." While second opinions are still obtained today, many patients now have taken matters into their own hands. There are mountains of information available to every one of us on the Internet. To harvest this information, you do not need to be a computer scientist, you need only be able to explore the World Wide Web. It's often comforting to do some "homework" regarding your disease and proposed operation in the days or weeks before surgery. Many sites are available on-line that contain this information; and for a few helpful links, you can start by logging on to www.preopguide.com. If you do not wish to search for information online, most local libraries have a few medical desk references available, and even a quick read of a textbook may give your a starting point when discussing your disease with your physician.

One point I wish to emphasize is that you *cannot believe everything you read*. I suggest that all my patients do some research of their own so that we can have informed conversations about their disease and surgery. However, I also suggest that you do not take the information you have gathered as absolute fact, especially if it contradicts the opinion of your surgeon. Remember again, it takes years of training to develop the knowledge and skills necessary to practice surgery. Along with that training comes the wisdom of literally decades of experience. Authors who propose new treatments, techniques, or approaches to the management of disease may be onto the next big advance, or they may be barking up the wrong tree. Take a second to remember how many times you have heard the news media report that the cure for cancer was at hand, only to find that the new cure did not meet the test of time. I have heard it quoted that upwards of 80% of all new advances reported in the scientific literature do not ultimately change the way diseases

are managed. Therefore, if you are discussing with your surgeon some cutting-edge breakthrough that you learned about, which he or she has heard nothing about, chances are very good that the good old way is probably still the best option.

Getting back to the bottom line, my suggestions are these:

1. Ask what the natural course of your disease will probably be if you have no surgery.
2. Ask what your surgeon hopes to accomplish by performing the planned surgery.
3. Ask what the chances are that this goal will be met.
4. Do a little homework so you can participate in the decision making process regarding your disease and your surgery.
5. If you discover new or experimental treatments that your surgeon is unfamiliar with, it is probably because they are, as yet, unproved. My personal bias is to stick with the method that has the best track record over the longest period of time; I believe most surgeons feel the same way. If you are unsatisfied with the tried and true method your surgeon advocates, perhaps you should contact the center at which the newest method has been pioneered to determine if you could receive your care at that institution.
6. Remember, in some cases, the best option is to do nothing. Do not be afraid to decline an operation if you are not convinced it will help you. This being said, remember that just as there are consequences to every action, there are also consequences to every inaction. As long as you are willing to accept the consequences of the decision you and your surgeon reach, you have made the right decision.

Chapter 6: Normal PostOp Care

The period following surgery can be as trying as the nervous anticipation that always precedes the operation. The information in Chapter 5 was designed to prepare you for surgery, the information contained in this chapter should help you know what to expect in the period immediately after your operation. Remember again, the postoperative care of each patient is as individualized as the patient. The following description provides a rough estimation of what you can expect after your operation, and why the things which happen are important.

Postoperative Pain

The experience of postoperative pain is varied and depends upon many things, including your personal tolerance to pain, the location of your operative incision, and the type of pain control prescribed. Some people have a high tolerance to pain, and I have seen people undergo major operations without using any postoperative pain medication. I have also seen people suffer tremendously after small procedures. You can not, in all likelihood, change your tolerance to pain. You can, on the other hand, use the medications currently available to manage your discomfort successfully. Many patients, particularly those over 60, feel that the use of pain medication is dangerous, a sign of weakness, or addictive. Let me clear up this myth right now: pain medication, when properly utilized, is a safe and important part of your postoperative care. The real danger in the postoperative phase is a lack of pain control. Pain causes several spontaneous responses, including elevation of blood pressure, increase in heart rate, decrease in lung expansion, and splinting (or decrease in spontaneous movement). These responses place additional stress on your heart; and in patients who have coronary artery disease, it may increase the chance of suffering a heart-related complication. Decreased lung expansion predisposes you to areas of lung collapse (called atalectasis), which in turn causes fever and increases the risk of pneumonia. Splinting aggravates the process of atalectasis and also contributes to the development of blood pooling and thus increases the likelihood of blood-clot formation in the veins (particularly in the legs). These blood clots, in turn, increase the risk of the potentially fatal complication of pulmonary embolus (when a blood clot breaks off and travels to the lungs, causing failure of gas exchange in the lung).

Thus, good pain control is important to ensure a quick and normal recovery. To maintain good pain control, sufficient medication must be administered at the proper time interval. A general rule of thumb is that you should be able to take a deep breath and get up and walk without experiencing severe pain. It is frequently impossible to give enough medication to remove all discomfort, so you should expect that you will experience some for the first several days after the operation. With that said, here is a quick explanation of how both drug dose and time between doses are important in achieving adequate pain control. For the most part, we are talking about narcotic analgesics (derivatives of morphine), which constitute the mainstay of postoperative pain medication. These drugs work by providing a certain level of drug in your bloodstream. Immediately after taking the drug, either by the intravenous or oral route, the level in the blood rises until all of the drug has been absorbed. This is your peak blood level and is probably higher than the level you need to control pain. Slowly the drug will be eliminated, and eventually the blood level will decrease to where you begin to experience pain again. If you wait long enough before the next drug dose, the level will actually go back to zero. As you can see, this will lead to periods where you are pain free and periods where you may experience severe

pain. To limit this, the dosing interval (time between administration of the drug) becomes important. If you take a repeat dose before the drug level goes below the threshold required to prevent pain, you can effectively prevent the return of pain and increase the level of comfort. This allows for lower drug doses, because you will already have some level of the drug in your system. Once the level reaches zero, another large dose of medication is needed to achieve the peak level again. There are several ways to administer analgesics to achieve the goal of around the clock comfort, and every surgeon has his or her own personal method.

In my opinion, the best way to control pain is to use a device that allows patients to administer their own pain medications when they feel they need it. This is called Patient Controlled Analgesia (PCA), which has been shown to decrease patient complaints of pain postoperatively. With PCA, you are given a button to push any time you feel pain. This button is connected to a microcomputer that administers a standard drug dosage each time it is pushed. To prevent you from receiving too much medication, a computer monitors the time between dosages, so if the time interval is too short, it will not administer the drug. Your physician will then be presented with a readout of the number of doses you received, how frequently you asked for medication, and how often the computer delayed the drug administration. With this information, the dose and dosing interval can be adjusted safely to achieve optimal comfort.

If PCA is not available, a similar effect can be achieved by requesting pain medication from your nurse at regular time intervals. In this case, you should ask for the medication early, as soon as you notice an increase in discomfort, because there will be a lag time between when you ask for the medication and when you receive it. This method works for both intravenous and oral pain medications. The key here is to remember to ask for your medication early, that way your blood level will not drop to the point were you would need higher doses of medication to remain comfortable.

If you find you are having side effects from your analgesics, such as nausea, headaches, hot flashes, or confusion, ask to be switched to another medication. There are several narcotic analgesics available, each of which has slightly different side effects. With a little experimentation, your surgeon should be able to find one that controls your pain with minimal side effects. Also, other medications that do not utilize narcotics are available to control pain. If you find that your pain is not well controlled on high doses of narcotics or you are experiencing unwanted narcotic side effects, such as confusion or hallucinations, your surgeon can add a non-narcotic pain medication to your pain control regimen, thus reducing the needed narcotic dose.

One final mode of analgesia that bears mentioning is epidural analgesia. In certain circumstances, you may have a small catheter placed in your epidural space (the space around your spinal cord). This is a safe and effective technique that allows the administration of medication in the region where pain signals are transmitted to your brain. In many cases, epidural analgesia is superior to the techniques described above. It also has some drawbacks, which limit its use in some patients, so it is not routinely used. In general, if you find yourself with an epidural catheter in place, it will be used for 1 to 3 days postoperatively; and once it is removed, you will be started on narcotic analgesics.

Complications of Narcotic Analgesics

Narcotic analgesics are effective in controlling pain; however, they have numerous undesirable side effects, which must be balanced against their positive effects. One major side effect is the alteration of mental status. That is to say, narcotics can cause confusion, hallucinations, and a sensation of disconnection. Many patients, particularly the elderly, find these side effects

distressing. In some circumstances, these side effects are so severe that patients become irrational and combative. In theses cases, the administration of the drug is stopped, and the changes resolve as the medication is cleared from your body.

Another side effect is constipation. This can become a severe problem, particularly in those patients who suffer from some degree of constipation preoperatively. For this reason, many surgeons will put you on a high fiber diet or recommend that you take Metamucil™, Citrucel™, or some other similar product for a week or two postoperatively. Given that the average American eats a diet low in insoluble fiber to begin with, this is a good recommendation to follow. Another safe and inexpensive class of medication that may be prescribed is the stool softener. These medications work by increasing the amount of water retained in your stool, thus preventing the formation of hard, difficult to pass stool. If these two interventions don't prevent constipation, you may be given a mild laxative such as Milk of Magnesia or Dulcolax™. These medications stimulate bowel contractions, and help to propel undigested material through the colon. Constipation is a problem best treated before it develops, and if you are placed on these medications while on narcotic analgesics, you should have few problems. If, however, you find yourself having fewer bowel movements after surgery than you did beforehand, let your surgeon know sooner rather than later; you'll both be glad you did.

Mobilization

Perhaps the event that most surprises people immediately postoperatively is the process of mobilization. In general when you feel poorly, the most comfortable way to spend the day is lying in bed. You won't be allowed to do this in the postoperative period. Typically within 24 hours of your operation, you will be sitting up in a chair; and within 48 hours you will be walking the halls of the hospital with a nurse or therapist at your side. This isn't done out of cruelty, but rather as a preventative measure. Just as inadequate pain control leads to shallow breathing, lung collapse, and blood clot formation, so too does inactivity. The most common complaint I hear postoperatively is that a nurse got me out of bed or made me walk today; and my response is always the same: good. There is no substitute for early mobilization; and it is a simple, inexpensive way to minimize some very severe complications, including atalectasis, pneumonia, blood clots, and pulmonary embolism. It also lets you know that you remain in one piece and are capable of getting up and moving about. Don't worry about your stitches being torn out or your wound opening. We are not asking you to lift a house, only to sit up and walk. So remember, no excuses and no complaints; when the nurse comes in the day after surgery and tells you to get out of bed, get up and do it.

Physical/Occupational Therapy

Depending upon your condition before surgery and the type of operation you have, you may have to work with a physical and/or an occupational therapist. Therapists are highly trained, deeply committed individuals who have one of the toughest jobs in the hospital. They are tasked with getting people to meet the limitations of their physical ability. In the postoperative period, as I mentioned above, most people feel they should be allowed to rest and recuperate. While rest is essential to recovery, it is not the solution to it. Our bodies are extremely efficient at allocating resources where they are most needed. Failure to use our muscles, joints, and bones sets in motion a process whereby these parts break down to supply other areas with raw materials. You will quickly lose your ability to walk or even stand if you do not continually use the muscles and

joints associated with these activities. Another point to remember, especially when you feel a therapist is asking you to do something that you just can't do: therapists work on the same types of problems day after day. They may ask you to do something you can't quite do, but they won't ask you to do anything unsafe. In my experience, most people start physical therapy resenting their therapist and by the end, feel the therapist is their greatest ally and friend. Keep this in mind when you are undergoing therapy, and look at it as a challenge and aid to recovery. Remember that once a surgeon has completed the operation, the difficult task of recovery is in your hands. The harder you work at it, the better you will do.

Nurses

The topic of nursing care in recovery could generate a book in and of itself. As I have mentioned, it is now your responsibility to complete your recovery. Your surgeon can guide you through this process, but ultimately the effort you make is the most important determinant of success. Nurses provide the support and know how to help you make the most of your recovery. Unfortunately, in today's medical and economic climate, nurses are being asked to do more and more with fewer and fewer resources in a larger numbers of patients than ever. These changes impact the amount of time your nurse can spend with you and, therefore, the amount of teaching he or she can provide. In response to the increased demands on nurses, many hospitals have expanded their use of nurse's aids to help the overworked nursing staff complete their appointed duties. This places people with less training and experience in a position that requires much of both.

To make the most of your interactions with your nurses, I suggest you listen to their advice and training as intently as possible. Do not expect your nurse to help you every time you want to roll over or have a fresh glass of water. There simply is no longer enough time for nurses to do all those things while still assessing vital signs, administering medications, writing notes, communicating with families, and helping to coordinate the discharge of a dozen or more patients at a time. In short, have patience with the nursing staff, and remember that they are doing their best to speed you safely through your recovery. These are the people who you will deal with most directly, both before and after your operation; and they understand the challenges you face (possibly better than you physician). If you show them respect and heed their advice, your hospitalization will be more pleasant, and your recovery more successful.

Diet

Postoperative diets vary, depending upon the type of operation you have had, as well as on surgeon preference. Some surgeons are very conservative, and will advance your diet very slowly in the days following surgery; on the other hand, some surgeons will let you eat whatever you would like. In general, if you have had abdominal surgery, you will not be given a diet until there is some evidence of return of bowel function. Basically, this means that after abdominal surgery or surgery on any portion of the digestive tract, your bowels will cease to function for a period of hours to days. The first indication that your bowels have resumed function are "bowel sounds" which can be heard by placing a stethoscope on your abdomen. The next sign of return of bowel function is the passage of flatus, sometimes called passing gas. Once this event has occurred, you will typically be started on a liquid diet. Over the next several days, more substance will be returned to your diet until you are once again eating solid food. For a variety of reasons, this may take several days; so if you experience episodes of nausea or vomiting, you may be returned to a

liquid diet or again be asked not to eat or drink anything (in medical terminology this is called NPO, which basically means nothing per mouth).

If your operation did not involve your abdomen or digestive organs, you may be allowed to eat as early as the day after surgery. In general, you will be asked not to eat anything immediately after your operation because if a complication should develop that requires a return to the operating room on an emergency basis, it is much safer to do so on an empty stomach. You may find your appetite is slow to return or you feel nauseated after eating, even if your operation was not related at all to the digestive organs. This is common and typically resolves within a few days. If it does not, or if nausea is associated with the administration of pain medication, you may need to have some of your medications altered.

