

I noticed a new growth on my belly. It's been there for about two months. I just didn't like the way it looked so I asked my doctor to biopsy it. I hate the thought of needles, but I was concerned. It turned out to be an early melanoma. The needle was no big deal.

—Jeff, 33, art gallery owner

Malignant melanoma is the worst of all skin cancers. It can kill. For reasons we don't quite understand, it is occurring more frequently in women between the ages of twenty-five and thirty-four. Melanoma is now the most common cancer in women age twenty-five to twenty-nine; it's second only to cancer of the breast in women thirty to thirty-four. People over the age of seventy have more than double the risk of getting it than people under fifty.

Another alarming fact is that the incidence of melanoma overall is increasing faster than that of any other cancer, having almost doubled in the past decade.

Read this chapter carefully, for the good news is that this serious cancer can be—and should be—diagnosed early, when it is usually completely curable. Knowing more about melanoma in its earliest stage can save your

HOW COMMON IS MELANOMA?

In 1999 melanoma incidence in the United States increased 6 percent over the previous year. Melanoma diagnoses in 1999 totaled 44,200; 7,300 people died from it. Most of these deaths were likely preventable.

life or the life of a loved one.

To play it safe, please go back and read about denial in chapter 20. It explains how, although we often know all the warning signs of melanoma, human nature some-

times prevents us from confronting a problem when it is puny, putting us in the position instead of having to deal with it when it is pernicious.

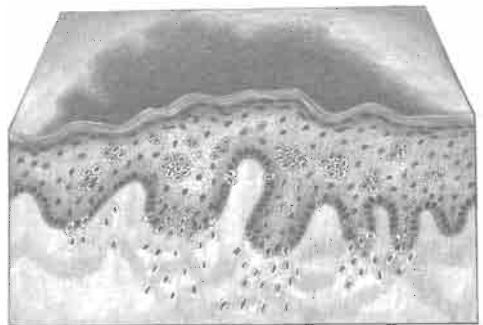
While melanoma may not be totally preventable because of genetic factors we don't fully understand, it can be fully treated if diagnosed early. Regular total body skin checkups and skin self-exam help. In this chapter, you will learn enough about melanoma to become a lay expert. This too will help you deal successfully with the risk of melanoma.

▪ WHERE DOES MELANOMA COME FROM?

Melanoma arises from melanocytes, the pigment-producing octopus-shaped cells that line the bottom layer of the epidermis. There is about one melanocyte for every ten regular epidermal cells. Cells similar to these melanocytes make up the normal moles we all have.

Cancer researchers believe that atypical cells are on a journey toward becoming true cancer cells. Not all atypical cells finish the march. From the point of view of cancer prevention, the trick is to identify those cells or growths that are atypical and remove them before they do become cancerous.

Because some moles can become atypical, we believe they can actually turn into melanoma. However, this is not necessarily true for the vast majority of abnormal moles. It is also cer-



Cutaway view of malignant melanoma, showing pigmentation on surface and cancer cells extending into the second layer of skin

tainly known that melanoma often can arise on its own, without an associated abnormal mole (see chapter 21).

▪ WHAT DO YOU KNOW?

Sadly, general knowledge in this country about melanoma and how to recognize it is not very high. In a random telephone survey of 1,001 Americans, only 34 percent knew that melanoma was a skin cancer. Twenty-six percent knew that a new mole or a change in a mole were signs of melanoma, but fewer than half of this number ever performed skin self-examination. But the record elsewhere proves that public ignorance can be remedied. For instance, in Australia, where skin cancer is a major health problem and public education programs have been going on for decades, more than 90 percent of all surveyed—and a whopping 95 percent of adolescents—knew that melanoma was a skin cancer and were knowledgeable about prevention methods.

Although it is the least common of the three major skin cancers, the rising incidence of melanoma means it is reaching epidemic proportions in this country. The National Cancer Institute reports that more than 44,000 new cases of melanoma will be diagnosed yearly. The disease is more common in men, affecting 3 men for every 2 women.

There is one figure about which there isn't much debate: more than 7,000 people die from melanoma each year. Overall, this includes over 4,500 men and 2,500 women. Many of the victims are young.

Excessive exposure to the sun and sensitivity to the sun are considered risk factors that have contributed to the rising incidence of melanoma in this country, but sun exposure is probably not the whole story.

Researchers are becoming increasingly aware of the profoundly important role that inheritance, or genetic makeup, has to do with the risk of getting cancer. This is no less true for melanoma. Although environmental factors are clearly important for most cancers—tobacco smoke causes lung cancer and the sun causes other forms of skin cancer—carcinogens likely cannot do their harm if there isn't an inborn genetic disposition. One form of genetic disposition is skin type or complexion.

For example, in the case of melanoma, the gene called MC1R helps direct the body's production of the protective skin pigment known as melanin. Melanin, which is produced by the skin in response to sun exposure, probably protects the DNA in the nucleus of the skin cell from fur-

ther damage from the sun. Fair-skinned people are at much higher risk for melanoma because their DNA is probably more “exposed” to mutation from the ultraviolet radiation of the sun. Researchers have in fact found that people who have abnormalities in the MC1R gene and have red hair and fair skin have a fourfold increased melanoma risk.

As with all new information about cancer genetics, this does not mean that you should rush out and have everyone in your family tested for this gene. At this early stage, this type of information is more useful for helping us understand what causes melanoma. If you have fair skin to begin with, you must be vigilant concerning your risk for melanoma.

The genetic story does have implications for early diagnosis and pre-

WHAT TO LOOK FOR ON YOUR SKIN

The ABCD method of checking for melanoma has been widely touted for public health purposes. The problem is that some of the changes described in it do not occur early, and we want to catch melanoma early. Nevertheless, I recommend you learn these ABCDs and know them cold. In addition, I include ways to become suspicious of growths even earlier, when the cure rate is potentially higher.

