



CHAPTER 9. Melanoma

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MELANOMA

IMPORTANCE OF MELANOMA CANCER FOR CANCER PREVENTION AND CONTROL

Every year. There are three main types of skin cancer: basal cell, the most prevalent; squamous cell; and malignant melanoma. Basal and squamous cell cancers have an excellent prognosis, but are at greater likelihood of recurring.¹ Melanoma of the skin[§] or cutaneous malignant melanoma, the rarest but most lethal form of skin cancer, is responsible for about three-fourths of all deaths from skin cancer and is, therefore, the focus of this report.¹ It should be noted that nonmelanoma skin cancers are also important and should not be neglected. Many recommendations offered in this chapter will apply to malignant melanoma of the skin, as well as to nonmelanoma skin cancers and other types of malignant melanoma (e.g., ocular).

Incidence of cutaneous malignant melanoma is increasing approximately 3% per year.¹ In the United States alone, the lifetime risk for developing cutaneous melanoma is approximately 1 in 80 persons. Persons born prior to 1930 have experienced the sharpest increases.² In the U.S., about one-fourth of melanoma patients are diagnosed before age 40.³ Thus, the years of life lost from cutaneous melanoma are higher than for most other forms of cancer. In 2007, it is estimated that 33,910 new cases of cutaneous malignant melanoma will be diagnosed in males and 26,030 in females.¹ Approximately 8,110 people will die from cutaneous melanoma in 2007.¹ In recent years, melanoma is one of the cancer sites showing the most marked increases nationally.⁴ The American Cancer Society estimates that, in 2007, melanoma of the skin will be the sixth leading new cancer site in the U.S. for both men and women, accounting for about 6% and 4% of all cancers, respectively.¹

Exposure to solar ultraviolet radiation (UVR) is well established as a major risk factor for melanoma.⁵⁻⁷ Increasingly, evidence has shown that artificial UVR exposure, such as that experienced in tanning beds and booths, significantly increases the risk of developing melanoma and other skin cancers.⁸⁻¹¹ Other risk factors include genetics,⁷ skin coloring,^{7,12} geographic location of residence,⁶ sunburn history,^{5,6,12} and melanocytic nevi (moles).^{6,7} Cutaneous melanoma prevention begins with avoidance of exposure to the sun, especially during midday. Those who cannot avoid the sun should limit direct sun exposure using broad-brimmed hats, long-sleeved shirts, pants, sun-resistant fabrics, or sunscreen.

MELANOMA IN NEW JERSEY

In this section we discuss the status of melanoma in New Jersey, including incidence, mortality, prevalence, survival, and risk factors.

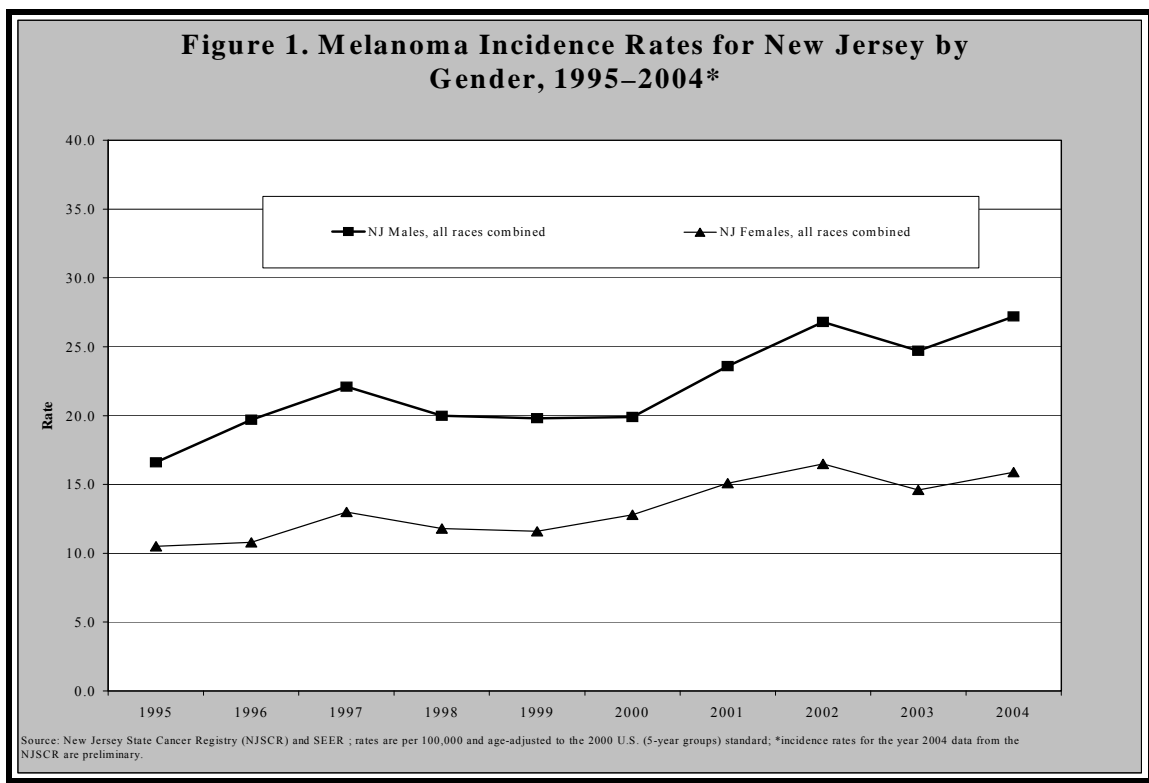
Incidence. New Jersey's cutaneous melanoma incidence rates reflect the national trend of increasing incidence.⁴ The stage at which melanoma is being diagnosed in New Jersey is improving. In 2004, 88%