Stockings and Compression Devices

When you wake from surgery, you may find yourself in knee-high or thigh-high stockings. These stockings are designed to compress the superficial veins in your legs to prevent blood clots from developing in your lower extremities. Many people find these stockings uncomfortable, particularly in combination with compression devices. Compression devices come in many forms but, in general, work to mimic the contraction of leg muscles that force blood out of the legs and back to the heart. These devices are typically worn while you are in bed and prevent the pooling of blood in your legs. This, in turn, decreases the incidence of lower extremity blood clots.

It is generally safe to stop wearing both the stockings and compression devices once you have been up walking and are able to do so on a regular basis. Thus, a major motivation to begin active walking is the removal of these cumbersome devices. Many patients attempt to remove these devices on their own, as they are often uncomfortable. Remember that by doing this, you are increasing the chance of developing a blood clot in the legs, which in turn predisposes you to a life-threatening and dreaded complication known as pulmonary embolism (blood clot of the lung). My advice to you is to tolerate the discomfort of stockings and compression devices for the first few days after surgery and to work as hard as you can to get up and walk. This will reward you by speeding your recovery and having the stockings and compression devices removed as early as safely possible.

Not everyone gets these devices after surgery, as there are other ways to prevent blood clot formation. Some surgeons prefer to administer a blood-thinning drug postoperatively. Several different drugs are now available that serve this purpose, some of which are taken orally and some which require an injection. Furthermore, some surgeons (myself included) prefer to use both blood thinner and the stockings/compression boots. Whatever the case, remember that the most important thing you yourself can do is to get up and walk as soon as possible after the operation.

Rounds and Residents

The process of visiting each patient in the hospital on a daily basis is known as "rounds." Some surgeons make their rounds very early in the day, and some prefer to make rounds after all of the work in the operating room has been completed. Generally, you will see your surgeon on a daily basis until you are discharged from the hospital. This gives your surgeon the opportunity to assess your progress and add, modify, or delete medications or therapies you are receiving. If you are admitted to a "teaching hospital," which trains residents and/or medical students, you may also find that they will visit you on a daily basis as well.

Residents are physicians who have graduated from medical school and are licensed to practice medicine or surgery under the supervision of a more senior physician. Depending upon their

intended specialty, residents spend between 3 to 10 years in training before they are eligible to take the board examination that qualifies them to practice their given medical specialty. Some people object to being seen by residents, as they feel they are being utilized as "guinea pigs." My feeling is that if a trained physician with a minimum of 4 (and potentially up to 14) years of medical education and training wants to provide care for me (at no charge, incidently), then so be it. Remember that no decisions regarding your medical care will be made by a resident without the advice and consent of your attending surgeon In general, the most respected and specialized surgeons serve as mentors for residents; however, there are many excellent surgeons who are not involved in "academic surgery" and do not teach residents. If your surgeon *does* train residents, expect that resident rounds will be a part of your hospitalization. If you wish to avoid this completely, you will need to choose a hospital and a surgeon with no resident coverage.

While in the hospital, unquestionably the most important thing on your mind is the care you receive. To most people, this equates with a daily visit by their surgeon. Realistically, no one person can work every day of the week, every week of the year. Surgeons are people, first and foremost. They cannot work 24 hours a day, every day of the year, any more than you can. Therefore, it is highly likely that you will not see your surgeon every single day. To accommodate patients who are in the hospital on days when they are not, surgeons typically practice in groups or arrange off-day coverage with other surgeons they trust and respect. Covering surgeons are told about the pertinent facts of your case and have a plan of care outlined. They will not know everything about your operation or postoperative management. If problems or unexpected complications arise, they will typically know how to contact your primary surgeon but will do so only in an emergency. Please don't feel slighted by a visit from a covering surgeon, and don't expect that person to be able to recite every detail about your history, operation, and recovery period. They are there to make sure you are progressing as expected and are able to handle any problems that arise in the absence of your surgeon.

Discharge Planning

Early in your hospital stay people will discuss discharge planning with you and your family. This is not an attempt to rush you out of the hospital, rather it is a system to help make certain that when you are ready for discharge, all eventualities will have been considered, and specialized equipment that needs to be procured will have been ordered. In some hospitals, nurses serve as discharge planners; in other hospitals there are people whose primary job is to plan discharges. Some insurance companies even have a discharge planning staff of their own. As I have mentioned before, the best recovery is one that occurs at home; therefore, when your doctor feels that it is safe for you to leave the hospital, and the discharge planning has been completed, you should try to leave the hospital as soon as possible.

Visiting Nurses

While in the hospital, you may also see a visiting nurse. Visiting nurses are a response of the health care profession to the decreased time now spent in hospitals. In days gone by, patients who had undergone simple operations, such as hernia repairs, were observed in a hospital for days to weeks. Today, these surgeries are performed on an outpatient basis, so to minimize problems or complications that arise after patients leave the hospital, visiting nurses check on them from time to time. Visiting nurses measure vital signs, look at incisions, access mobility and appetite,

and look for problems or situations that could require a surgeon's intervention. They also administer medications or draw blood so your surgeon can continue to monitor your condition. Most patients who have had a major operation will be seen by a visiting nurse one or more times after discharge.

Nasogastric Tubes

Nasogastric tubes (or NG tubes) are an uncomfortable but important part of surgical care. These tubes are inserted through your nose and passed down your esophagus to your stomach. They can be used to remove air and fluids that accumulate in your stomach for a variety of reasons. These tubes are placed while you are under anesthesia, by either your surgeon or anesthesiologist, to drain the contents of your stomach while you operation proceedes. Your stomach produces 1 to 1.5 liters (about half a gallon) of gastric juice a day, and if your bowels have ceased functioning due to your operation, this fluid can accumulate and make you feel distended, nauseated, or just plain old uncomfortable. In general, these tubes are removed 1 or 2 days after your operation, when your bowel function returns.

In some cases, you may be required to have an NG tube for days or even weeks after your operation. This can be quite trying, as these tubes are uncomfortable. There are a few solutions to the discomfort of NG tubes; so if you require one for more than a day or two, you can ask your doctor for either throat lozenges or an anesthetic spray to decrease discomfort. On occasion, NG tubes have to be replaced after they have been removed. This too is an unpleasant process, but if you comply with your surgeon's instructions while the tubes are being replaced, they can be quickly navigated into your stomach. Typically, this is done to resolve postoperative distention or frequent vomiting.

Foley Catheters

Foley catheters are thin rubber tubes that are inserted into the urethra and passed into the urinary bladder. They allow for the elimination of urine without effort and enable accurate measurements of the production of urine. This is an important measurement, as urine formation gives a rough estimate of body perfusion (how well your body is supplied with fluid and blood). A general rule of thumb is that these catheters should be removed as soon as no longer needed because they can provide an access site for bacteria to enter your bladder. Bacteria that find their way into your bladder can cause urinary tract infections; and in worst case scenarios, the infection can travel to your bloodstream causing a life-threatening infection.

Most people find the catheters somewhat uncomfortable (particularly men) and are happy to have them removed. A word of caution, do not attempt to remove these catheters yourself. They are anchored in your bladder with an inflatable balloon, which must first be deflated before removal. Any attempt to pull the balloon through the urethra without deflating it will cause severe pain and tissue trauma. Another word of caution, Foley catheters are not designed for long-term use, so leaving them in to avoid trips to the bathroom is not a wise practice. Like most medical devices, a urinary catheter is helpful when needed and dangerous when improperly used. Follow your surgeon's advice as to the timing of removal.

Sundowning

A frequent finding in hospitalized patients, particularly the elderly, is confusion and disorientation in the evening hours. The exact cause of this condition, known as "sundowning" among medical professionals, remains unknown. It is believed that sleep deprivation, narcotic

medications, and an unfamiliar setting combine to produce a state of delirium in certain patients. This can be a severe problem, as patients become agitated, unreasonable, and, in some situations, violent. Sundowning is especially troublesome for visiting friends and family members, as the patients may tell tales of mistreatment and imprisonment. Some patients even fail to recognize members of their immediate family or claim to have been visited by dead relatives.

There is no "cure" *per se* for this condition. When a patient begins to sundown, usually several blood tests will be ordered to ensure that there is no biochemical imbalance responsible for the symptoms. If the tests return normal (which they almost always do), then an attempt to withhold narcotics and sedatives is made. Frequent reassurance from the medical staff and family members may help, but often the patients are simply beyond reason. In these cases it often becomes necessary to restrain the patients, to prevent them from injuring themselves (they frequently try to climb out of bed or remove intravenous lines, catheters, and monitoring equipment).

Fortunately, the simple measures listed above typically result in a return to normalcy within several days, and no permanent damage is done. It is a frightening situation for the patient and his or her family and friends, which is not taken lightly. It helps somewhat to understand that this is a very common event, and not a dangerous one.

Intravenous Lines

There are two varieties of intravenous lines, central and peripheral. The most common by far is the peripheral IV. This is a small plastic catheter that is inserted through the skin into a vein. It allows the administration of fluid, medications, and blood during your hospitalization. Peripheral lines are safe, have few complications, but have some drawbacks. The first is that they don't last very long. Typically, an IV site must be changed every few days to prevent the development of an infection or damage to the small vein. Occasionally these lines will "blow," or puncture the vein into which they were placed. This can result in an accumulation of fluid under the skin, which may be painful and disfiguring but which typically resolves quickly. They also can be painful when certain medications are run through them. The final problem with peripheral lines is that certain medications cannot be administered through them.

Central intravenous lines, on the other hand, can be used to administer a wide variety of medications, are not associated with painful drug administration, and rarely need to be changed. Their use, however, is associated with more complications than with peripheral lines. Central lines are more difficult to place, and their use is reserved for very ill patients or patients who have no usable peripheral veins.

A typical surgical patient will have an intravenous line placed prior to surgery, and one will remain in place until all intravenous medications have been discontinued and the patient is eating a regular diet. In certain circumstances intravenous access is required for prolonged periods of time. In these cases, special lines are inserted that can be used for months at a time or longer.

The Intensive Care Unit

Depending upon the operation scheduled and your baseline physical condition, you may be required to spend time in the intensive care unit (ICU), either before or after your operation. This can be an overwhelming experience, as ICUs are very active places with numerous mechanical and electronic devices, as well as a large medical staff. If you are sent to the ICU on an elective basis after your surgery, it is typically for close monitoring to ensure that no problems develop in the immediate postoperative period. ICUs have the capacity to closely monitor your heart and the

level of oxygen in your blood, provide mechanical support for your lungs, and allow you to be cared for almost constantly by at least one highly trained nurse. The benefit is that even small changes in your condition can be detected early, thus allowing your surgeon or intensive care physician to alter your therapy to prevent problems from developing. The down side to an ICU stay is the difficulty it presents for your state of mind. You will find it very difficult to sleep in the ICU, as you will be connected to multiple monitoring devices and assessed at least hourly by a nurse. Add to this the noise of hundreds of monitors, the confusion of emergency situations in nearby beds, the needle pricks required for multiple blood draws, and the administration of medications and intravenous fluids, and you can see why it is difficult to find peace and quiet in the ICU.

Elective admission to the ICU preoperatively is done to optimize your physical condition before the operation. This allows your surgeon to place a heart monitor, administer medications and intravenous fluids, and monitor your response to stress prior to your operation. It has become much less common in the past several years, but fortunately, anesthesiologists are able to successfully perform many of these functions in the operating room immediately prior to surgery.

If you should develop a complication intraoperatively or postoperatively, you may be transferred to the ICU. In this case, you may be unaware of your transfer, as typically only seriously ill patients are admitted to intensive care units under these circumstances. We will talk more about the intensive care unit in the chapter on complications. On a positive note, even gravely ill patients transferred to ICUs tend to do very well with appropriate care. If you or a loved one should end up in an intensive care unit under these circumstances, take solace in the fact that in a well staffed ICU, you will be receiving the very best care available.

Surgical Drains

One of the most unpleasant things for patients to deal with postoperatively is the presence of surgical drains. From an aesthetic standpoint, it is difficult to accept the sight of a plastic or rubber tube protruding from your skin. From a practical standpoint, a drain represents an object tethered to your body that you must protect while attempting to sleep, sit up, get dressed, or walk. It also serves as a constant reminder of your procedure. On the other hand, the surgical importance of drains cannot be underestimated.

The purpose of a drain is to prevent the accumulation of fluid in the open space created by a surgical incision. Drains also hold tissue together to allow them to heal. The body's response to injury is the release of fluid from the injured blood vessels and capillaries. Following surgery, the tissues beneath the incision are separated, leaving a space where this fluid can accumulate. As this fluid accumulates, the space between the tissues expands, preventing healing. Depending upon the type of operation and the type of tissue producing the fluid, this drainage can resolve in a matter of days or may persist for a matter of months. Maintaining adequate drainage of the operative space promotes healing and deters the collection of fluid.

Fluid collections also can become contaminated by bacteria, resulting in the formation of an abscess. The infected fluid incites an inflammatory response, which in turn stimulates the release of more fluid. This self-fueling cycle continues until the space beneath your incision is filled with pus. If this happens, the wound will need to be reopened to allow the drainage of this infected material. Again, the use of a drain at the time of surgery serves to prevent this from developing.

Now that we see why drains are important, the next issue is how to deal with drains that are present. Several types of drains are available; but for the purpose of discussion, we will divide them into open and closed drains.

Open drains represent a way to evacuate fluid from under an incision and release it above the skin. If you have an open drain, gauze pads will be placed over (or under) the drain to collect the fluid. These gauze pads have to be changed periodically to prevent the underlying skin from becoming injured. Open drains are typically used only when the drainage is expected to resolve quickly, or when the area in question was severely infected at the time of the operation. The care of these drains typically requires a trained professional, as they can be very messy. If you are discharged from the hospital with an open drain, you will probably be cared for by a visiting nurse or, at the very least, will require some additional training so you can care for the drain yourself.