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| <p>A <i>Asymmetry.</i> If you fold the mole over in your mind’s eye, the halves do not match.</p> <p>B <i>Border irregularity.</i> The edges of the mole are ragged, notched or blurred, not smooth like normal moles.</p> | <p>C <i>Color.</i> The coloration of the mole is irregular. There are shades of tan, brown, and black. Even red, white, and blue can add to the mottled appearance.</p> <p>D <i>Diameter.</i> Any diameter greater than a pencil eraser (about 5–6 millimeters) should raise suspicion.</p> |
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In addition to these broad guidelines, two more, a “C” and an “S”:

Concern. Even if you don’t know why, if you sense there is something of concern about a mole, insist your doctor biopsy it.

Suspicion. This is one time when it’s okay to be suspicious. Doctors call it having a “high index of suspicion.” I call it being vigilant. But whatever you call it, when it comes to melanoma, the best rule is “When in doubt, check it out.”

vention, though. About 5 to 10 percent of patients diagnosed with melanoma have at least one family member with melanoma. Variants of cancer genes called p16 and CDK4 are associated with familial melanoma. The mutation that occurs is the kind caused by ultraviolet radiation from the sun.

Genes or no genes, it is important to understand who gets melanoma, what it looks like in its earliest stages (it's less helpful to diagnose any cancer after it has already grown and galloped away), and what can be done about it.

Approximately 70 percent of melanomas appear on normal skin, while 30 percent originate in a preexisting mole in which changes in color, size, and/or shape have occurred. Itching, bleeding, swelling, and pain may accompany these changes.

When caught in time, malignant melanoma is, in most cases, curable. Thus it is critical for me to note and repeat to you once again, that self-examination, early diagnosis, and immediate treatment can literally save your life. Learn the ABCD's of melanoma (see box).

Dermatologists classify people into six skin types when assessing any individual's risk for a range of skin problems (see chapter 5, "Frequent Questions"). If you are skin type I or II, you should become very familiar with the early signs of melanoma. Melanoma can occur in different sites and the location varies between men and women (see box below).

Happily, melanoma survival rate is also increasing. For example, the five-year survival rate has increased from approximately 50 percent fifty years ago to 85 percent in 1990. This is due to public education programs, stressing self-examination and early detection, and doctors now knowing far better what to look for than they did years ago. Incidentally, it may also

COMMON LOCATIONS TO DEVELOP MELANOMA

- For both men and women, the most common location for a melanoma to appear is on the back.
- Men are also highly susceptible to melanomas on the chest or abdomen.
- Women develop melanomas on the legs more often than do men.
- Both sexes may find that melanomas appear in areas not commonly exposed to the sun, such as under the arms, in the groin area, on the buttocks, and in women, on the undersides of the breasts.

be due to the increasing popularity of my chosen profession. In 1973, there were about 2,000 dermatologists in the United States. Today, there are at least 8,000 of us in the U.S., all the more of us to diagnose and educate about melanoma. But it will be best, if you can learn to help diagnose yourself as well.

▪ HOW WIDESPREAD IS MELANOMA?

Epidemiology is the study of the occurrence, distribution, and causes of disease. It tells us how big a health problem is and it can also give clues about which individuals are at risk. While it is true that statistics don't mean much for the individual, they do help guide our thinking about a medical problem.

Malignant melanoma affects men more than it affects women. Women tend to have a higher survival rate than men. This is probably attributable to the fact that women are more conscious—even self-conscious—about their skin and that men simply avoid going to the doctor.

According to the American Cancer Society, in 2000 the lifetime risk of being diagnosed with melanoma will be approximately 1 in 75. Compare this with the lifetime risk in 1980, 1 in 250, and you can see why we dermatologists use the word *epidemic* when discussing the disease. We mean it.

The incidence rate in Caucasians is at least six to seven times that of blacks in comparable geographic locations. Melanoma is also much less common among Asians than it is in Caucasians. Interestingly, the most common sites of the cancer differ among various races. Caucasians tend to

THE MELANOMA RISK FACTORS:

If you are a match for any of these, you are at risk for getting melanoma:

- Family history of melanoma
- Personal history of melanoma or atypical (dysplastic) moles
- Skin type I or II
- Tan poorly
- Sensitivity to the sun
- Freckles
- Red, blond, or light brown hair
- Green, gray, or blue eyes
- Excessive sun exposure
- New or changing mole

get melanoma distributed over the entire body surface, while both blacks and Asians tend to develop the cancer on the palms, soles, nail beds, and mucous membranes. Those Caucasians who burn easily and have fair skin, blue, gray, or green eyes, and blond or red hair also seem to be at greater risk for melanoma than other whites.

▪ WHAT TO LOOK FOR

My wife saved my life. I never would have gone to the doctor.

—Roger, 14-year survivor of malignant melanoma

As in all cases of cancer, the earlier the melanoma is diagnosed, the better. According to the *Journal of the National Cancer Institute*, people who check themselves for changes in existing moles or new growths and abnormalities are 44 percent less likely to die from melanoma. The obvious key to early detection is to know what to look for.

Traditionally, we talk about the ABCD's of melanoma (see box, page 230), which has served as an excellent means of educating the public about the need to check for melanoma. However, the truth is that we want to diagnose melanoma at its earliest stages and sometimes interpretation of the ABCD's can lead people to wait too long before seeing their dermatologist. Although the ABCD's are helpful, you should remember that any mole that doesn't seem right to you should be checked out.