[§]The New Jersey State Cancer Registry data reflect cutaneous malignant melanoma of the skin and do not include basal and squamous cell skin cancers. The American Cancer Society data reflect melanoma of the skin and do not include basal and squamous cell skin cancers.

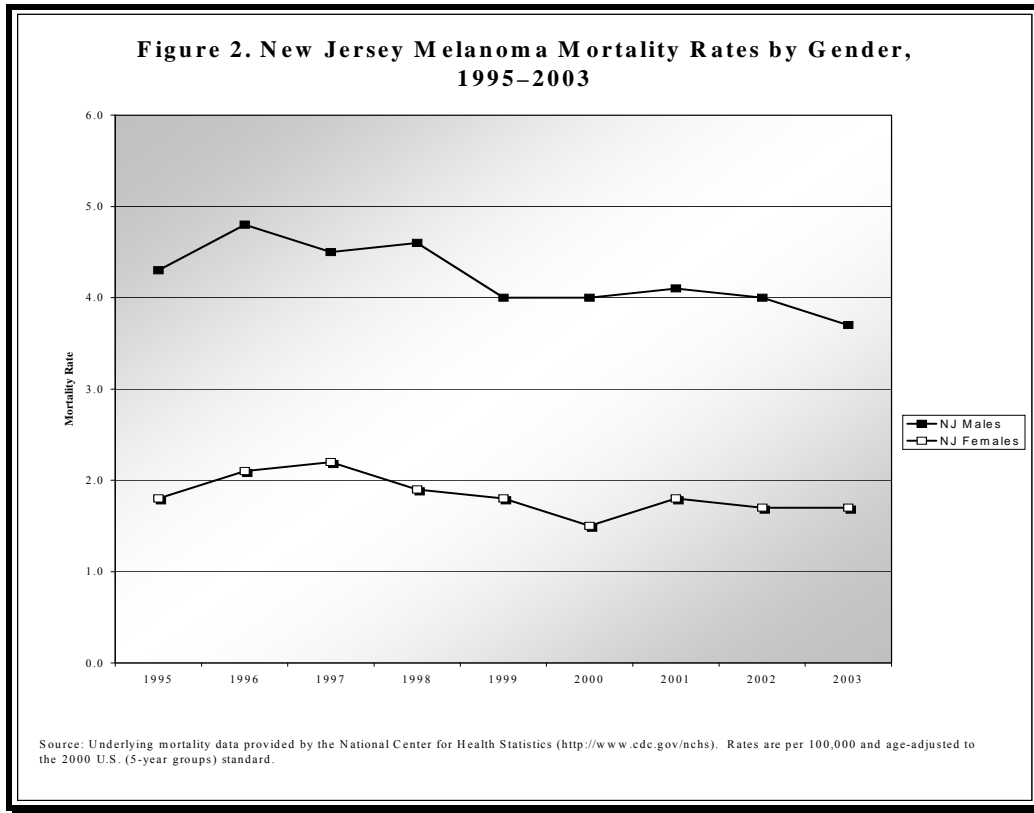


of melanomas were diagnosed in the early stages (in situ and local) compared to 70% in 1995. Data from the New Jersey State Cancer Registry reveal that the incidence rate of melanoma in New Jersey men (all races combined) increased from 1979 to 2004 (Figure 1). Although melanoma can occur in the black population, the incidence rate is significantly higher in whites (1.2 for black males and females combined versus 23.6 per 100,000** for white males and females combined in 2004). The incidence rate is lower for Hispanics than non-Hispanics (6.5 versus 22.2 per 100,000** for males and females combined in 2004).¹³