Closed drains, on the other hand, make use of a suction device to remove and collect the fluid produced by the wound. Typically, this suction device is a closed bulb that is evacuated of air, causing a vacuum effect. As the fluid is removed from the wound, the bulb is filled and the vacuum decreased. The bulb reservoir is then emptied, and the process begins again. There are several advantages to this type of drain. First, the drainage fluid is collected in a reservoir and not emptied onto the skin, therefore it is much cleaner and easier to manage. Second, since the system is closed to the outside environment (except when it is emptied), there is less chance that bacteria will use the drainage device as a passage beneath the skin, thus decreasing the chance of infection. Third, the volume of drainage can be accurately recorded, giving your surgeon an accurate representation of how much fluid is being produced on a daily basis. The downside to a closed drain is its bulk and weight. Some of these drains can hold a pint of fluid, and as you can imagine, a container of this size hanging from your skin can be difficult to carry and protect.

Most surgical drains are removed within a few days of surgery, so you may never have to care for the drain yourself. The removal of most drains is quite simple and, surprisingly, relatively painless. After removing the stitch that secures the drain to your skin, it is simply pulled through the skin exit site. A dry gauze dressing or Band-Aid is then placed over this small incision until it seals. It is not uncommon for a small amount of fluid to leak from this wound for a few days after the drain has been removed, so this should not concern you. If, however, you notice an increase in the amount of drainage, the drainage becomes foul smelling, or the skin around the drain site becomes red or painful, you should notify your surgeon at once.

If you leave the hospital with a drain in place, remembering a few simple tips will go a long way toward helping you manage the drain. When emptying the drain, do so in a clean, well-lit room. If the drain has volume markings on it, record the date, time, and amount of fluid emptied each time on a sheet of paper, which you can show to your doctor at your follow-up appointment. Before emptying the drain, disinfect the spout with a small alcohol wipe (available at most pharmacies and discount stores). Pour the fluid into a clean cup and replace the cap on the drain spout. You may then dispose of the fluid down a drain or into a toilet. The drain should also have some mechanism to secure it to your clothing, so that you may walk without carrying the reservoir. If there is no way to fasten the drain to your clothing, you can attach a piece of tape to the drain and then safety pin it to your clothing. Drains are frequently used after breast surgery, and bras that have a built-in pocket to carry the drain are now available at most surgical supply stores.

One final point about drains. The timing of drain removal is designed to coincide with the cessation of drainage. Late removal of a drain increases the risk of infection and requires you to maintain and carry around the drain needlessly. On the other hand, premature removal of a drain may result in the development of a fluid collection in the site. In most instances, the accumulation of a small amount of fluid after drain removal has no consequence and can be safely monitored without action. If, however, the fluid collection (termed a seroma) becomes large or

symptomatic, it may need to be drained in the surgeon's office. This is accomplished by accessing the collection with a needle and withdrawing the fluid under sterile conditions. On occasion, this procedure needs to be repeated more than once. Although inconvenient, this minor complication usually resolves with careful attention and should not worry you unnecessarily.

Chest Tubes

Chest tubes are very similar to the drains described above, except they are placed into the chest cavity. Technically speaking, there are two types of chest tubes, pleural tubes and mediastinal tubes. The chest is actually divided into three major spaces (of which there are also subdivisions). Each lung is contained within a fibrous sack known as the parietal pleura. This sack is attached to the inside of the rib cage as well as the diaphragm (the muscle separating your abdomen from your chest: its contraction allows you to breathe in). The lung itself is not normally attached to the parietal pleura, thus there is a space (actually it is a potential space, since its volume in a state of health is very small) between the lung and the parietal pleura. This space is known as the pleural space, and a chest tube that enters this space (usually for the purpose of draining air, or blood, or fluid) is a pleural tube. The mediastinum is basically the space between the two lungs and their associated pleura. One major organ residing in this space is the heart. Following open-heart operations, it is typical for chest tubes to be left in the space around the heart, hence these tubes are known as mediastinal tubes.

One major difference between chest tubes and other surgical drains is the need to drain air. When injured or operated on, the lungs typically leak air. If this air were allowed to remain in the pleural space, it would eventually begin to take up volume normally used by the lung. The amount of air leaking from the lung depends upon the size of the lung injury. Once any air leaks have resolved (which they almost always do within a few days), the tubes may be removed. The removal of a chest tube is a little more complicated than the removal of other drains, since air can leak back along their path and collapse the lung when they are taken out. Thus, chest tubes are removed rapidly, and with the simultaneous application of a pressure dressing that prevents air from following the tract of the tube back up into the pleural or mediastinal space. On occasion, air moves into these spaces, and as a result, you can develop a slight (or rarely, a total) collapse of the lung. Normally this improves with no specific treatment, but sometimes a new chest tube has to be inserted to remove the air and re-expand the lung

Ostomies

In many circumstances, it is necessary to exteriorize a portion of bowel to divert the flow of stool. These openings of the bowel through the skin are collectively known as ostomies. Ostomies can be temporary (also known as diverting), or they may be permanent. There are many different types of ostomies, and they are named on the basis of the region of bowel brought through the skin. The two most common ostomies performed are the ileostomy, which is an exteriorization of the ileum (or end point of the small bowel), and the colostomy, which is an exteriorization of the colon (this can be performed at several points).

Ileostomies have the disadvantage of producing liquid stool; therefore, you may need to increase your fluid intake if you have an ileostomy. Colostomies, on the other hand, tend to produce solid stool. A wide variety of techniques are used when creating ostomies, and each technique alters the type of care that ostomy requires. Some empty on their own volition, while others require the patient's intervention (so called continent ostomies). The bottom line in ostomy care is the proper application of the stoma (ostomy) appliance. Before leaving the

hospital, you will need training in stoma care, irrigation, and appliance application. A nurse who specializes in ostomy care usually provides this training. Utilize this resource to its fullest potential, and make sure you really understand how to size, fit, and glue your stoma appliance (the device which holds the ostomy bag in place) before you go home. Given the diverse number of operations, locations, and functional characteristics associated with modern ostomies, it is not possible to go into further detail in this guide. Many books are published on this subject, and you may visit your local bookstore or an online retailer to obtain one. You should ask your surgeon if you will have an ostomy created at surgery; and if so, I suggest obtaining and reading a book on ostomy care before surgery.

A word to the wise, ostomy placement is sometimes a psychologically difficult event to deal with. If the thought of having an ostomy offends you, or if you find the care of an ostomy distasteful, you are not alone. However, remember to consider the alternatives. Often the creation of an ostomy is essential to the success of the surgery or may even be mandated by your disease process. I have never met a patient who was unable to come to terms with ostomy placement; and when properly educated and trained, patients with ostomies can participate in all of life's pleasures. Don't hesitate to ask your surgeon questions about your ostomy; and make use of all of the resources available, through the hospital and the press, to learn to live your life to its fullest.

Vital Signs and Sleep

One of the biggest benefits of an overnight hospital stay is the ability to monitor a patient's progress and vital signs. One of the worst parts of a hospital stay is being disturbed every few hours to have your vital signs checked. When a nurse or nursing assistant wakes you up 2 or 3 times an evening, it is difficult to get a restful sleep. This is an unintended consequence of an important monitoring function; and, unfortunately, there is presently no way around it. Please remember that checking your vitals is a good way for your surgeon to detect problems early, and that by not checking, serious consequences can ensue. Also, don't blame the nurse taking your vitals for the frequent disturbances. It is being done by the order of your physician; and if you find it too annoying, it is an issue you must discuss with your doctor. Along the same lines, the amount of urine you produce on an hourly or daily basis is a very important piece of information that your surgeon needs to know, at least for the first few days after surgery. Try to make sure that each elimination is recorded in some way so that an accurate measure can be obtained.

Television and Phone Use

Most modern hospitals are equipped with televisions and telephones in every patient room. The big exception to this is the intensive care unit, but since most ICU patients are too sick to talk or watch TV, it does not turn out to be a problem. Unfortunately, in today's cost-conscious world, you frequently will have to pay for the use of these items out of your own pocket. As I mentioned Chapter 3, you will probably want to have a little cash on hand to pay for use of these items. If you have a cellular phone, you will not be allowed to use it in the hospital, so don't even bother bringing it with you. Cell phones have been found to interfere with many electronic devices used in hospitals, including monitoring systems and intravenous pumps. My guess is that you do not want your intravenous fluid running at the wrong rate, so why take the chance with the use of a cell phone. One final note, if you have a personal entertainment device, such as a Walkman or portable television, you are free to use it. Keep in mind, however, that valuables

have a way of disappearing from patient's night tables. As I stated in Chapter 3, bring to the hospital only what you are willing to lose.

Wound Closure

Three predominant methods are used today to close wounds. They include the use of stitches, staples, or glue. All three seem to be adequate, but not every incision can be closed with every technique. The point I emphasize here is that surgical staples, which look rather menacing the first time you see them, are easily and comfortably removed. If you should notice that your wound is closed with staples, don't worry. They are taken out with a tool specifically designed to remove them easily; and although you may feel a slight pinch with the staple removal, it is not an experience to fear. If you do not see anything holding your incision together, your surgeon either closed your incision with a subcuticular stitch (that is, a stitch below the skin) or with surgical glue. If you have a subcuticular stitch, the suture material will be absorbed by your body over time. Eventually, there will be nothing left of the stitch; however, it is not uncommon for small bits of the suture to poke through your skin for the first few weeks after your operation. This is especially true where knots were tied, as they take longer to dissolve. If you notice a thread poking out of your wound, do not worry; just point it out at your next office visit and your surgeon will tell you how he or she would like to manage it.

Wound Dressings

Most surgeons "dress" their wounds with sterile gauze pads at the conclusion of the operation. These gauze pads may be removed in a few days, but some surgeons prefer to leave them on for up to one week. You may also notice some staining on the gauze pads. This is normal, and as long as your dressing is not saturated with blood or fluid, there is no reason to worry. The removal of a dressing can sometimes be an uncomfortable experience, as the area below the dressing is sensitive because of the incision. In general, dressings come off without a problem, and you should not worry about them. By 48 hours after your operation, the edges of your wound have developed a weak seal; therefore, it is safe to leave you incision exposed to the air from this point forward. If you find a small amount of fluid leaking from the wound, your surgeon may choose to keep a dressing over it to prevent the fluid from staining your clothing or running down your skin. If your wound is dry and it is more than 2 days after your surgery, it is safe to leave it uncovered. The only reason to apply a dressing beyond this point is to protect the wound from being irritated by clothing or friction.

Chemotherapy or Radiation Therapy

If your operation was performed to remove a tumor or cancer, you will probably be evaluated by an oncologist (cancer specialist). There are literally hundreds of different techniques and drugs available to treat cancer, so I'm not going to talk about any one specifically. For some cancers, the drugs and radiation are very beneficial, and can help to achieve a complete cure. For others, there are no treatments that significantly change the outcome of surgery alone. Remember to discuss this with your oncologist before you begin a course of chemotherapy or radiation. In this instance, I will refer you to the discussion on managing expectations in the Chapter 3. You should know what the goal of the therapy is, and how often the therapy achieves its goal. Since chemotherapy and radiation therapy have consequences as well as benefits, make sure you understand both before agreeing to undergo further treatment.

Chapter 7: Complications

This is a topic no one likes to talk about, but it is a reality that you must understand before you have surgery. Current legal thinking is that the risks and benefits of surgery must be explained to you before you can give informed consent and agree to have an operation. In theory, this is a good idea, since no one in his or her right mind would agree to an operation with a 100% complication rate. Beyond that, it is important that you know what could possibly happen to your body after your operation. In reality, there are so many possible extremely infrequent complications that could occur that to detail each one would not be possible. In practice, most surgeons will list for you the most frequent complications specific to your operation. This is an attempt to provide you with information without scaring you out of a needed operation. In my opinion, it is not possible for you to give a truly "informed consent" unless you have studied surgery for years. That is not to say that surgeons are more intelligent than their patients, my point is simply that there are so many potential pitfalls to even the most minor procedure that to understand the risks you must have witnessed a tremendously large number of operations. The goal of this chapter is not to frighten you. It is to raise you level of awareness to possible outcomes so that you go into the operation with your "eyes open."

Complications may be divided into 2 general categories: major and minor. Examples of minor complications include localized wound infections, urinary tract infections, and phlebitis at the site of an intravenous line. You may also experience minor bleeding or bruising at the wound site. Most of these complications can be corrected with rapid and appropriate treatment. In almost all cases, they do not alter the length of your hospitalization. Major complications include failure of the operation, heart attack, stroke, major bleeding, blood clots in the legs (or rarely, the arms), overwhelming infection, pneumonia, and death. Unfortunately, any of these complications can occur after even the simplest operation. Careful preoperative screening and vigilant postoperative care can minimize the risk of these complications; but even under the best of circumstances, they can occur.

If you carefully follow the advice given in Chapter 5, I believe you will be well on your way to avoiding complications. Of course, even if you follow my suggestions to the letter, you will not eliminate the risk of complications. Below we will consider several complications and their treatments; so if you do run into one of them, you will understand what is being done to remedy the situation.

Failure of the Operation

This is rare but not impossible. There are numerous reasons that operations cannot be completed, and it is not possible to discuss them all here. Suffice it to say that all operations are performed under a certain set of assumptions, many of which cannot be verified before your operation. If your surgeon finds that the criteria for safely completing the operation are not met, the operation will not proceed. Alternatively, you surgeon may find that a different operation would better suit the circumstances encountered; and you may wake to find you had a procedure that you had not discussed. In a worst case scenario, it could be discovered that your disease is not repairable by surgery; and you will leave the operating room with both an incision and your original disease.