Over the years the single most important thing that I have been able to teach residents is an approach that I learned myself early on. I call it the Wal-Mart approach to melanoma: *When it comes to melanoma, the customer is always right.* It is not uncommon for patients to come see me with a concern about a particular mole or mark. To my eye, and objectively speaking, the spot in question appears like a completely benign mole that would not under any other circumstances pique concern. The person can often not articulate why he or she is concerned about the mole, unable to say what is different. But the patient knows he or she doesn't like it. My policy: *Biopsy it.* I have come to believe over the years that patients have a sixth sense about their own bodies and listening to their concerns can only help the physician. Many times I have evaluated moles that appeared totally normal but proved premalignant or malignant when we biopsied them because it worried the patient.

If you have a mole you are concerned about and your dermatologist doesn't want to biopsy it, find another doctor. Having said that, however, I must also advise you to be cautious of the physician who is too eager to excise and biopsy multiple normal moles about which you yourself have absolutely no concern. Time and again I am confronted with cases where doctors have excised innumerable benign keratoses that never had any risk whatsoever of being melanoma or other skin cancer. Often such a doctor will tell the patient, "Don't worry, Mrs. Jones, we got it all." This is disingenuous because the lesion wasn't cancerous in the first place and didn't have to come off. Do yourself a favor: find a good dermatologist you trust and rely on him or her for special expertise in skin disease.

■ IS THERE A MACHINE THAT CAN DIAGNOSE MELANOMA EARLY?

There is much in the media now about new techniques for diagnosing melanoma. These include digital imaging of lesions, serial photographs, and a process called dermoscopy in which an illuminated magnifier, like the otoscope used to check for earaches, is placed on the skin to magnify the skin lesion. All these techniques are still being explored and show promise.

We are still a far way off from having technology that will allow us to place you in a machine and have your moles read like a supermarket bar code on a jar of apple juice. Technically, this should be possible because the diagnosis of melanoma by your doctor is based on pattern recognition. In time, we should be able to develop a database of information about the patterns of melanoma that will allow for sophisticated automated pattern recognition of skin lesions. The trick is making the technique reliable enough that we would want to trust our health to the artificial intelligence of a computer.

For now the diagnosis of melanoma only can be made under the microscope. Until the time comes when we are able to evaluate your skin cells at a magnification of 400 times directly, a biopsy will be necessary. A biopsy is removal of the growth to determine what it is. I am aggressive about diagnosing melanoma. Until the technology improves, if I am concerned that a mole may be abnormal or a melanoma, it must be biopsied. The risk of biopsy is negligible and the cosmetic result should be excellent. As a result of the biopsy we will know for certain whether or not you have melanoma at its earliest stages, when it is most curable by simple office

MELANOMA CHECKS

- Every adult over forty should have an annual full-body skin exam.
- Public skin cancer screenings at which only sun-exposed areas are examined ARE ABSOLUTELY UNACCEPTABLE if that is the only melanoma check you are getting. Melanoma can and does develop where the sun doesn't shine.
- If you are at high risk for melanoma you should perform a full-body self-exam on a regular basis.

excision. Nevertheless, there are some patients who have innumerable moles, many of them abnormal; it is impractical to perform biopsies on all these. These patients should be followed in a pigmented lesion clinic or by a dermatologist specially equipped for monitoring. A biopsy is just the first step in diagnosing and treating melanoma. If the biopsy shows melanoma, the area must be re-excised with margins of skin. (see *After a Melanoma Diagnosis*, p. 246)

▪ HAVING A BIOPSY

When melanoma is suspected, the only acceptable approach is to perform a biopsy. This relatively simple office procedure accomplishes two important goals: it confirms whether in fact you have a melanoma and it helps determine how serious it is. Melanoma cannot be diagnosed without a biopsy and the type of biopsy done is determined by the nature of the lesion, its size and location, and the information that your dermatologist is seeking.

In general, when a melanoma is suspected, it is always best to remove the whole lesion and send it for biopsy. Because the actual thickness of the melanoma is the single most important factor in determining prognosis, or how well you will do as well as the need for other treatment, the biopsy must be complete and thorough.

The most rapid and effective means of biopsying relatively small, flat, pigmented lesions is by *tangential excision*. In this method the skin is anesthetized with lidocaine, a local anesthetic. The doctor excises the lesion in its entirety by cutting under it horizontally beneath the expected depth of the growth. This virtually guarantees that the complete lesion will be removed for analysis. In the method known as the *elliptical excision*,

the lesion is outlined in the shape of a football, anesthetized, and then removed in its entirety. The wound is then sutured closed.

After tangential excision, the wound heals on its own. If no further treatment is needed because the biopsy proves noncancerous, the site will heal up with a round white scar. After an elliptical excision, there will always be a thin, linear scar.

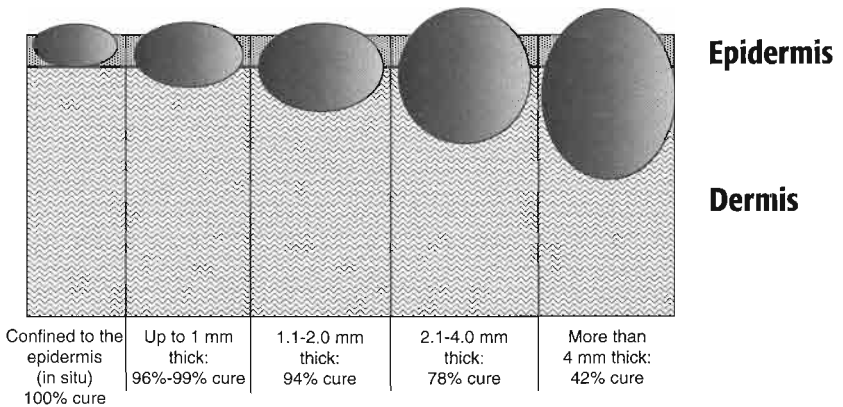
Both methods are acceptable as long as the full depth of the lesion has been removed. A physician experienced in melanoma will likely be able to decide on the right biopsy approach.