The American Cancer Society estimates that, in 2007, 2,210 new melanoma cases will be diagnosed in New Jersey.¹ Melanoma incidence rates increase as age increases. The highest rates of melanoma in New Jersey are in males aged 80–84 (incidence rate = 112.0 per 100,000** for the years 1995–2004 combined).¹³



** Rates are per 100,000 and age-adjusted to the 2000 U.S. population standard.



Mortality. Data from the National Center for Health Statistics reveal that cutaneous melanoma mortality rates for New Jersey males declined slightly between 1995 and 2003 and remained relatively stable for females (4.3 in 1995 versus 3.7 per 100,000** in 2003 for males and 1.8 in 1995 versus 1.7 per 100,000** in 2003 for females)¹⁴ (Figure 2). The U.S. rates for males and females remained relatively stable between 1995 and 2003 (3.9 per 100,000** in 1995 and 2003 for males and 1.8 in 1995 versus 1.7 per 100,000** in 2003 for females).¹⁵ The mortality rate for whites is higher than that for blacks (3.2 versus 0.3 per 100,000** for males and females combined for the period 1995–2003). The mortality rate is lower for Hispanics than for non-Hispanics (0.6 versus 3.0 per 100,000** for males and females combined for the period 1995–2003).¹⁴

Prevalence. Estimates indicate that on January 1, 2003, there were 15,486 or 0.2% of New Jersey men and women alive who had ever been diagnosed with melanoma of the skin. As with other cancers, the prevalence of melanoma increases with age and is highest in the 65+ age group (0.7%). The prevalence of melanoma is higher in whites than blacks (0.2% versus less than 0.05%, respectively).¹⁶

Survival. The five-year relative survival rate for melanoma of the skin diagnosed in New Jersey (all races combined) from 1994–1997 is 84.2%. This rate is lower than the U.S. rate of 90.5%. Disparities in survival exist between blacks and whites. In New Jersey, black men have a lower survival rate than white men (57.1% versus 82.6%, respectively) for the period 1994–1997. The white female survival rate for the same time period is 86.9%. The black female survival rate is not available due to a small number of cases.

** Rates are per 100,000 and age-adjusted to the 2000 U.S. population standard.



Survival rates are much higher for melanoma diagnosed at the local stage than at the regional or distant stage. In New Jersey from 1994–1997, the five-year survival rate for local-stage melanoma was 91.2% for men and 92.1% for women, whereas that for regional-stage melanoma was 46.9% and 55.8% for men and women, respectively, and that for distant-stage was 14.5% and 31.9% for men and women, respectively.¹⁷

Risk factors. According to estimates from the 2004 New Jersey Behavioral Risk Factor Survey, more males than females (33.4 % compared to 25.9%) answered ‘yes’ to the question ‘Did you have a sunburn in the past 12 months?’. When broken down by age, the subgroup of 18- to 34-year-olds had the highest percentage of sunburns within the past year (38.7 %).¹⁸

Cutaneous melanoma is a serious threat in New Jersey in particular, where the number of new melanoma cases is the seventh highest in the nation.¹ New Jersey has a very active coastal community, where tourists visit the beaches and other outdoor attractions every summer. Many opportunities exist to prevent cutaneous malignant melanoma through these recreational activities and facilities.



HEALTHY NEW JERSEY 2010 GOALS

Healthy New Jersey Goal	Reduce the age-adjusted incidence rate of invasive melanoma per 100,000 to 12.0 for the total population, 14.0 for whites, and 0.4 for blacks.
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Table 1. Age-adjusted incidence rate of invasive melanoma, New Jersey, 1999–2002, and [Healthy New Jersey 2010](#) projected target rates.