Bleeding

Every operation, no matter how small, runs the risk of significant blood loss. Typically, this can be well controlled in the operating room, but you may require a blood transfusion to prevent anemia (low red blood cell count). To minimize bleeding, you should avoid products that inhibit platelet function as discussed in Chapter 5. Additionally, if you bruise easily or have a relative who has experienced major blood loss from a minor injury or surgery, you should let your surgeon know. You may need additional screening tests before the start of your operation. Having done your part, it is now up to your surgeon to be as careful and thorough as possible to prevent unnecessary bleeding, and to control any bleeding necessary for the procedure (for example, the careful division of arteries supplying a tumor). It is never possible to control all points of bleeding at surgery; and in almost all cases, some minor bleeding occurs. Your clotting system will take care of this trivial blood loss; and with time, the injured blood vessels will heal and the situation will return to normal.

Part of the art of surgery is knowing which bleeding will stop on its own and which bleeding needs to be stopped by mechanical (surgical) means. This usually becomes an issue if a bleeding problem is suspected after the operation has concluded and you are in the recovery room or a hospital room (if you are having outpatient surgery, this can happen at home). Many means exist to monitor ongoing blood loss, but the most commonly used are monitoring the vital signs and urine output. If these parameters suggest bleeding, a blood count may be drawn to determine if you have lost (or are losing) more blood than expected. If you are, your surgeon will either elect to give you a transfusion and follow the situation closely, or possibly return to the operating room for another look.

Once the bleeding is controlled, you may need additional transfusions of blood or blood products (platelets or liquid clotting factors). Fortunately, after the problem is corrected, you should have no further problems. In circumstances in which blood transfusions are required, there is a risk of contracting certain blood borne viruses (such as Hepatitis or HIV), since these can be passed from blood or blood products. Remember, however, that the blood products available in the United States today are rigorously tested and are extremely safe. Your risk of contracting a disease from a blood transfusion is lower today than it ever has been, and with continued advances in molecular biology, I imagine the blood supply will become only safer over time.

Anastomotic Leaks

The surgical attachment of two tubular structures (such as blood vessels or pieces of bowel) is called an anastomosis. To make these attachments, the two structures are brought together in the proper alignment, then sutured or stapled together. When this is completed, the anastomosis is inspected, but as you can imagine, it is rarely (if ever) fully watertight. In the case of blood vessels, a localized clotting process will occur at the anastigmatic site, and this will effectively create a seal around the connection point. In the case of the bowel (or any other structure that may be connected, including airways, nerves, ureters, gynecologic or reproductive organs.), there is no biologic glue to seal the anastomosis; so we depend upon the suture or staples to hold the tissue together until wound healing occurs in a week or so. It is believed that all of these anastomoses leak to some degree, but that a small amount of leakage is handled by the body. In some instances, the leakage overwhelms the body's ability to handle it, and a problem occurs. Often surgeons will leave drains in areas that they think may leak, thus enhancing the body's own defenses. Where there is no drain and a significant leak occurs, a collection of fluid will develop. Depending upon the content of this fluid, the fluid collection may represent a simple nuisance or a full-fledged emergency. Since there are so many different types of anastomosis, it is not possible

to discuss the solution to each one. Suffice it to say that clinically significant anastomotic leaks of any type tend to require further surgery unless the area around the leakage is well drained. An exception to this is a vascular anastomosis, where a significant leak will almost always require a surgical repair.

Dehiscence

A dehiscence is basically the failure of a suture line to hold together. There are many causes for dehiscence, and some patients are at higher risk for this complication than others are. If the dehiscence occurs weeks or months after the operation, this tends to result in the formation of a hernia at the incision site. Depending upon the size and symptoms associated with this event, your surgeon may recommend simply observing the hernia over time or suggest a surgical repair. If the dehiscence occurs soon after surgery (days to weeks), this can become more of a problem. If you experience the sound or sensation of a "pop" from your incision, and this is followed by drainage of fluid from your suture line, you should inform the hospital staff or your surgeon immediately. There are several treatment options, but in many cases you will require a return trip to the operating room to repair the original closure.

Deep Venous Thrombosis (DVT)

A deep venous thrombosis is the development of a blood clot in the deep veins of an extremity, typically the leg. This occurs for several reasons, but suffice it to say that many disease states increase the likelihood of developing blood clots. Add to this the tendency for increased blood clotting after surgery and you can see that surgical patients are at high risk for this occurrence. The final piece of the puzzle is the pooling of blood that results from inactivity. Now you can see why surgeons are so insistent that their patients be up and about as soon as possible after an operation.

Even under ideal conditions and with all the appropriate preventative measures being taken, a certain number of patients will develop this complication. Once formed, these clots have the ability to break off and travel to other parts of the body, possibly resulting in pulmonary embolism or stroke. For this reason, if you develop a deep venous thrombosis, you will be placed on blood thinner to try to prevent the clot from spreading or enlarging. You will probably be discharged from the hospital on a blood thinner and will be required to stay on this therapy for 6 months to a year. If you cannot safely take a blood thinner, or if you are given a blood thinner and still develop complications from this clot, you will need to have a filter placed in your vena cava (the largest vien in the body, which leads to your heart). This filter is designed to catch any blood clots that break off and begin to travel in your venous system. My advice to you again is to do your part in preventing the development of DVTs by getting up and out of bed as soon as possible after your operation. A short period of discomfort postoperatively is definitely worth it if you can avoid a year of anticoagulation therapy.

Pulmonary Embolism (PE)

PE is one of the most dreaded complications after surgery, which can range from a clinically undetectable syndrome to an immediately fatal condition. In most cases, PE is heralded by shortness of breath, chest pain, and an inability to get enough oxygen into the blood. If you are suspected of having a PE, you will immediately be placed on blood thinner and one of several tests will be ordered to confirm the diagnosis. If you are found to have a PE, several options are available. If you remain in stable condition, the blood thinner alone may be sufficient therapy. If

your condition deteriorates, it may become necessary for a drug to be administered that actively dissolves blood clots. This is a dangerous therapy and reserved for only the sickest of patients; in fact, many surgical patients cannot take this drug at all since they would be at risk of bleeding at the operative site. In a worst case situation, you may require a procedure designed to suck the blood clot out of the lung with a vacuum device, or you may even require emergency surgery. Clearly again, the best way to treat a PE is prevention. By avoiding DVTs as described above and in Chapter 5, you will markedly reduce the likelihood of developing this potentially lethal situation.

Cerebrovascular Accidents (CVA or stroke)

Strokes are another possible complication of surgery. As noted above, blood clots are more likely to occur in people after surgery, and a stroke is a blood clot in one of the vessels supplying the brain. The best way to avoid this complication is by careful screening preoperatively. Even with the best of screening, some people will still have strokes during or after their operations. Currently there are not many good options for treating strokes. A blood thinner can be administered to prevent the clot from enlarging, and in some cases a drug may be administered to break up the blood clot (again, not often possible in the postoperative state). Numerous tests will be ordered to determine the cause of the stroke; and if one is determined, an operation may be required. Unfortunately, most times no single cause of the stroke can be determined, and we are left treating the deficit caused by the stroke. On a positive note, with therapy and watchful waiting, most people who suffer strokes are able to return to a productive life.

Myocardial Infarction (MI or heart attack)

As noted previously, additional strain is placed on the heart by surgery. This is a well-known fact, and as such, care is taken before an operation to determine the overall condition of the heart. Unfortunately, heart attacks can occur "out of the blue," and no amount of testing will eliminate this risk from surgery. Surgeons and anesthesiologists continue to do everything possible to minimize the stress caused by surgery, but as nearly all patients develop coronary artery disease with age, this will continue to be a problem. If a heart attack is suspected, aspirin and blood thinner will be administered, as will supplemental oxygen. All causes of stress will be minimized, and if possible, a blot clot-breaking drug will be administered. Small heart attacks that occur in the hospital can be well treated, and are usually not life threatening. Larger heart attacks may require emergency cardiac catheterization or open heart surgery, and in many cases these still prove to be fatal.

Anesthesia Complications and Death

The process of administering anesthesia itself can cause complications and death. The preoperative anesthesia screening process and careful choice of anesthesia technique coupled with careful intraoperative monitoring has lowered the risks of anesthesia tremendously. Even so, these unpredictable complications still occur, and can have fatal consequences. Fortunately these events are rare; but when they occur, they are devastating to families and physicians alike.

Renal failure

Surgery not only places a tremendous burden on the heart but also puts the kidneys at risk as well. The kidneys are very sensitive to factors such as blood pressure and blood volume, two factors that can vary tremendously during an operation. They also receive a high volume of blood

flow, and small showers of blood clots can be swept into the kidneys and cause damage. As such, surgeons are very careful to follow the renal function of their patients postoperatively. In addition, several important drugs have the side effect of causing kidney damage, including several antibiotics, as well as intravenous contrast material. Fortunately, with appropriate care, most cases of renal failure will resolve in time, and it is rare that patients require dialysis. If necessary, dialysis will be instituted, and in some cases may become a lifelong necessity.

Pneumonia

Another common complication following surgery, pneumonia can range from a highly treatable problem to a lethal one. There are multiple preventative strategies outlined in Chapter 5 for the prevention of pneumonia. If pneumonia develops, often the administration of antibiotics in combination with the mobilization of secretions by respiratory therapy can solve the problem. If the pneumonia is severe, or if the patient has a tenuous pulmonary status to begin with, mechanical ventilation is sometimes necessary to maintain blood oxygenation while the pneumonia resolves. This obviously requires a trip to the intensive care unit and is a serious complication. A variant of pneumonia that occurs when a patient inhales gastric juices will be described below.

Aspiration Pneumonia

The inhalation of stomach contents into the lungs is known as aspiration. For many reasons -- including positioning, depressed mental status due to narcotics and sedatives, and poor gastric emptying due to ileus. -- this is a common complication after surgery. The treatment for this is the removal of the inhaled material through suctioning or bronchoscopy; however, even with immediate treatment, there is a high likelihood of developing pneumonia. Aspiration pneumonia is somewhat more difficult to treat than regular infectious pneumonia because the acid in gastric juice can damage lung tissue itself. Many patients who have an aspiration event require prolonged mechanical ventilation and ICU care. This is one of the reasons surgeons leave nasogastric tubes in place until they are sure that bowel function has returned. It prevents the accumulation of fluid in the stomach and reduces the likelihood of an aspiration event.

Sepsis/Multiple Organ Dysfunction Syndrome (MODS)/Systemic Inflammatory Response Syndrome (SIRS)

A poorly understood but devastating complication of surgery, sepsis syndrome (also known as MODS or SIRS) results from an overactive immune response. This triggers a cascade of inflammatory events in which the body produces a series of compounds that eventually serve to injure itself. Although the subject of intensive laboratory investigation, there is still not an accepted treatment for this process. The best we can offer currently is supportive care in an ICU until the process resolves. This frequently leads to long hospitalizations with multiple subsequent complications, operations, and procedures. Unfortunately, just half of the patients who develop sepsis syndrome will recover and only after prolonged and intensive therapy. Frequently, patients with sepsis syndrome will require the placement of a tracheostomy and feeding tube for support while the disease process resolves.

Acute Respiratory Distress Syndrome (ARDS)

ARDS is a process similar to the one described above in which the inflammatory response is limited to the lungs. This too requires mechanical ventilation and ICU care and also carries a high rate of complications and mortality. In a well-staffed and equipped ICU, patients have a better

than 50% chance of survival. Frequently, patients with ARDS will require the placement of a tracheostomy and feeding tube for support while the disease process resolves.

Urinary Tract Infections

Urinary tract infections are a common complication, particularly in patients who have a urinary (Foley) catheter. It has been estimated that you have a 10% per day risk of infection while a Foley catheter is in place. Fortunately, this is usually an easy complication to treat, and the removal of the catheter combined with antibiotic administration alleviates the problem. In rare instances, urinary tract infections can spread to the kidney or to the bloodstream; and in these cases, it may be harder to eradicate the infection. As with most complications, prevention is the best cure. This is why most surgeons will remove the Foley catheter as soon as it is safe to do so. Remember that a catheter is not a means to avoid trips to the bathroom or a way to prevent incontinence. If you don't absolutely need one, you should not have one.

Wound Infection

Depending upon the type of operation and the circumstances surrounding the surgery (i.e., emergency vs. elective, bowel prep vs. unpreped bowel), the incidence of postoperative wound infection can range from 1 to 40%. In its most mild form, a wound infection can be treated with simple antibiotic administration. If this fails to resolve the problem or if a fluid collection beneath the wound becomes infected, you may need to have the entire incision "opened" to allow the infection to drain. This is often described as "allowing the wound to heal from inside out." If your wound does require wide drainage, you will probably require the assistance of a visiting nurse after discharge, as it can be a labor-intensive process to keep the wound clean. Fortunately, wounds that heal this way are cosmetically acceptable; and once healed (weeks to months later), it will look almost identical to a wound closed with stitches.

Depending upon the cause of the wound infection, a more serious problem may be brewing. Infections of deep tissue spaces and tissue cavities are known as abscesses. An abscess is a collection of fluid that becomes infected, requiring open or closed (percutaneous) drainage. This serious complication may require weeks or months of therapy before it can be resolved. If you develop and abscess and it is drained well, once it resolves, the problem will be solved. On occasion, abscesses will reform or multiple small abscesses will slowly enlarge at their own pace, so it seems like every time one abscess is cured, another surfaces. The key to treating this complication is patience and persistence. Although you may ultimately require a second, third, or even fourth operation, in almost all cases, a diligent surgeon will be able to solve the problem in time.