Many people are under the impression that if you cut into a melanoma you run the risk of spreading it in the bloodstream. This is not true. Sadly, melanoma does not need our help to spread, and there is absolutely no evidence that cutting into melanoma facilitates its spread. It is far more important to get the diagnosis of melanoma right than to worry about an unsubstantiated risk of spread.

Once the biopsy has been performed, it is extremely important to wait for the results to see whether melanoma is present. Remember that melanoma can only be diagnosed by biopsy. For an accurate result, the biopsy specimen must include all or at least the majority of the growth.

When the results of the biopsy come in, a key finding is the *Breslow depth*. This measures the depth of the melanoma. The Breslow depth determines prognosis (how serious the melanoma is) and this figure helps

Melanoma Thickness Affects Survival



The thicker the melanoma when it is diagnosed, the lower the cure rate.

QUESTIONS TO ASK YOUR DOCTOR BEFORE SURGERY

- How advanced is my disease?
- What is the level of invasion of the tumor?
- Are the lymph nodes involved?
- How long does the surgery take?
- Will I receive general or local anesthesia?
- What will I be given for pain?
- How big will the wound be?
- Will I need reconstructive surgery?
- Will I be incapacitated and, if so, for how long?
- How long will it take for the wound to heal?
- What type of scar will the surgery leave?
- How often will I need to come back to see you?
- Will I need to see an oncologist (a medical cancer specialist)?

guide your doctor's determination of what kind of additional treatment is needed. (The biopsy report may also include a measurement called *Clark's level*. This early method of gauging the seriousness of a melanoma also provides helpful information in certain situations.)

I must make two other critical points about biopsy. First, make sure that your doctor is sending the specimen to a board-certified dermatopathologist. Dermatopathologists are general pathologists or dermatologists who have had extensive special training in reading pathology of the skin. This is such a specialized and complicated area, especially when it comes to melanoma, that you must insist that your specimen be read by such a professional. Many managed care companies try to use general pathologists for this purpose, but insist on your right to have your specimen read by a dermatopathologist. Ask your dermatologist if he or she will be sending your specimen to a dermatopathologist that he or she trusts. Your dermatologist will be glad to have your support.

Second, although this might seem obvious, make sure your doctor actually sends the specimen off. In my career I have heard of cases (including one of a melanoma) where the doctor simply threw the specimen away because the lesion looked benign. It doesn't hurt to ask to see the specimen in the bottle if you don't find the thought too gross. It's your body!

▪ THE RESULT

I am always acutely aware of the anxiety that a patient experiences while waiting for the biopsy report, which generally takes about one week. If I am concerned about the possibility of a melanoma, I send the specimen through as a “Rush” and can have the results in about two days. We either call the patient with the result or send a follow-up letter. Regardless of the notification method used by your doctor’s office, within ten days call for the biopsy results if you haven’t heard. With something as potentially serious as a melanoma biopsy, don’t assume no news is good news. Follow up!

After the results of the biopsy are known, more decisions can be made. There are several different types of melanoma, the most common being the superficial spreading melanoma. The actual type is less important, most of the time, than the Breslow depth. Other factors that may affect the prognosis of melanoma are its location and whether the patient is pregnant.

▪ TYPES OF MELANOMA

Just as there are many different models of Toyotas, so too are there different types of melanomas. These varieties have different cure rates. Here is a brief rundown of invasive melanoma. *Lentigo maligna*, also known as *melanoma in situ*, is not invasive but is discussed here as well. The color plate section includes examples of each type.

SUPERFICIAL SPREADING MELANOMA

A flat lesion characterizes superficial spreading melanoma (sometimes, however, the lesion may be slightly raised). When this melanoma grows out in the surface of the skin, like oil on water, it is considered in the earlier “lateral” growth phase. When it begins to get thicker, entering the “vertical” growth phase, the risk of spread in the body is greater. This type of melanoma can have many different colors in it. It is the most common type of melanoma.

NODULAR MELANOMA

Nodular melanoma takes its name from the nodule (see page 12). There is no lateral or sideways spreading in this variety, which constitutes

about 15 percent of all melanomas. The nodule can be as small as a pea or even larger. Nodular melanomas are usually of uniform pigment that is generally dark brown or black.

ACRAL LENTIGINOUS MELANOMA

The rare cancer *acral lentiginous* (pronounced AK-rul LEN-tij-i-nis) melanoma is seen more often in blacks than in whites. It's also called palmar-plantar-subungual-mucosal melanoma, which refers to the areas of most frequent occurrence—the palms, the soles, the nail beds, and the mucous membranes of the nose, mouth, anal, and genital regions. It is often diagnosed after it has already progressed, so the cure rate for this dangerous form of melanoma is less than that for the more common forms. Full-body skin examination on a regular basis can help with earlier diagnosis and more successful treatment of this type of melanoma.

LENTIGO MALIGNA

Lentigo maligna, or *melanoma in situ*, is considered an early form of noninvasive melanoma. Appearing most often in older people, the tumor is confined to the epidermis, so it lacks access to the dermis, which would provide an opportunity for it to spread. Therefore it may be considered a pre-melanoma, even though it is made of the same abnormal melanocytes that could proliferate and grow into a true invasive melanoma.

It is my impression that increasingly these growths are being diagnosed in younger people. They appear often as tan or brown patches on the sun-exposed areas of the head and neck. Most often they are seen on the cheeks.