Population	1999	2000	2001	2002	Target	Preferred 2010 Endpoint
Total	14.9	15.4	18.1	20.6	12.0	10.0
White	17.5	18.2	21.4	23.9	14.0	12.0
Black	0.8	0.8	0.9	0.8	0.4	0.3
Hispanic	2.9	3.3	3.7	3.4	**	**
Asian/Pacific Islander*	*	*	*	*	**	**

Source: New Jersey Department of Health and Senior Services, Center for Health Statistics, [Healthy New Jersey 2010: Update 2005](#).

* The number of Asian/Pacific Islander cases is known to be understated.

** A target was not set because the baseline data for this subpopulation were statistically unreliable.

Note: Data for white, black, and Asian/Pacific Islander include Hispanics and non-Hispanics.



GOALS, OBJECTIVES, AND STRATEGIES

In support of the Healthy New Jersey 2010 goal for melanoma, the recommendations of the Melanoma Workgroup are summarized below in the following focal areas:

- Awareness
- Education
- Treatment
- Research and surveillance

AWARENESS

As demonstrated earlier in this chapter, protection from UV rays is the easiest way to eliminate the most common risk factor for cutaneous melanoma. However, according to the 1998 National Health Interview Survey, only 27% of adults sought out shade, only 23% wore protective clothing when exposed to sunlight, and only 30% routinely used sunscreen.¹⁹ Consequently, in 2000 an estimated 36% of U.S. adults experienced one or more sunburns.²⁰ These data clearly demonstrate the need to make the public more aware of UV exposure as a risk factor for cutaneous melanoma.

Under the auspices of the first edition of this *Plan*, New Jersey implemented the Centers for Disease Control and Prevention's (CDC) "Choose Your Cover" campaign to increase awareness about skin cancer, while also influencing social norms regarding sun protection and tanned skin.

Additionally, CDC has established the National Council on Skin Cancer Prevention and the Federal Council on Skin Cancer Prevention (www.skincancerprevention.org), as well as launching public awareness campaigns such as Pool Cool; Sunwise Stampede; the National Coalition for Skin Cancer Prevention in Health, Physical Education, Recreation and Youth Sports; and the Coalition for Skin Cancer Prevention in Maryland.

The most common public awareness message is that of the "ABCDE's of Melanoma,"²¹ which describes suspicious lesions as those that are **A**symmetrical, have an irregular **B**order, have **C**olor variegation, have a **D**iameter greater than 6 millimeters, and **E**volve or change over time.

Awareness campaigns are most prevalent in the form of educational materials for display in dermatologist offices. However, this type of campaign only targets those who have already taken the initiative to visit the dermatologist; those who do not visit the dermatologist or a primary care physician are being missed. Although the basic message of the program is correct, people are only encouraged to look for advanced signs of disease rather than early warning signs.

Despite these state and national efforts, New Jersey is still estimated to rank seventh in the nation for cutaneous melanoma incidence for 2007.¹ Yes, as stated in the introduction to this chapter, while diagnosis in the early stages is increasing, data from the New Jersey State Cancer Registry show that the diagnosis of cutaneous melanoma in the late stages (regional and distant) has decreased slightly from 1995 to 2004 (8% to 7%, respectively).

Reducing the public's exposure to artificial UVR is an important step in reducing the disease burden of melanoma. The annual revenue of the indoor tanning industry was estimated at \$5 billion in 2005,



increased from \$1 billion in 1992. Each day, over 1 million people are exposed to UVR in tanning salons throughout the United States.⁹ The most frequent users of indoor UV tanning are white adolescent girls.^{9,11,22} Given the risk of melanoma and other skin cancers associated with the use of tanning beds and booths, the Melanoma Workgroup strongly recommends increasing awareness among New Jersey residents of the risks associated with indoor UVR exposure.

A recent study suggests that tanning salons, through the provision and advertising of pricing policies that allow unlimited use of tanning beds and booths at a discounted rate, encourage frequent tanning, which exceeds U.S. Food and Drug Administration (FDA) guidelines.^{23,24}

The fact that melanoma is a life-threatening disease must continue to be communicated effectively to the public and to healthcare professionals in order to increase the proportion of melanomas diagnosed in the early stages when the disease is most treatable. The Melanoma Workgroup recommends continued implementation of awareness campaigns that target early diagnosis. Awareness issues must be addressed on five levels. First, the public at all age levels must be made aware of the gravity of the disease and the need for preventive measures. Second, screening must be promoted to those at risk. Third, patients must be made aware of the treatment regimens that are available immediately after diagnosis. Fourth, medical professionals must be made aware of state-of-the-art diagnosis and treatment programs, as well as the quality-of-life issues that accompany these treatments. Fifth, the public and professionals must be aware of the facilities in New Jersey that offer state-of-the-art diagnosis and treatment for melanoma of the skin.