Drug Allergies

Drug allergies can range from simple skin rashes to full-blown anaphylactic shock and death. For this reason, you will be asked by virtually everyone you meet in the hospital if you have ever had an allergic reaction to a medication. This is in contrast to a side effect of a medication, which is a predictable adverse effect caused by a drug. Examples of side effects are nausea or forgetfulness, caused by narcotics, or leg swelling, caused by ACE inhibitors. Allergic reactions are not caused by the drug itself but rather by your body's immune response against the drug. If you have had an allergic reaction to a drug before, you should avoid taking the drug again in the

future, particularly if the reaction was severe. You may also develop an allergic reaction to a drug that is similar in structure to the one causing the initial reaction. Finally, even if you have never had an allergic reaction to a medication in your life, you may develop a new allergy while you are hospitalized. It is, therefore, important to let your health care team know if you develop any of the symptoms of an allergic reaction, especially immediately after the administration of a medication. These symptoms include a skin rash, hives, itching, chills, sweats, or lightheadedness. The treatment for most allergic reactions is to simply discontinue the administration of the drug. If the reaction is not severe, your doctor may instead choose to treat you with a medication to inhibit the allergic reaction and continue to use the offending drug.

Sundowning

This poorly understood condition occurs typically in elderly patients, especially those in poor health prior to their operation. Medically, sundowning is a form of delirium, in which patients lose their grasp on reality. As the name implies, this condition worsens in the evenings, for reasons that are still unclear. It is characterized by disorientation (loss of person, place, and/or time), agitation, hallucinations, and paranoid fantasies. Sundowning patients frequently complain that they are being held against their will or tortured. If this should occur to you or a loved one, your surgeon will order a series of tests to ensure that there is no medical condition causing this state of delirium. If none is found, the only treatment is to avoid medications that have a clouding effect on the central nervous system (such as narcotics and sedatives) and to protect the patient from self-inflicted injury until the confusion resolves. This may include the use of wrist, ankle, and body restraints. Although frightening to witness, it is usually a harmless condition if the patient is closely monitored, and it is comforting to know that most patients do not remember anything about the period of their hospitalization when this occurs.

Alcohol Withdrawal

As I mentioned in earlier chapters, this is an extremely serious complication which continues to carry a substantial mortality, even in this day and age. If you have, or suspect you may have a physical dependence on alcohol, you should address this problem prior to surgery. For safety's sake, if you drink even a single alcohol-containing beverage a day, you should discontinue this practice several weeks in advance of your surgery. If you are unfortunate enough to develop alcohol withdrawal, expect that it will add several days or more to your hospitalization. The most commonly used treatment today is sedation, with a slow weaning of the sedation over the span of days to weeks. In its most severe form, treatment includes mechanical ventilation, ICU treatment, and medically induced coma and paralysis until the withdrawal process is complete.

Intubation/Tracheostomy

Should you develop a serious complication, particularly one which requires a transfer to the intensive care unit, there are many common procedures that you may have to undergo in the course of your therapy. The first we will consider is intubation. This is a process whereby a plastic tube is inserted through your vocal chords and into your trachea (windpipe). This may be done for several reasons, all of which ultimately will require the use of mechanical ventilation. This does not imply a lifelong dependence upon a breathing machine. In fact, most intubations are transient events to allow for the optimal treatment of curable problems. If you continue to require the support of a ventilator for more than a week, your surgeon may recommend the placement of a tracheostomy tube. This is essentially a small incision in the neck to allow the placement of a

plastic breathing tube directly into the trachea. There are a number of good reasons that this is done, including protection of the vocal chords and trachea. It is also easier to wean patients from mechanical ventilation when they have a tracheostomy. I have found that many patients are extremely fearful of tracheostomy placement, and I am not sure why this operation has developed such a stigma. In reality, when tracheostomies are no longer required, the plastic tubing is removed from the incision site, and gradually the wound shrinks in size until it is fully healed. If your surgeon recommends a tracheostomy, it is a good idea to heed that suggestion.

Feeding Tube

Nutrition is another important aspect of post-surgical care and is essential for proper wound healing. Those patients who develop serious complications often are unable to eat enough to maintain adequate nutrition. For this reason, feeding tubes are often required. This allows for direct access to the stomach or small bowel, and enables your physician to deliver enough protein, minerals, and nutrients to meet your body's daily requirements. There are several ways to place feeding tubes, but one of the most commonly used today is the endoscope. Using direct visual guidance, a feeding tube can be placed in the stomach or small intestine at the patient's bedside in a matter of 10 to 20 minutes. The procedure is virtually painless, and like a tracheostomy, a feeding tube can be removed when no longer needed.

Despite the best efforts of surgeons, anesthesiologists, nurses, and allied health personnel, complications during and after surgery continue to occur. To do your part in preventing complications, follow your surgeon's advice, as well as the tips outlined in Chapter 5. Remember, the quicker you get out of the hospital, the less likely you are to suffer a complication. That alone should motivate you to get up and get going as soon as possible after surgery. If you do develop a complication, remember that patience is your most important ally. When a three-day hospital stay turns into a month-long hospitalization, it is easy to get angry, upset, or frustrated. Remaining calm and trying to keep a positive attitude will go a long way toward helping your health care team help you to get better. Years after the experience, you will remember that your operation allowed you the joy of continued life free of disease, and you will forget the seemingly endless days of boredom in the hospital.

Chapter 8: Going Home

Now that your operation is over and you have recovered sufficiently in the hospital, your surgeon is considering your discharge. For many patients, this is a frightening prospect. There is unquestionably a sense of comfort and security associated with hospital care. You probably do not feel well at this point; you may only have begun eating a day or two ago; and you still find that tasks such as sitting up in a chair exhaust you. This is all very normal, and the apprehension you may feel is understandable.

There are a few points to remember when you begin to think about your discharge. While a hospital is obviously the safest place for a critically ill patient, it is a poor place to recover from surgery. The staff of most hospitals is well trained to treat acute illness but is not well positioned to support recovery. This has not always been the case, but as the number of available hospital beds has dramatically decreased in this country over the past decade, so has the staff that went with them. Hospitals now are caring for only the sickest of patients, and they are the ones who get most of the attention from the limited available staff. This means that the healthier patients cannot get undivided attention. Physical therapy and rehabilitation departments have also been cut, with the result that most hospitals cannot fully support the long-term rehabilitation needs of their patients. Hospitals obviously do not have many of the comforts of home, such as home cooked meals, comfortable beds, quiet rooms, and loving family members. All of these things will contribute to your sense of well being after surgery, as well as to your recovery. Finally, in any community, the most dangerous and virulent infectious agents can be found in local hospitals. The reason for this is obvious if you think about it. Dangerous organisms cause the worst illnesses, and the sickliest patients are in the hospitals. Your risk of developing a serious and potentially life-threatening infection is high in a hospital. The quicker you get home, the safer from this risk you will be.

Patients typically ask several important but hard to answer questions prior to discharge. The first is always, when can I return to work ? This answer depends upon your surgeon's preferences, the type of operation you had, and your overall medical condition. A good rule of thumb that I use is this: if you are able to eat normally, are moving your bowels, can easily walk up a flight of stairs, and do not require any pain medication (except maybe to help you get to sleep), then you are ready to return to work. Another thing you must consider is your activity at work. Clearly, someone who spends most of his or her time behind a desk or in a chair will be able to safely return to work sooner than someone who is operating heavy machinery or who lifts heavy loads on a regular basis. These same rules of thumb apply to driving a motor vehicle. You should not even consider driving until you have gone several days without pain medication. Driving sometimes requires quick activity and/or sudden movement. If you still experience pain with exertion or rapid movement, you should not be driving. This may seem overly cautious, but the few extra day of rest are a small price to pay for your safety and the safety of other motorists and pedestrians around you.

Another very important question regards resuming sexual activity. This is a personal decision; and frequently, you will find that your desire has not returned even after your feel your recovery is well progressed. Surgery alters our perception of ourselves, and this is a vital ingredient of our sexuality. If you find that you do not have your normal sexual appetite for several weeks, do not be alarmed. On the other hand, many people will want to resume sexual activity before they have been discharged from the hospital. In this case, a good rule is: if it doesn't hurt, it's probably

safe. Your body is a very good judge of its condition, and if something is bad for you, chances are your body will let you know by providing a painful disincentive for the activity. As long as your incision line is not being abraded or strained in any fashion and you are not experiencing pain with any given activity, then it should be safe to proceed. My suggestion is to increase your activity slowly, experimenting with what you can and cannot do. If you don't rush into anything too strenuous, you should not have a problem.

Upon discharge, you may find that you are on several new medications. You may also find that you are not given prescriptions for some of the medications you were taking before surgery. If you filled out the PreOp-Worksheet and brought it with you to the hospital, you can be sure that your surgeon knows what medications you were taking beforehand. If you forgot to list a medication, or if you did not bring the worksheet or a medication list with you, your surgeon may not have even known you were taking a certain drug. To ensure that you are not taking any drug you should not be taking and that you are not missing any drug that you need to be taking, there are several steps to take. The easiest is to use one pharmacy to handle all of your drug prescriptions. This allows your pharmacist to check all your medications for side effects and drug interactions, which may be dangerous. It is sometimes difficult in this day and age, when many prescriptions are filled by out-of-state companies, which mail you medication on a regular basis. This is an unfortunate consequence of some of the cost-cutting measures health insurance companies are using these days to keep their costs down. If you do not have a single pharmacist, your primary care physician can fulfill this role for you. Your surgeon should have contacted your primary care physician after the surgery to let him/her know what was found in the operating room and how your recovery is progressing. For your own safety, I suggest that you call your regular doctor as soon as you are discharged to let him/her know how you are doing, what prescription medications you were given, and what medications he/she wants you to take at home. You should also schedule an appointment with your primary physician within a few weeks after discharge. Your surgeon will want to see you to make sure you are doing well; but at some point, particularly if you have had a curative operation, your relationship with your surgeon will become inactive. This is why you should strive to keep your primary physician well informed, as it is this person who will continue to treat you on a regular basis.

When going home, you should normally resume the medications you were taking preoperatively unless the operation you had fixed the problem that required the medication, or you were specifically instructed by your surgeon to stop taking a particular drug. The only way this can be safely done is to inform your surgeon of all the medications you take. I cannot stress this point enough. It would be a terrible tragedy for you to have a successful operation only to have a complication develop due to a medication error. In the end, only you can be responsible for preventing this from happening, and the best way to do that is by providing accurate information and initiating appropriate communication between you and your physicians.

You may find that you do not have a normal appetite when you return home. This is not unusual and occurs with many types of surgery. You may even find that you begin to lose weight after your operation: this too is not unusual. As long as you are able to tolerate liquids sufficient to prevent dehydration and you continue to move your bowels regularly, you should not be alarmed. If, however, you develop persistent vomiting that lasts for more than a day, you find that your abdomen is getting bigger, or if you are suffering from serious constipation, your surgeon should be notified. Weight loss of up to 5% of your body weight is not worrisome, and you will likely gain the weight back as soon as your appetite improves. On the other hand, if a

week or two has passed since your discharge, and you find that you cannot eat or that you are still losing weight, again you should let your surgeon know.

Depending upon your operation and your underlying medical condition, it may be necessary for laboratory tests to be performed after your discharge. If this is the case, your surgeon or primary care doctor will instruct you to have blood drawn. It is important that you faithfully have these tests completed. This is a process that may have occurred easily if you were hospitalized for an extended stay several years ago. In today's cost conscious world, you will not be permitted to remain hospitalized for several days just so a lab test can be drawn, even if it is a vitally important test. I suggest that you know which lab tests are scheduled for you after your discharge and who will be receiving the results. Make sure you follow up to be certain that the test results were forwarded to the appropriate physician and that no changes in your care are mandated by the test results. If you are having outpatient-nursing visits after your surgery, these functions can be performed by the visiting nurse at the time of his/her house call.

Visiting nurses have become an extremely valuable tool to surgeons who discharge their patients before they are fully recovered. It is both comforting to you and your surgeon that a trained medical professional will assess your vital signs and wound condition, as well as make sure you are taking the proper medications and have all necessary lab tests drawn. Not every patient will need the assistance of a visiting nurse, but for those who do, the visiting nurse is an extremely valuable asset. If you are scheduled for discharge and you are uncomfortable with some aspect of your care at home, you should inquire as to the availability of visiting nurses in your community. Along those same lines, you may want to talk to a discharge coordinator before going home. If you anticipate that you will have unusual needs after discharge, such as a wheelchair, hospital bed, oxygen-delivery system, or other medical equipment, most hospitals have a coordinator who can see to it that everything will arrive at your home before you do.

In the course of normal recovery, there are ups and downs; so you will have good days and bad days. As such, it is not necessary for you to call your surgeon every time you notice a bit more pain from your wound or if you feel tired or fatigued one day. These are things you should expect, and until several months have passed, you should not expect to feel your old self again. Several conditions do require immediate notification of your surgeon, so by keeping your eyes open for these signs and symptoms, you could nip a problem in the bud. If you do not have a home thermometer, now would be a good time to buy one. There are few pieces of information that surgeons need more than they need your temperature. This is because so many problems first surface as an elevation in temperature. It is a good idea to take your temperature several times a day after you are discharged, and record the time, date, and temperature. Especially if you begin to feel weak, tired, or just plain sick, record your temperature, and note your symptoms. If you find you develop a fever of 102° F, you should call your surgeon. Temperatures this high may be early indicators of developing infections, and he/she will probably want to keep a close eye on your temperature, and possibly schedule an early office visit.

Other important symptoms to note are changes associated with the operative wound site. If you notice a developing redness around your incision, or if you begin to see drainage from the wound, you should let your surgeon know. These are both signs of wound infections, and the earlier they are treated, the easier they are to cure. Other signs of wound infection include a foul odor emanating from the wound, increased tenderness around the wound, or separation of the skin edges. On the other hand, if you notice a ridge developing under the incision or the incision site itches, this probably represents the process of wound healing, and you should not be alarmed.