Patients often bring such spots to the dermatologist's attention because of cosmetic concerns. They wonder whether laser treatment might not eliminate the unsightly blemish. To the untrained eye, lentigo maligna can look like age spots or liver spots. When in doubt, I never treat such spots with laser until I determine by biopsy that they are not lentigo maligna.

Historically, lentigo maligna has not been of much concern; the feeling was that it had to be of long duration—say, approximately twenty to thirty years—before true invasive melanoma could develop. Moreover, the large size of many lentigo maligna lesions presents special challenges. They are usually treated only by excision, which can result in unsightly scars or the need for skin grafts.

The problem that dermatologists now have is that as lentigo maligna becomes more common, treatment can pose challenges and nonintervention could be a risk. While certain approaches such as cryotherapy in which the lesion is frozen or laser in which the pigmentation is removed by laser light have been explored, the concern is that incompletely treated lentigo maligna can develop into invasive melanoma. In addition, a melanoma on the head and neck may be more risky than elsewhere. This is because the rich supply of blood vessels and lymphatic channels in the head and neck area can potentially carry errant melanoma cells elsewhere in the body.

My approach to lentigo maligna is to make the diagnosis by biopsy and then, if feasible, excise it in a simple fashion, hiding the scar in the natural lines of the face. Whenever the lentigo maligna is too large to accomplish this, I use a staged excision rather than a single large removal (the latter would require a skin graft, which can be permanently unsightly).

In a staged excision, the initial procedure removes approximately 50 percent of the lesion; the patient returns in six to eight weeks to have the rest of the lesion removed, permitting me to hide the second scar in the original lines. Because lentigo maligna is very slow growing, this delayed approach poses no real medical risk.

Some dermatologists use Mohs micrographically controlled surgery (see page 262) for lentigo maligna, as they would for basal cell cancer or squamous cell cancer, but I do not believe there is sufficient data at this point to justify this approach.

OTHER PROBLEMS WITH LENTIGO MALIGNA

One problem that arises with lentigo maligna is making sure that it is really what it appears to be. The abnormal melanocytes can sometimes be confused under the microscope with cells that are just badly damaged by the sun but are not yet cancerous. Cells don't come with flashing neon signs that say, "I am cancerous," so it is left to the dermatopathologist to determine on which end of the cancer spectrum a cell sits. Moreover, that decision cannot be made in a vacuum, as one must look at the whole picture. If cells look suspicious for lentigo maligna but the face is severely sun damaged, with wrinkled skin that is blotchy from years of sun exposure, I would be less eager to make a final diagnosis of lentigo maligna. Furthermore, if after my initial excision the biopsy report suggests that there are still cancer cells at the edges, I would evaluate the patient before going

back to excise more tissue. That's because in some people with sun damage one can continue performing these excisions until an unreasonable amount of tissue has been removed. Unlike nodular melanoma, which is usually a single nodule, lentigo maligna may well behave like buckshot. Multiple areas on the face could develop lentigo maligna and it would be unrealistic, if not impossible, to excise all of the cells. In this case, unlike other melanomas that are truly invasive, a balance between watchful waiting and conservative intervention will serve best. Where possible, though, the goal is to remove the lentigo maligna in its entirety.

Recently dermatologists have been experimenting with the use of the ruby laser to treat lentigo maligna. This laser is used to remove pigmentation in tattoos and other growths, so it seems reasonable that it might be useful to treat other brown growths, such as lentigo maligna. Occasionally, the lesion is so large that surgery is not feasible. I did treat an elderly woman with lentigo maligna that completely covered her right cheek. A plastic surgeon was at a loss with what to do so we initiated treatment with the ruby laser. Although the lesion cleared completely, it remained important to go back and monitor by biopsy, since the disappearance of pigmentation is not always a sign that the cancer cells have been eliminated. Laser treatment for lentigo maligna cannot be considered standard care except in exceptional circumstances where there are no other alternatives.

If you have a complicated lentigo maligna, make sure that your condition is checked by a doctor with extensive experience in the management of this tricky condition.

AMELANOTIC MELANOMA

Although we think of melanoma as a pigmented growth, in the rare form called amelanotic melanoma there is no change in color. This unusual flesh-colored melanoma announces itself by some other change that the doctor or patient notices. Often it will be biopsied because it looks like some other kind of lesion and only then will its true nature be discovered.

▪ **SAVE YOUR OWN LIFE**

It is not an exaggeration to say that when it comes to melanoma, you can save your own life. Regular skin exams by a dermatologist or other physician or health care provider trained in skin exams, and skin self-

exams are two ways to diagnose any suspicious lesion at its earliest, most curable stage. Skin self-exams are also especially important because it has been shown that many abnormal skin lesions are often first discovered not by the doctor but by the patient.

■ SUN AND OTHER SOURCES OF ULTRAVIOLET RADIATION

When it comes to melanoma, the sun is a complicated risk factor. Some say that a single blistering sunburn in childhood increases your adult risk of melanoma several-fold. At the same time, dermatologists often diagnose melanoma in locations that never saw the sun.

Nonetheless, there is an environmental connection between sun exposure and melanoma and other skin cancers. Many questions remain unanswered. Exactly how much of a connection is there between sun exposure and melanoma? How much exposure increases the risk? How many years of exposure to sun increases your chances of getting melanoma? In what period of life (childhood, adulthood, old age) does exposure to the sun increase your risk by the greatest amount? We don't yet have the answers, but some patterns are emerging.