There are a host of other symptoms that mandate early evaluation, which are simply listed below. If you develop any of these symptoms, let your surgeon know. The problems associated with these symptoms vary in importance, and you may be asked to keep and eye on the condition over several days, or you may be asked to come in for immediate observation. You should follow whatever recommendation your surgeon makes. Important symptoms include: chest pain at rest; shortness of breath at rest or with minimal activity; coughing up blood or green/tan sputum; pain or burning with urination; swelling of one or more extremities; persistent night sweats; weight loss that persists for more than two weeks; vomiting that persists for more than one day; constipation with no bowel movement in 2 to 3 days; increasing abdominal girth (with or without pain or nausea); pain/tenderness/redness at any IV or blood withdrawal sites; the passage of bloody stool; or the passage of black/tarry stool.

If everything is going well after discharge, do not neglect scheduling follow-up appointments. Your surgeon will probably want to see you within 1 to 3 weeks of your operation. As I mentioned above, you should also schedule a follow-up appointment with your primary care physician. This can usually be done at some time after the appointment with your surgeon. If you are being treated for several medical conditions, or if you were seeing your regular physician on a more frequent basis, schedule a follow-up with that physician sooner. You may have also been seen by one or more specialists while you were in the hospital. These people may have left you a professional card or asked your surgeon or primary care doctor to schedule an appointment with them. Don't forget to make those appointments as soon as you are discharged, as it may be several weeks before you can be fit into the appointment schedule.

Once you have finished your initial follow-up visits and have been at home for a few weeks, you will be wondering when your full strength will return. The next chapter will give you an idea of the timetable you should keep in mind when judging your progress.

Chapter 9: Long-Term Care and Recovery

The first weeks to months after surgery can sometimes be a difficult period. If you had a minor operation or a curative procedure for a benign condition, you will probably be getting back to your usual routine by now. Your stitches or staples have been removed, you have returned to work, and your stamina is returning. If you fit into this category, congratulations, you have successfully navigated the tricky world of surgery. A few basic points bear repeating for you at this time.

Now that your operation is over, you are thinking about taking up some of your old preoperative habits such as smoking. The single most important thing you can do to protect your own health and future well being as a user of tobacco products it to quit for good. You weren't able to smoke in the hospital, and you may have noticed that you are breathing easier and that you don't wake up with a cough or the desire for a cigarette. Run with this opportunity; kicking the habit will save you trouble down the road, no doubt about it. If you lost weight associated with your surgery, now is also a good time to consider what you would like your weight to be. While I do not advocate surgery as a method of dieting, in the period after surgery you will lose both muscle and fat as your body attempts to repair itself. Now is a good time to begin a healthy diet and institute a routine of daily exercise. While you are at home recovering, get in the habit of taking a walk and maybe doing some stretching or other form of exercise. This will not only improve your recovery period but it may also set the stage for a healthier future. There are no diet or exercise routines which will cure every disease; but as we age, keeping our bodies in the best shape possible will improve the quality of our lives and increase our ability to recover from future medical problems.

The incision that was made in your skin, as well as the manipulation of your organs necessary for the operation, heal by a remarkable natural process. This is a long-term process that literally begins minutes after your operation is over. By the end of one week, the healing process progresses to the point that your incision is able to hold itself together. The wound continues to remodel and strengthen over time, but the process is not complete for nearly a year. At the same time, the dissolvable suture material used in the operation slowly degrades in your body. Unless you are a professional athlete under the care of a sports physician, you should avoid any strenuous activity like heavy weight lifting, downhill skiing, mountain biking, or competitive sports for 3 to 6 months. This depends, of course, upon the type of operation you had, but it emphasizes the fact that wound healing is a very slow process. Another point to keep in mind is that scar tissue is never as strong as the tissue it replaces, and in best case scenarios, you will achieve only 80% of the original tissue strength. Fortunately, this is adequate for virtually all normal activity; even strenuous activity, but remember, it takes time for this strength to develop. Remember also that scars are very light sensitive; you should protect your incision from direct sunlight for a year or so. Failure to do so will result in a deeply pigmented scar that will take longer to fade away. If you must expose your incision to sunlight, keep it well coated with the strongest suntan lotion you can find.

Now is also the time to develop a long-term follow-up plan with your primary physician and surgeon. If your disease was benign and has been cured, you may not need to worry about this. However, if you had a cancerous or pre-cancerous lesion removed, it is possible that you will have a recurrence of this disease in the future. There are few, if any, cancers that can be said to be cured 100% of the time by surgery. For this reason, you may need to have semi-annual or

annual exams for the rest of your life. In this case, as with all of medicine, the earlier a disease is recognized, the easier it is to treat. Your diligence in scheduling follow-up care is the best step you can take to be certain you remain in good health.

For patients who have had a malignant disease, this is the time when additional treatment will begin. You may need to have chemotherapy or radiation therapy to improve your chances for cure or treat any residual disease. If this is the case, you may have weeks, months, or even years of therapy ahead of you. Unfortunately, I don't have any profound words of wisdom or encouragement to offer. Dealing with cancer is a highly personal issue, and every patient and physician deals with it differently. I would like to remind you that there are numerous support groups and sources of information available, and many of these resources can be found on the Internet. As a first step, you can ask your surgeon, primary care physician, or specialty doctors you are seeing for information. Many offices have extensive files of information that you can use to find the resources you need to cope with your disease. Again, I would like to point out that in this day and age, there is no substitute for information and you should become as knowledgeable as possible about your condition so that you can participate fully in the decision making process that may lie ahead.

For patients with chronic diseases or those who have had complicated operative courses, this may be a time to consider rehabilitation placement. Surgery and its attendant complications can take months or years to fully recover from. If you began your operation in a weakened condition or if your hospital stay left you unable to care for yourself, a short stay at a rehabilitation hospital may be your ticket back to independence. Today's acute-care hospitals can no longer fulfill the role of chronic rehabilitation, so a new brand of care facility has arrived to fill the gap. These are not nursing homes but rather facilities that specialize in the reconditioning and rehabilitation of patients who are expected to regain the ability to care for themselves. I personally look at rehabilitation hospitals as the ultimate location for postoperative recovery. They tend to be modern facilities with a dedicated and professionally trained staff, who enjoy the challenge of improving your strength and endurance while providing the necessary therapy and medical care to get you back on your feet. If your surgeon recommends this option for you, I suggest you jump at the chance. Many people feel a stay at one of these facilities is equivalent to being "put out to pasture." I assure you that this is not the case and the time you spend in rehabilitation will be time well spent.

Chapter 10: The PreOp Worksheet

This chapter will help you complete the PreOp-Worksheet so you can take it with you to the hospital on your day of surgery. Before you attempt to fill out the worksheet, you should have several things in your possession. Gather up all of the medications you take on a regular basis and put them on a table. Include in this group any over-the-counter medications you take more than weekly. You should also have a phone book to look up the address and telephone number of any physician who has treated you within the past year or two. If you keep a file of old medical records, gather them together now as well, for you will need to know the dates of your most recent examinations and hospitalizations. Find all of your insurance cards now, and remember to bring them to the hospital with you. This is especially important for people who are covered under more than one policy, as you want to make sure the bills are forwarded to the proper company as soon as possible. If you have any legal documents pertaining to your medical care, bring them with you to the hospital, this includes a copy of your living will and durable power of attorney (if you have either). Finally, I suggest you fill the worksheet out with a pencil, as you are likely to make additions, corrections, and deletions as you remember details over time.

Section 1: Demographic Information

This section is easy to complete. The information is useful primarily to your physicians and nursing staff. It will enable them to contact your home or a member of your family, should the need arise. Remember that you should designate a friend or family member to be your primary contact person. This is the person who will receive all important phone calls from the hospital, and who will be responsible for informing the remainder of your family and friends of your condition. A common problem in hospitals these days is the dissemination of information to patient's families. Legally, health care providers are bound to not release specific medical information, particularly over the phone. Many family members do not understand this and become irate when denied access to information to which they feel entitled. Before your operation, make it clear to everyone whom to call for daily updates or in the event of an emergency. Remember, the more time your doctor or nurse spends talking to family members, the less time they will have to take care of you. You should also have a discussion with your primary contact about your wishes for life-saving and/or life-prolonging therapy in the event you suffer a catastrophic complication. This is especially true if you have strong feelings about the use of mechanical ventilation, tube feeding, and nursing home care.

Section 2: Medical History

It is critically important that your surgeon have access to your past medical record and be able to contact physicians who are actively caring for you. In many small communities, this is easily accomplished, as only a small number of physicians work at any given hospital or clinic. In larger communities, not all physicians know one another, and you would not want this lack of familiarity to adversely impact your care. It may be time consuming to find all of the addresses and phone numbers of your physicians, but would you rather spend the time now, or have your surgeon waste time in an emergency situation?

When recording the medications you take, be sure to copy the name exactly from the pill bottle. You should also find the dosage of the medication written on the bottle, as well as the number of pills and the number of times you take the pill(s) daily. All of this information is

important so you can resume your regular medication schedule as soon as possible after surgery. If you have been asked to stop taking a medication before your operation, include it on this list anyway, and make a note of the last time you took that drug. The question regarding drug allergies is equally important. Simply writing a list of medications you may have had allergic reactions to is not enough. You should also note what type of adverse reaction you had to the drug and when you stopped taking the drug. Today, there are many drug families that have overlapping effects and overlapping allergic reactions It will be important for your surgeon to know how likely it is that you will have a bad reaction to a class or family of medications. If you have been on antibiotics in the past year, you should include this information on the worksheet. It is important to know exactly what antibiotic you were taking and why it was prescribed. If you do not remember, call your doctor's office and ask to check your medical records for this information.

When listing your past medical and surgical history, it is important to list not only the conditions for which you have been treated but also when those conditions were diagnosed, and by whom. If you have trouble remembering the details of your specific medical conditions or operations, call the office of the physician who cared for you and ask for this information. This will be especially helpful in the case of previous surgeries. If possible, ask for copies of old operative reports and hospital discharge summaries. Some offices may refuse to send these documents directly to you, but they may be willing to forward them to your current surgeon. Finally, if you have been admitted to any hospital in the past several years, it may become necessary to contact the medical records department of that hospital for additional information. By providing the hospital name, location, and phone number, you can expedite this process and increase the likelihood that all of the necessary information is available to your surgeon.

Section 3: Social History

As I have stressed earlier in the book, it is imperative that your surgeon know the details of your social habits. There is no substitute for honesty in this section, and you could put yourself in serious jeopardy by failing to report your use of tobacco and alcohol products. Similarly, the use of narcotic pain medications or other recreational drug use should be noted. Your surgeon is obligated by law not to share this information with anyone, so it should not worry you. If you have a few skeletons in your closet, most other people do too.

Section 4: Family History

One of the best indicators of possible problems with anesthesia or surgery is a family history. Diseases such as coagulation disorders or sensitivity to medications can sometimes run in families. If you are unsure about your family's history regarding surgery, contact one of your elder relatives. Most families have one or two senior members who will be able to tell you at least some of the details of operations on other family members.

Section 5: Legal Documents

This section requests that you list any important legal documents that may assist in rendering your medical care. Remember, if you have a living will or durable power of attorney for health care, you should bring a copy of the document with you to the hospital. Your primary contact should be the person to whom you have granted power of attorney. If you have a family lawyer, you should also include his or her name and phone number here as well. If you have any feelings regarding final wishes or organ donation, make them known.

Chapter 11: Glossary

ABI: See arterial brachial index.
Abscess: A collection of infected fluid. In the most basic terms, a pimple is a mini-abscess. The fluid within an abscess contains dead white blood cells and an infectious organism such as bacteria. If left untreated, an abscess will usually continue to expand and may ultimately rupture, spilling infectious material.
Anastomosis: The surgical connection of two hollow structures, so as to place their lumens in continuity. For example, sewing two blood vessels together so that blood may flow from one into the other. This may be accomplished with either sutures, or in some cases, specially designed staple devices.
Anemia: Sometimes referred to as a low blood count. This term is used to describe a person who has an abnormally low amount of hemoglobin (the substance that carries oxygen in the blood). There are many causes for anemia, but in the post-surgical state, the most common cause is blood loss due to injury or the operation.
Angiogram: Literally, a picture of a blood vessel. To accomplish this, a catheter is placed within the blood vessel and contrast material (which shows up on x-rays) is injected into the vessel. X-rays are then obtained, which show the course and extent of a blood vessel. Virtually any blood vessel large enough to see with the eye can be evaluated with this method.
Angioplasty: The process of dilating a blood vessel that has been evaluated by an angiogram. Numerous techniques accomplish this, and this field is evolving very rapidly. Many times angioplasty can be used to open blocked blood vessels that would have required surgical bypass only a few years ago. This technique is useful but will not work on every blood vessel.
Anticoagulation: The process of inhibiting blood clot formation by pharmaceutical means. Many drugs function as anticoagulants, including aspirin, Coumadin, and heparin. In some diseases, pathological anticoagulation may occur, resulting in excessive bleeding.
Arterial brachial index: The result of dividing the blood pressure in the lower extremity by the blood pressure in the arm. A normal index is around 1. This number in and of itself is not very useful, but it gives a good indication of how much blood flow is reaching the lower extremities, and can be easily followed with simple measurements in the office or after an operation.
Atalectasis: The collapse of lung tissue due to either an internal obstruction of the airway or a failure to fully expand the lung with a deep breath. This is a very common complication of surgery, and can result in fevers and possibly lead to pneumonia. Deep breathing exercises, coughing, and the use of an incentive spirometer can all help to diminish the incidence of this condition.
Barium enema: This is a radiological test in which contrast material that shows up on x-ray films is introduced through the anus into the large intestine. By altering your position and administering the proper amount of barium contrast, a radiologist can provide a fairly detailed picture of the inside of your large intestine (colon). In many cases, this test has been replaced by colonoscopy; however, there are times when a barium enema is preferable.
BE: See barium enema.
Benign: This is a description of a tumor, which implies that there is no cancer within the mass. These lesions may continue to grow and may require surgical removal; however they do not have

the capacity to metastasize and spread to the rest of the body. If you discover a new mass or tumor, you want it to be benign.

Biopsy: There are numerous types of biopsy, but in general a biopsy is the removal of a portion of a suspicious lesion so that it can be characterized by microscopic examination. In some cases, a biopsy can remove the entire lesion; this is termed an excisional biopsy. In many cases, only a piece of the lesion will be removed, and by looking at the removed tissue under a microscope, your physician will be able to determine if you have a cancerous growth developing. Biopsy samples are studied by a pathologist, who is a physician trained in making diagnoses using microscopy and other biochemical techniques.

Bleeding time: A laboratory test in which a small incision is made in the skin. The time it takes for the bleeding from this incision to stop is known as the bleeding time.

Blood culture: See Culture.

Bronchoscopy: The process of using a thin, lighted telescope to look at the inside of the major airways of the lung. This can be done diagnostically to look for lung cancer, or therapeutically to remove foreign or infectious material from the lungs.

Cancer: A generic term for a growth of tumor cells that have the capacity to metastasize. There are many different types of cancer, and the type of cancer depends upon the normal tissue from which it develops.

Cardiac echo: See Echocardiogram.

CAT scan: See CT scan.

Cath: Slang for Catheterization (see below).

Catheterization: A very broad term. In general a catheterization is the placement of a tubular structure in a body cavity. A catheter may be placed through the urethra into the urinary bladder to drain urine, or a fluid collection in some other area may have a drainage catheter placed into it to remove the fluid. Frequently this term is used to refer to the process of injecting contrast material, which shows up on x-ray film, into blood vessels to determine their course. Commonly the vessels of the heart will be studied in this fashion, and this is referred to as a cardiac cath.

Cauterize: The process of using heat to denature tissue and prevent bleeding. Typically produced by the application of an electric current to an area of tissue.

Cecum: The portion of the large intestine beyond the ileocecal valve (where the small intestine empties into the large intestine) is known as the cecum. The appendix originates at the base of the cecum. This is a frequent site of colon cancer, and is found on the right hand side of your abdomen below you belly button.

Cerebrovascular accident: Commonly known as a stroke. This occurs when there is insufficient blood flow to a region of the brain. If the lack of blood flow is transient, the symptoms may come and go quickly (called a transient ischemic attack or TIA). If the lack of blood flow persists long enough, the brain tissue, which is starved for blood, will die. In many cases, the symptoms of a stroke will improve over time, as other areas of the brain assume some of the function of the dead tissue. In some cases, however, the symptoms never resolve.

Coags: A slang term for the laboratory tests that determine the rate of blood clotting.

Coagulation: The process of forming blood clots is known as coagulation.

Colon: Also known as the large intestine. This is the area of your intestines where water is absorbed and solid stool is formed. It forms a long, upside down U in your abdomen and is broken into distinct regions, the ascending (right), transverse, descending (left), and sigmoid colon. The sigmoid colon empties into the rectum.

Colonoscopy: This is a test in which a long, flexible, lighted telescope is inserted through the anus and directed through the large bowel. Colonoscopy is performed to look for masses, infections, bleeding sites, or problems with the lining of the colon. This allows the doctor to actually see every inch of your colon. Typically you will need to complete a bowel cleansing before this test can be performed. You will probably be given a heavy sedative prior to this test, as it is uncomfortable (and sometimes downright painful) when performed on fully awake patients.

Colostomy: The creation of a communication between the colon and the surface of the skin for the purpose of diverting stool from the colon or rectum. These can be temporary or permanent.

Complication: Any event or occurrence that is not a part of the normal course of treatment and recovery is termed a complication. You can have a complication before, during, or after surgery. Most complications are small and easily corrected.

Compression boots: See Sequential compression device.

Conscious sedation: A process whereby a patient is given a sufficient dose of a sedative drug to render the patient comfortable without the patient losing consciousness. Typically, you will not remember a test performed under conscious sedation, but you will remain awake and breathing normally during the procedure.

CT scan: Formerly called a CAT scan. This is a radiological test that provides detailed images of your internal organs. The abbreviation CT stands for computed tomography.

Culture: The process of placing a specimen on or in a controlled substance that supports the growth of micro-organisms. If you develop a fever, samples of blood, urine, and sputum may be collected and cultured to determine if you have a bacterial (or fungal) infection that needs to be treated.

CVA: See Cerebrovascular accident.

Deep venous thrombosis: This is a condition whereby a blood clot develops in the deep venous system of an extremity. This condition is dangerous in that these blood clots may move centrally toward the largest vein in your body, your vena cava. Blood clots in the deep venous system can also break off and travel to your lungs or your brain, causing a blockage of an important artery. This is a serious complication of surgery and several disease states, and requires immediate treatment.

Dehiscence: The early failure of a wound closure. This results in the separation of a wound below skin level. This can sometimes be managed nonoperatively, but frequently will require an additional operation to repair the opening in the wound.

Disease free survival: A measure used to examine the effectiveness of a treatment for cancer. This measure will tell you the likelihood that you will survive for a given number of years without a recurrence of your disease.

Diverticulitis: A pathological state in which a diverticula becomes obstructed and infected. The infectious material becomes trapped behind the obstruction in a blind ending outpouching, and as fluid and white cells flood into the area to combat the infection, the outpouching (or diverticula) expands. If the infection is not controlled, the diverticula will eventually rupture, spilling infected material. This condition requires antibiotic treatment at a minimum, and may require surgery if the inflammation cannot be controlled with medication alone.

Diverticulosis: A medical condition in which a hollow organ (most commonly, the colon) develops outpouchings of its inner surface. These outpouchings penetrate through the wall of the organ and form small pouches where particulate matter can be trapped. This is a common

condition, and in and of itself is not a problem. People with known diverticulosis are often asked not to eat corn or nuts, to prevent an obstruction of one of the outpouchings (known as diverticula).

Doppler: A type of ultrasonic test that uses the Doppler effect (a principle of physics) to determine the rate and direction of blood flow. This is useful in determining if a blood vessel contains a blockage or clot.

Drain: A device that prevents the accumulation of fluid in a body space or cavity. A drain may be made of cloth, rubber, or plastic. It may also allow the drainage fluid to empty onto the skin or may have a reservoir, which serves to capture the escaping fluid.

Duplex imaging: The use of both an ultrasound image and a Doppler study to better evaluate the conditions within a blood vessel. The ultrasound image will provide a visual representation of the blood vessel while the Doppler study will quantify the rate and direction of blood flow.

DVT: See Deep Venous Thrombosis.

ECG: Formerly known as an EKG. This test uses electrodes to determine the electrical activity of your heart. By examining the conduction of electrical activity in the heart, your physician can determine if you have electrical disturbances or if you have ever had a heart attack in the past.

Echocardiogram: A test that uses an ultrasound device to obtain images of your heart. This test is good at determining the size and motion of the heart as well as giving a good look at the heart valves. There are two ways to perform this test, transthoracic (looking through the rib cage) and transesophogeal (putting the probe down into your esophagus and looking through its wall at the heart).

EGD: See Upper endoscopy. This is an abbreviation for the term esophagogastro-duodenoscopy

Electrocardiogram: See ECG.

Endoscopy: A generic term that refers to a procedure whereby a lighted telescope is passed through an orifice into a body cavity to visually examine that region. There are both flexible and rigid endoscopes, and their use is increasing dramatically for both diagnosis and therapy.

Endotracheal tube: A narrow plastic tube that is inserted between the vocal chords and into the trachea for the purpose of protecting the airway and allowing the administration of mechanical ventilation.

Enteroclysis: See Small bowel series.

Epidural: A method of analgesia (or anesthesia) in which pain medication is injected directly into the space surrounding the spinal cord. Although this sounds dangerous, it is actually a safe and possibly the most effective method for controlling pain during and after an operation. Epidural catheters are sometimes left in place for several days after an operation, and intermittent or continuous dosing of an anesthetic agent may be used.

ET tube: See Endotracheal tube.

Feeding tube: A tube placed either surgically or endoscopically into the stomach or small intestine for the purpose of providing nutrition to a patient who is either unwilling or unable to consume sufficient calories to sustain life.

Fever work up: The process of determining the cause of a fever in a patient after an operation. Usually your surgeon will perform a physical examination, obtain numerous samples for culture, obtain laboratory studies, and perhaps order an x-ray or CT scan.

Five-year survival: A measure used when describing the effectiveness of a treatment for cancer. This will give you an idea of the likelihood of remaining alive for a full five years after your therapy. Ten-year survival is another common measure used.

Flat and upright: A descriptive term for a series of abdominal x-rays that are taken with you lying flat, and then sitting or standing in an upright position. This allows your surgeon to look at the contents of your bowels in a very gross sense. This is a good initial test but does not provide very detailed information, and it rarely leads to a diagnosis in and of itself.

Gastrojejunostomy: An anastamosis between the stomach and the jejunum. There are numerous techniques to accomplish this.

Greenfield filter: A metallic filter that is placed under x-ray guidance into the main vein of the body, the vena cava. This filter is designed to capture blood clots that may break off from the lower extremities and pass into the lung. By capturing these clots, the filter prevents the development of pulmonary embolism.

Hemorrhage: A medical term that signifies heavy (severe) bleeding.

Hartman's pouch: When a portion of the colon is removed but there is remaining colon above and below the removed segment, it is sometimes not possible to connect the two ends of colon together. The proximal (or higher) end is brought through the skin as a colostomy. The distal (lower) end can also be brought through the skin (termed a mucus fistula), or it can be sutured or stapled shut and left in the abdomen. This small pouch is also known as a Hartman's pouch.

Hematocrit: A measure of the volume of red blood cells in your total blood volume. Normally about half of your blood volume is made up of red blood cells. If this level falls, you are said to have anemia.

Hemoglobin: A measure of the amount of iron your blood is carrying in a given volume of blood. This measurement allows your physician to determine how much oxygen is being carried by your circulation at any time. If this level falls, you are said to have anemia.

Heparin: A medication that inhibits blood clot formation. It is a naturally occurring compound which our bodies produce. The commercially available medication is derived from animal tissue. It may be given by injection into the skin or directly into an intravenous line. If your are given skin injections of heparin, it is common to develop bruising at the site of injection.

I & D: See Incision and drainage.

Ileostomy: The creation of an opening between the ileum and the surface of the skin for the purpose of diverting stool away from the colon. These may be temporary or permanent.

Ileum: The final portion of the small bowel. It is connected directly to the colon. It is responsible for absorption of food and is the specific site of absorption of several vitamins and other important compounds.

Ileus: Technically, an obstruction of the small bowel. Typically used to describe the condition of adynamic ileus, in which a portion of the bowel does not contract, resulting in a dilation of the bowel proximal (before) to the non-contracting segment. This commonly occurs after abdominal surgery, and usually resolves spontaneously within several days.

Incentive spirometer: A small plastic device, which is used to encourage the performance of deep breathing after surgery. It comes in many shapes and sizes and typically allows you to measure how deep a breath you are able to take. The frequent use of an incentive spirometer will help to reduce the likelihood that you will develop a pulmonary (lung) complication after your operation.

Incision and drainage: A surgical procedure that makes use of a small skin incision to drain a localized collection of infected fluid. Similar to the old-time tradition of lancing a boil. Depending upon location and type of fluid collection, this may be a definitive treatment (i.e., a cure) or a temporizing measure to prevent the progression of an infection prior to a definitive operation.

Intravenous catheter: A small plastic or metal tube, which is inserted through the skin directly into a vein. This allows for the administration of fluid and medications directly into the circulation.

IV: See Intravenous catheter.

Jejunum: The mid-portion of the small bowel, this is the region in which most of the nutrients contained in food are absorbed into the body.

J-pouch: The creation of an artificial rectum by sewing a loop of ileum together in the form of a J. This is done to expand the caliber of the lumen of the ileum so that it can accommodate a larger volume of liquid stool. This is typically performed in situations where the rectum is removed but the anal sphincter remains in place.

Large intestine: See Colon

Lesion: This is a commonly used medical term to describe a mass, tumor, ulcer, or other abnormal area that has not yet been diagnosed. Your doctor may tell you that you have a suspicious lesion, which requires further investigation.

Lumen: The space within an artery, vein, intestine, or tube.

Lymph node: An immunologic organ whose main purpose is to allow infection-fighting white cells to come into contact with foreign material so that it may be removed from the body. There are thousands of lymph nodes scattered throughout the body. In situations where cancer has metastasized from its point of origin, cancer cells often show up in nearby lymph nodes before they are discovered elsewhere. In some situations, lymph nodes will trap the escaping cancer cells, and if the nodes are removed before the cancer cells pass through them, a cure is possible by removing the nodes.

Magnetic resonance imaging: A radiographic test that makes use of strong magnetic fields to alter the spin of electrons in the tissues of your body. This technique produces extremely detailed pictures of internal organs. It is superior to CT scans in many (but not all) situations. People with claustrophobia may find this test difficult, in that you may be asked to lie in a confined space for a prolonged period of time. Special MRI machines for people with claustrophobia exist. This technology is rapidly advancing, and new MRI- based tests are being introduced constantly.

Mass: This is the term given to any firm, space-occupying lesion that develops over time. This term is very general, and is typically used to describe something that has not yet been studied and characterized.

Mechanical ventilation: See Ventilator.

Metastasis: The process whereby malignant cancer cells spread through the body and grow in different sites. This is the result of tumor cells breaking free from the original site of cancer and implanting at a different site.

MI: See Myocardial infarction

MODS: Short for multi-organ dysfunction syndrome. See Sepsis.

Morbidity: Usually described as a percentage. This gives you the expected rate of complications following a particular surgery. This term can also be used to describe a typical complication following an operation.