SAFE SUN: PRACTICING SKIN CANCER PREVENTION

- Apply a sunscreen thirty minutes before going out to allow the active compound to interact with your skin.
- Apply a broad-spectrum sunblock or sunscreen every two hours while outdoors.
- Wear a broad-brimmed hat. Although hats are disdained by golfers and tennis players alike, do try to find one hat that works for you (see Appendix 4 product guide).
- Wear sun protective clothing with a tight weave. The common T-shirt provides a sun protection factor of only 6. You don't have to wear a caftan, but you should be reasonably protected.
- Avoid the sun between 10 A.M. and 4 P.M. Take a siesta. Play some chess or cards in the shade.
- Be aware of the reflection of radiation off sand, water, and snow.
- *Protect* your children
- *Never* use a tanning bed.

▪ SUN, MELANOMA, AND YOU

Whether sun exposure turns out to be 50 percent of the cause of melanoma or 90 percent, we know at a minimum that it plays some important role in causing this deadly cancer. We also know that it is relatively easy to minimize our exposure to sun thereby reducing our risk of developing this disease. Reasonable and judicious sun avoidance combined with regular skin self-examination should permit each of us to lessen our risk of developing melanoma and dying from it.

There has been some debate recently in the media about whether the use of sunscreen creates a false sense of security, encouraging people to spend more time in the sun than is safe. The truth is, all scientific evidence suggests that anything you can do to minimize exposing your skin to the harmful effects of ultraviolet radiation will help prevent melanoma.

Sun protection and avoidance are the two most active steps we can take. A recent study of 1,300 women under sixty in the San Francisco Bay area evaluated whether sunscreen reduced the risk of cutaneous melanoma. Thirty percent of the women reported that they “almost always” used sunscreen products, 27 percent said they sometimes used sunscreens, and 43 percent said they never used sunscreens. After careful epidemiologic analysis, it became clear that women who used sunscreen sometimes or never had *twice the rate of melanoma* compared with those women who usually used sunscreens. While it is true that the number and type of moles that people have correlates better with melanoma risk than purely sun-related factors, exposure to sunlight cannot be ignored.

There are of course many things that one can do to minimize exposure to the carcinogenic agent we know as ultraviolet radiation. Sun-

CHOOSING YOUR SUNSCREEN

Sunblocks are physical agents, like zinc oxide or titanium dioxide, that actually reflect the sun's rays. They block UVA and UVB.

Sunscreens are chemical agents that absorb the ultraviolet radiation rather than reflect it. If choosing a chemical sunscreen, look for a product that provides both UVA and UVB protection. Use a product with SPF (sun protection factor) of 15 or higher.

screen is just one aspect of a total sun protection program (see box, page 242).

In addition to avoiding the sun when practical, the use of sunscreen, use of protective clothing, and a regular skin self-examination, special forms of surveillance are appropriate if you are at high risk for melanoma. You are in that category if you have had a melanoma before, have a history of melanoma in the family, have a history of atypical moles, are fair-skinned and/or have had excessive sun exposure. It should be noted that certain family syndromes have an especially high incidence of melanoma. Consult your dermatologist if you think you may fall into that category.

Even if you do not have the familial form of atypical moles, but have many atypical moles and are at risk for melanoma, photographic monitoring by your dermatologist can be helpful.

In one study of 18 patients followed for atypical moles, early diagnosis of curable melanoma was possible in 10 of the subjects as a direct result of changes that were detected in baseline surveillance photographs. In another study of 78 adults who had at least five atypical moles, 11 of 20 melanomas were detected solely because of changes that were evident when baseline photographs were compared with the changes detected in physical examinations.

Baseline dermatologic photography is now regarded as a critical aid in detecting melanoma in high-risk patients. Managed care has had a negative impact here, refusing to pay for these potentially lifesaving photographs. The American Academy of Dermatology and many dermatologists are currently attempting to obtain an official medical billing code that would permit reimbursement for photographs to monitor melanoma.

▪ EFFECTIVENESS OF SUN SCREENS

In protecting against skin cancer, not all sunscreens are created equal. Often people use a sunscreen with a high SPF rating, thinking this automatically protects them from all ultraviolet radiation. This is not the case, since only certain sunscreens offer broad-spectrum protection. The best sunscreens and sunblocks are those that state on the label that they protect against both UVA and UVB rays.

The best known sunblock is zinc oxide. This thick white cream, famous on the noses of well-tanned lifeguards, has evolved significantly

over time. Now available in a range of colors and skin tones, it can be strikingly obvious as a fashion statement or less obvious by blending in when skin tones are selected.

Perhaps a more user-friendly sunblock is a chemical variation of zinc oxide called titanium dioxide. It is now used in a variety of high-quality products in which the sun-blocking compound is broken down into microscopic particles, so that each functions like a small mirror on the surface of the skin. Unlike its zinc cousin, titanium dioxide is virtually transparent as it reflects back the ultraviolet radiation.

Nowhere is the use of sun protection more important than in children. It is estimated that 85 percent of lifetime sun exposure is acquired by age eighteen. Chronic, repeated sun exposure leads, so we believe, to the genetic changes that cause skin cancer. Children spend a great deal of time outdoors and should be protected from the sun on a regular basis. Be sure to keep infants under the age of six months out of direct sunlight at all times. Sunscreen should be used only on children older than six months.

In addition to applying sunscreen approximately thirty minutes before going outside and reapplying after swimming or exercise, it is important to dress properly in the sun. If you look at pictures of midwestern farmers or railroad workers at the turn of the century, what strikes us today is that they were wearing long-sleeved shirts, long pants, and broad-brimmed hats even in summer. How these workers must have sweated while toiling! But one thing is for sure: I can guarantee few of them got skin cancer from overexposure to the sun. Nowadays, we frequently wear T-shirts and shorts in sunny weather. However, the typical T-shirt has a sun protection factor of only 6. Fortunately, it's now possible to buy lightweight clothes that, because of a tight weave, provide much more sun protection (see Appendix 4).