Mortality: Typically described as a percentage or rate. This tells you the likelihood of death associated with a particular operation or treatment.
MRI: See Magnetic resonance imaging.
Myocardial infarction: Commonly known as a heart attack. This occurs when insufficient blood flow reaches the heart muscle, and the heart muscle becomes damaged for lack of oxygen and nutrients. Heart muscle will rapidly die when starved of oxygen and nutrients.
Nasogastric tube: A thin plastic tube, which is inserted through the nose and passes down the esophagus and into the stomach. This tube can be used to drain fluid and air from the stomach or to introduce nutritional supplements directly into the gut. It is an uncomfortable but effective way to keep the stomach from distending.
NG tube: See Nasogastric tube.
Obstruction: A blockage of a hollow organ. Any organ that has a lumen in which blood, liquid, or stool passes can be blocked. Obstructions can result from a mass blocking the lumen, or a mass outside of the organ can compress it, resulting in a closing off of the normally open lumen.
Occlusion: The blockage of a hollow tubular structure such as a blood vessel, duct, or loop of bowel.
Packed red blood cells: When you are given a blood transfusion today, this is what you will receive in most instances. The blood from a donor is centrifuged, and the red blood cells (oxygen carrying cells) are removed and stored. When you require a transfusion to improve the oxygen carrying capacity of your blood, you are given packed red blood cells. As with all therapies derived from living donors, transfusion with packed cells carries a small risk of infection.
Path: A slang term for pathology. If your physician tells you it will be a week before the path is back, this means the pathology report determining the character of the tissue removed by the biopsy or operation will take a week to be completed.
Patient controlled analgesia: A concept whereby the delivery of pain medication is controlled directly by the patient at the bedside. This technique has been shown to improve pain control and reduce the amount of pain medication requested by patients.
PCA: See Patient controlled analgesia.
PE: See pulmonary embolism.
PEG tube: Also known as a feeding tube. This is a tube that is placed through the skin and into the stomach with the assistance of an endoscope. This is an effective means of providing nutrition to a patient who is unable or unwilling to consume sufficient calories to meet the body's needs.
Plasma: Also called fresh frozen plasma (FFP). This is the component of the blood that includes all of the proteins found in circulation. Typically plasma is given to patients who are having problems with bleeding or their coagulation factors. This is obtained from donated blood, and as such, transfusions carry a small risk of infection.
Platelets: The cellular elements in blood that are responsible for forming blood clots. These are obtained from donor blood and are transfused when your own platelet count becomes too low to support the clotting of blood. As with all therapies derived from living donors, transfusion with platelets carries a small risk of infection.
Polyp: A descriptive term that describes a small, fleshy mass that protrudes from a mucosal surface. Polyps are typically benign but may harbor cancerous or pre-cancerous cells.
Pressors: A category of drugs that serve to increase blood pressure. They function to either increase the amount of blood the heart is pumping, or constrict the veins and arteries of the

vascular system so that the pressure increases. These drugs are typically used in the treatment of shock (see below).

Pulmonary embolism: This is a condition in which a blood clot travels through the venous system to the right side of the heart. The blood clot travels through the right side of the heart and lodges in the first blood vessel that it is too big to pass through. Typically this is one of the branches of the pulmonary artery, which brings deoxygenated (oxygen depleted) blood to the lungs in order to pick up more oxygen. Small pulmonary embolisms will be broken down by the blood clot dissolving system of the blood, but large ones can cause chest pain, shortness of breath, inability to fill the blood with oxygen, and in some situations, death. This is a dreaded complication and the reason that so much effort is directed toward preventing blood clots from forming in the venous system (see also, Deep venous thrombosis).

Purulence: The development of an infectious liquid composed of white blood cells and infectious organisms. This may be a thin, watery liquid or a thick, creamy substance.

Pus: See Purulence.

Rectum: The very end of your digestive system. The rectum is the portion of the large bowel just above the anus. It is nearly straight, and is about seven inches in length. It serves as a reservoir for solid stool; when it becomes full, you get the urge to have a bowel movement.

Regional anesthesia: The process of blocking transmission in specific nerves to achieve total anesthesia for a certain portion (or region) of the body. For example, it is possible to inject a local anesthesia in several locations resulting in a total loss of sensation to a hand or foot.

SCDs: See sequential compression device.

Sepsis: Strictly speaking, this is a term for overwhelming infection, usually by a type of bacteria. More commonly this term is used to signify a condition termed "sepsis syndrome." In sepsis syndrome (now also referred to as multi-organ dysfunction syndrome or MODS) patients behave as though they have an overwhelming infection, even if there is no infection present. This is a highly studied but, as yet, poorly understood condition, which frequently leads to death.

Septic: The state of Sepsis (see above)

Sequential compression device: A pneumatic pump that tightens around your legs (rarely used on the arms), designed to "squeeze" venous blood out of your legs to prevent blood clot formation. They are designed to mimic the effect of muscle contraction, which also serves to prevent pooling of blood in the deep veins of your legs. If you are given a pair of these after your operation, it is important that you use them while you are resting in bed. They are an uncomfortable but important way to prevent blood clots.

Shock: From a surgical perspective, shock represents a lack of adequate tissue blood flow. Shock can result from many causes, including blood loss, infection, heart failure, or spinal chord injury. This is a condition that requires immediate treatment or it can quickly become life threatening.

Small bowel: The portion of your gut that is responsible primarily for absorption of digested food. There are three regions of the small bowel. The first region is directly attached to your stomach and is known as the duodenum. The duodenum becomes the jejunum, which in turn becomes the ileum. The ileum empties into the large bowel (colon) through the ileocecal valve.

Small bowel series: Also known as a small bowel series or enteroclysis. A radiographic test that allows your physician to examine your small bowel. You will be asked to drink a contrast material, which shows up on x-rays. You will then have multiple x-rays taken over the span of

several hours. The results will allow your physician to determine if there are any masses, surface irregularities, or points of dilatation or obstruction.

Sputum: The product produced by the secretion of mucus in your lungs. Typically a thick, mucus-like product, which may range in color from clear to tan, yellow, or green. This is indicative of pneumonia or bronchitis but may result simply from smoking tobacco.

Staples: Surgical staples are used to close large skin lacerations or incisions. They are typically removed 7 to 14 days after an operation with a specially designed remover. The removal of surgical staples is a surprisingly simple and pain-free experience.

Stent: An artificial tube that is used to hold open a hollow organ that is closing off for some reason. Stents can be used to open blocked blood vessels or prevent tumors from blocking the lumen of a hollow organ such as the esophagus or bronchus.

Stoma: The artificial opening of a loop of bowel through the skin.

Stress gastritis: A problem that used to surface frequently after surgery; this complication has decreased in incidence with the development of drugs that inhibit stomach acid secretion. Under states of biological stress (such as after an illness, injury, or operation), the lining of the stomach becomes weakened and does not do a good job of protecting the stomach lining from the acid the stomach secretes. In response to acid contact with the stomach wall, the lining of the stomach becomes inflamed, causing pain and occasionally bleeding. This is now treated with oral or intravenous medications, and rarely will progress to the development of stress ulcers.

Stress test: This is a test that looks at the function of your heart when it is placed under stress. There are many variations on the stress test, some which involve you exercising while hooked up to monitors, and others where medications are administered that alter the function and blood flow in your heart. This test will be performed if you have an abnormal ECG or have had a heart attack in the past.

Stress ulcer: A problem that used to surface frequently after surgery, this complication has decreased in incidence with the development of drugs that inhibit stomach acid secretion. Under states of biological stress (such as after an illness, injury, or operation), the lining of the stomach becomes weakened and does not do a good job of protecting the stomach lining from the acid the stomach secretes. In response to acid contact with the stomach wall, ulcers form in the stomach lining, which may cause pain or bleeding. Typically this can be treated with antacids or other drugs that prevent acid formation. In some cases, the ulcers may be so bad that upper endoscopy is required to evaluate the lining of the stomach. Very rarely will a stomach need to be surgically removed because of this problem (something that occurred fairly regularly just 20 years ago).

Stricture: A point of narrowing. There are many causes for strictures, but when a tubular structure, such as a duct, develops a narrowing, pressure builds up above the narrowing. If a stricture progresses, it can result in an obstruction.

Stroke: See Cerebrovascular accident.

TEDS: These are stockings designed to prevent the development of blood clots in the deep veins of your legs. They are intentionally tight and promote the circulation of venous blood out of the legs.

Thrombosis: The clotting off of a blood vessel. When this occurs, no blood may pass through the vessel, and the tissue normally supplied by this blood vessel is at risk for death due to lack of oxygen and nutrients.

TIA: See Transient ischemic attack.

Trachea: Sometimes known as the windpipe, the trachea is the major passageway for air entering the lungs. The trachea begins below the vocal chords, and extends into the chest where it divides into the left and right mainstem bronchi.

Tracheostomy: A surgical airway that provides access to the lungs for long term mechanical ventilation. A tracheostomy will be performed for many patients who are undergoing head and neck surgery. In cases of patients who can not be removed from a mechanical ventilator in a timely fashion (typically less than 10 to 14 days), a tracheostomy will be performed so that the endotracheal tube may be removed.

Transient ischemic attack: An event whereby blood flow to a certain region of the brain is decreased, and the affected brain tissue is starved for oxygen and nutrients. These symptoms are caused by a blockage of a blood vessel that is either incomplete or is quickly resolved. Symptoms develop suddenly but then quickly resolve. These are warning signs that a cerebral vascular accident (stroke) may occur.

Transfusion reaction: An adverse reaction to a transfusion of blood or blood products. To minimize these reactions, blood is typed and screened for reactive antigens and antibodies before it is administered. Since there are many more reactive antigens and antibodies than we can test for; sometimes, adverse reactions occur despite our best efforts. Most transfusion reactions are minor and resolve quickly when the transfusion is stopped, but some can be life threatening.

Tumor: A new mass. Technically speaking, all mass-forming lesions are tumors, so this includes abscesses, fluid collections, and large blood clots. Commonly this term is used to describe a mass that has not yet been identified. Most tumors are benign, which is to say they are not cancers. However, all cancers are also technically tumors.

Type & cross: A series of laboratory tests in which your blood type is determined and donated blood is checked to see if it will react with a sample of your blood. This process is performed prior to giving a blood transfusion (except in emergency situations, where you may receive uncrossmatched blood).

Type & screen: A series of blood tests in which your blood type is determined, and your blood is examined for certain common antigens. This is done prior to crossmatching blood for transfusion.

UA: See Urinalysis.

Ultrasound: A type of radiological examination that uses sound waves instead of x-rays to produce an image. This basically works in a similar fashion to the sonar used by ships. By reflecting sound waves off of structures in the body, a visual image is created. By studying this image, a radiologist can see the size of structures and determine if there are abnormal fluid collections or stones present in organs.

Umbilicus: The medical name for the belly button.

Upper endoscopy: Similar to a colonoscopy, in this test a long, flexible, lighted telescope is inserted through the mouth and passed down the esophagus and into the stomach and beyond. This allows your physician to directly inspect the upper portion of your digestive tract. By passing instruments through this scope, you doctor may be able to take biopsies or control points of bleeding. A new technique allows specially trained physicians to pass ultrasound probes into your digestive system to get a better look at some of your upper abdominal organs.

Urinalysis: A series of lab tests that determine the properties of urine. This simple and inexpensive set of tests can determine if you have a urinary tract infection, high blood glucose levels, and a number of other important parameters.

Vascular invasion: This is a term that describes a cancer that has begun to spread into nearby blood vessels. This is usually a bad sign and indicates a higher chance that the cancer will metastasize.

Ventilator: A mechanical device that administers oxygen into a patient's lungs. It can be programmed to breathe for a patient who is unable to breathe for him or herself. This is also known as mechanical ventilation.

White count: A measure of infection or inflammation. This number represents the quantity of white blood cells in circulation at a given time. An elevated white count is suggestive of the presence of infection; however, it is common for the white count to be elevated for a few days after surgery due to the stress of the operation.

Wound infection: A relatively common complication following surgery. Wound infections range from simple cellulitis (which can be treated with antibiotics) all the way to abscess formation (which typically requires some type of open drainage in addition to antibiotics). Wound infections can occur due to bacteria that are normally present in the skin, or from bacteria released from internal organs during surgery. The more contamination or infection present before the operation, the higher the likelihood of a wound infection afterwards.

The PreOp-Worksheet

www.preopguide.com

Patient Information
Name:
Address:
City/State:
Date of Birth:
Social Security #:
Home Phone:

Occupation:
Marital Status:
Insurance:

Primary Contact
Name:
Relationship:
Power of Attorney: ___ yes ___ no
Home Phone:
Work Phone:
Mobile Phone:
Pager:

Family Information
Spouse/Significant Other:
Number of Children:
Name/age/phone:

Allergies

Medication	Date	Reaction

Release medical information to my children ___ yes ___ no

Antibiotic Use Within Past Year

Medication	Date

Medications

Drug	Dosage	Frequency	Taken Since	Prescribed By

Please complete this form prior to arrival for surgery.

The PreOp-Worksheet

www.preopguide.com

Medical History

Medical Conditions:

Diagnosis	First Diagnosed	Treated By

Hospitalizations:

Hospital	Diagnosis	Date

Prior Surgeries:

Hospital	Operation	Date	Surgeon

Social Habits

Tobacco use: Y / N

Type	Packs per day	Started

Alcohol use: Y / N On occasion / Daily

Type	Drinks per day

Have you ever had problems with stopping drinking Y / N

Ever attended Alcoholics Anonymous Y / N

Pain Medication use: Y / N

Medication	Frequency	Last taken

Important Numbers

Surgeon	Phone #:
Primary Physician	Phone #:
Cardiologist	Phone #:
Specialists	Phone #:

Do you or anyone in your family have a bleeding disorder: Y / N If so, describe:

Have you or anyone in your family had problems with anesthesia: Y / N If so, describe:

Do you have a living will: Y / N If so, please bring a copy with you to the hospital.

Do you have a personal attorney: Y / N If so, please indicate name, address, and phone number below.

Please complete this form prior to arrival for surgery.