It is also important to stay out of the sun during the peak hours between 10 A.M. and 4 P.M. People who live close to the equator have known this for some time—their siestas are no accident. In addition, be cautious at high altitudes. For every 1,000 feet above sea-level, UVR increases 4 to 5 percent.

In recent years public agencies have provided additional information about ultraviolet radiation in our environment. Television weathercasts and newspapers provide us with the ultraviolet (UV) index. This new index is an estimate of the peak amount of ultraviolet radiation that will reach the earth's surface at noontime. Become familiar with the UV index and try to incorporate it into your sun-avoidance strategy.

▪ AFTER A MELANOMA DIAGNOSIS

After the doctor called with the biopsy results I was in a panic. I didn't know what the next step was. I thought I should get a second and third opinion.

—Jane, graphic designer, 32

Most melanomas are diagnosed in the earliest stage and treatment is straightforward. Once the diagnosis of melanoma has been made it is important to know its Breslow depth. The risk that you will develop serious problems with melanoma is directly related to how deep the melanoma is. Any melanoma that is up to 1 millimeter in depth has an excellent chance for cure. The cure rate following simple excision is in the range of 96 to 99 percent. Because it is not 100 percent, it is important to emphasize the need for regular monitoring and follow-up examination.

If the melanoma is just *in situ*, meaning it is not invasive and confined only to the epidermis, excision margins of 0.5 centimeters are sufficient. This is equivalent to about a fifth of an inch. The excision margin is the amount of extra, normal skin that is removed around the melanoma.

In order to determine how to treat a patient with melanoma and to make some predictions about prognosis, we categorize melanoma in stages.

When a melanoma is up to 1 millimeter in depth, excision with 1 centimeter margins down below the level of fat is all that is required. This procedure can be performed in the doctor's office under local anesthesia.

When the melanoma is between 1 and 4 millimeters thick it is classified as intermediate and may require margins of 2 centimeters when definitive treatment by excision is done. If the melanoma is more than 4 millimeters deep, the margin of safety around the melanoma should be 2–4 centimeters, if it is technically feasible. In some cases smaller margins may be acceptable.

It is extremely important to know that in the past decade doctors' attitude about the management of melanoma has changed in a meaningful way. Treatment of melanoma was based for many years on a single autopsy case performed at the beginning of the twentieth century. Back then autopsy of the patient revealed melanoma cells scattered throughout the surrounding skin, or about two inches away from the original cancer. Without much controversy or challenge, it was assumed that any melanoma, regardless of its stage, should be excised with *wide* margins of about two

inches in order to get all the cancer out. Recent studies worldwide have suggested that under most circumstances wide excision of melanoma does not enhance survival or decrease the risk of recurrence of the cancer where it was removed.

Many physicians in practice today are not current on the latest management of melanoma. It is important to be sure that your physician is knowledgeable about current practices and understands that the amount of tissue that has to be removed is based on the thickness of the cancer as measured under the microscope. Of course, individual circumstances can vary, and there are certainly situations where it is necessary to be more aggressive than the thickness of the cancer alone would suggest.

▪ LYMPH NODES AND MELANOMA

Although we now better understand what the margins of excision for melanoma should be once it has been diagnosed by biopsy, new technology has raised questions about what to do next. Normally, once a melanoma has been diagnosed baseline chest X-ray and liver enzyme (LDH) readings (a simple blood test) are obtained so that the potential for spread of the melanoma throughout the body can be monitored. *If* melanoma is going to spread or metastasize it will usually go first to the lymph nodes and then to internal organs. The lung, liver, and brain are often affected eventually.

When melanoma is beyond more than 1 millimeter in depth, there is some controversy about whether the lymph nodes should be removed in an effort to halt the potential spread of the cancer. Usually physical examination by your physician helps evaluate whether there is any change in the lymph nodes. Feeling the nodes in the area that corresponds to the location of the melanoma will indicate whether they are enlarged or not. The most common lymph node areas are in the neck, armpit, and groin. A lymph node that is enlarged must be removed and studied.

If the lymph nodes are not enlarged, two approaches can be taken. One can wait and see, and through regular examinations the lymph nodes can be evaluated for evidence that melanoma has spread to them. Alternatively, the lymph nodes can be removed at the time of the original melanoma surgery and evaluated for the presence of cancer. Removal of lymph nodes is not without complications, so this procedure should not be performed without considering all the options.

▪ SENTINEL NODE BIOPSY

A new technique has been developed lately that may help us determine whether or not lymph node removal is more appropriate in melanoma management. Called *lymph node scintigraphy*, it involves injecting a radioactive substance at the site of the melanoma and tracking it with a scanner to help identify which lymph node group it drains to. Once that is identified, the cancer surgeon can remove what is called the sentinel node, or the first lymph node in the region to which that melanoma is draining. A biopsy of that lymph node during surgery using frozen sections permits a more precise analysis of whether the other lymph nodes should be removed. If no cancer is found, no further surgery is needed. The risk of complications from extensive lymph node surgery is thus avoided. However, if cancer cells are present in the sentinel node the rest of the lymph nodes can be removed, remaining firm in the knowledge that removal was necessary.

I must stress that sentinel node biopsy is not yet a standard part of practice. Although its logic is compelling, we are not sure whether this approach will in fact result in increased life expectancy from melanoma or allow us to identify metastatic melanoma earlier than we had been able to in the past. Therefore it is best if you discuss whether this new technique is appropriate with your dermatologist or surgical oncologist. At present, it is safe to say that such a procedure does give us more information about the melanoma and its extent.

It is important to note that if sentinel node biopsy is being considered, the excision of the melanoma must be done at the time the lymph nodes are mapped. It is not possible to have the definitive excision of the melanoma and the sentinel node biopsy done at different times.

▪ CHOOSING YOUR MELANOMA DOCTOR

When malignant melanoma is diagnosed early—or at least early enough—complete surgical excision of the cancer is the recommended course of treatment. Such an excision must include adequate removal of normal skin tissue around the site of the melanoma and also adequate depth of removal, including subcutaneous fat. The procedure can be performed by any physician trained in skin surgery who is knowledgeable about melanoma management.

Once a melanoma has grown thicker so that a wider margin is

WHAT IS MY PROGNOSIS?

Your prognosis, or survival rate from melanoma can depend on many factors. The most important information is how thick the melanoma is when it is removed. In general, the thicker the melanoma, the greater the risk that it will travel in the body and lead to death. This table gives only a very rough idea of how thickness corresponds to survival. Consult your doctor regarding your particular factors and remember that statistics apply to large groups of people, not to the patient as an individual.

Breslow Thickness	Survival Rate
Up to 1 mm	96%–99%
1.1–2 mm	94%
2.1–4 mm	78%
more than 4 mm	42%

required, reconstruction with a skin flap or graft may be necessary. This is generally done by a general surgeon, surgical oncologist, plastic surgeon, or dermatologic surgeon. The surgery itself is not necessarily the challenging part of management—it is deciding how much to remove, whether to check the lymph nodes, and how to manage the problem after the surgery.

To ensure your physician is skilled and knowledgeable about melanoma, you should ask several questions: What percentage of the doctor's practice is composed of melanoma patients? Does he or she have an association with a university-affiliated multidisciplinary melanoma panel? This type of group is usually not necessary for thin melanomas, but for more complicated cases, the input of several specialties is helpful. When a physician does have such an affiliation, you can be sure that you'll get the most up-to-date information, as well as the opportunity to join clinical trials that study new treatments for melanoma.

▪ PREGNANCY, ESTROGEN, AND MELANOMA

Recent studies have shown that pregnant patients do not do worse with early-stage melanoma than those who aren't pregnant. This concern has been raised because of the question about whether melanoma cells respond to the estrogen hormone.

As in any other situation involving skin cancer, continued skin self-examination is key to early detection, successful treatment, and cure. Since the size and shape of moles can change during pregnancy, the diagnosis of melanoma in a pregnant woman can be delayed. Because some change and increased irregularities are considered normal at this time, suspicious moles may be overlooked by patient and doctor alike.

Even though no link has been established between subsequent pregnancies and recurrence of melanoma, a waiting period between pregnancies is almost always recommended for a woman who has previously been treated for malignant melanoma.

The treatment for malignant melanoma discovered during pregnancy is the same as for melanomas diagnosed at any other time.

▪ RECURRENCE AND ADVANCED MELANOMA

When recurrence does develop—that is, when melanoma develops again at the site of the original cancer—it is often because of incomplete removal of the tumor the first time around. After removal of a recurrent melanoma, though, the overall five-year survival rate remains about 90 percent.

While early diagnosis is the best hope that the melanoma will not spread, the behavior of some cancers can often be hard to predict. If a melanoma is diagnosed with a thickness that poses a real risk that cancer cells will escape the skin and travel to other parts of the body, some have advocated removal of the draining lymph nodes. Currently there is no uniform view about the benefit of lymph node removal in melanoma. Sentinel node biopsy, as discussed above, may help clarify the debate in this area. At the present time it is best to discuss all options with your doctor.

As with all aspects of melanoma management there are many issues to consider. Once melanoma has metastasized the survival rate overall is about 20 to 30 percent. A whole range of treatment options exist, including vaccines, interferon, chemotherapy, and other approaches, but so far there is no magic bullet, no sure thing. Medical oncologists continue to research treatment for melanoma that has metastasized.

▪ ALTERNATIVE MEDICINE AND MELANOMA

The potential aggressiveness of melanoma leads some people to seek out alternative therapies, but I know of no alternative form of medicine

that can cure melanoma. While the options available for melanoma once it has spread in the body may not be great, alternative therapies generally have shown no proven benefit.

Despite the lack of evidence that alternative treatments are effective in the fight against cancer, alternative cancer therapy is a multibillion-dollar business. Those who champion alternative treatments tend to be well-meaning people who genuinely believe that their treatments will be helpful.

If you are considering alternative therapy, it should be undertaken only in conjunction with traditional methods of treatment, including routine screening to measure the size of the cancer and whether it has spread. Discuss the risks and possible benefits of the alternative treatment with your oncologist and, if possible, proceed with his or her continued involvement.

One important question to ask your alternative medicine provider is whether there is any documented proof that the proposed treatment has been effective for other melanoma patients. What is the background and what are the credentials of the person who will be providing the treatment? Are there any attendant risks or side effects in undergoing this treatment? You should be wary of any self-published reports that advertise the value of the treatment. Instead try to find out whether the treatment has been described in any legitimate medical journals and whether it is monitored by any regulatory agencies.

▪ INVESTIGATIONAL THERAPIES

An important source of cutting-edge treatment for melanoma are clinical drug trials conducted at university medical centers throughout the country and at the National Cancer Institute. Unlike alternative therapies, these investigational therapies are carefully regulated and supervised. They are an important aspect of the treatment options available to melanoma patients. Usually, these trials evaluate whether a particular medication or technique is effective in curing melanoma or slowing its growth. If the study proves a success, the treatment is then made available for widespread use on a routine basis. There are dozens of clinical trials nationwide for melanoma. (See Appendix 6 for further information.)

Unfortunately, only 26 percent of Americans know that a new mole or changes in a mole are signs of melanoma. Continued education about the early signs of melanoma is critical. Read this book. Educate your family. Examine your family. See your dermatologist.