GOAL ME-1

To decrease the number of melanomas diagnosed in late stages and increase the percent of melanomas being diagnosed in early stages.

Objective ME-1.1

To promote state-of-the-art diagnosis and treatment for melanoma in facilities available for the citizens of New Jersey.

Strategies

- ME-1.1.1** Develop continuing education programs to educate New Jersey healthcare providers about state-of-the-art early diagnosis and treatment techniques for melanoma.
- ME-1.1.2** Develop and distribute a resource guide specific to melanoma to promote awareness of state-of-the-art diagnosis and treatment. Using this tool, patients will be able to locate providers in their area for melanoma prevention, detection, treatment, and referral.
- ME-1.1.3** Develop an awareness campaign targeted to New Jersey residents regarding state-of-the-art treatment and diagnosis of melanoma.



Objective ME-1.2

To develop an alliance with businesses and organizations to develop skin cancer media campaigns promoting public awareness and knowledge.

Strategies

- ME-1.2.1** Develop and disseminate educational materials and programs in collaboration with other healthcare organizations.
- ME-1.2.2** Collaborate with pharmaceutical companies that make sunscreen to launch a skin cancer awareness campaign piggybacked on their product marketing.
- ME-1.2.3** Partner with cosmetic companies and other industries to launch a skin cancer awareness campaign piggybacked on their product marketing.

GOAL ME-2	To decrease the exposure of New Jersey residents to UVR from the use of tanning beds and booths.
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Objective ME-2.1

To increase awareness among the public and healthcare professionals of the risk of melanoma associated with UVR exposure from the use of tanning beds and booths.

Strategies

- ME-2.1.1** Partner with other organizations to develop and disseminate an awareness campaign emphasizing the risks associated with UVR exposure from the use of tanning beds and booths.
- ME-2.1.2** Advocate for legislation mandating the provision and posting of Task-Force-approved educational materials at all licensed tanning salons emphasizing the risks associated with UVR exposure from the use of tanning beds and booths.
- ME-2.1.3** Advocate for legislation mandating that all commercial tanning salon print, radio, and television advertisements include a Task-Force-approved statement of the risks associated with UVR exposure from the use of tanning beds and booths.



Objective ME-2.2

To increase regulations imposed on commercial tanning salons operating in New Jersey.

Strategies

- ME-2.2.1** Advocate for licensing fees for tanning salon operators. Recommend that revenue generated from tanning salon licensing fees be utilized to advance melanoma programs and research.
- ME-2.2.2** Advocate for the development of a state-sponsored certification program to educate tanning salon employees about proper use of tanning beds and booths, the risks associated with UVR exposure from the use of tanning beds and booths, the signs and symptoms of melanoma, and alternatives to UV tanning. Mandate that all tanning salon employees complete the program within sixty (60) days of hire date.
- ME-2.2.3** Advocate for the development and systematic enforcement of regulations limiting the duration, frequency, and intensity of indoor tanning based on Food and Drug Administration guidelines.
- ME-2.2.4** Advocate for legislation mandating that all commercial tanning salons maintain written records of parental consent for customers under the age of 18.

EDUCATION

Schools, worksites, and the community present ideal venues for educating the public about issues surrounding melanoma prevention and detection. The Melanoma Workgroup recommends educational initiatives be implemented in all three areas.

School-based education. New Jersey school districts must continue to be committed to the promotion of comprehensive school health education in the form of Kindergarten through 12th-grade health instruction that is planned, documented, sequential, and age appropriate. It is recognized that classroom instruction is not effective unless coordinated with, and reinforced by, policies and programs within other components of the school health program. School personnel need to work together with community representatives to ensure that the health needs of students are met and that the school health program reflects the interests of both school and community.

Awareness of the increasing rate of melanoma incidence must be presented to school health educators to impress upon them the seriousness of the problem in our state. The incidence rates can be lowered, and the behaviors of the student-aged population can be modified with assistance from these school health professionals.

Schools can promote sun safety in two ways: through educational interventions and policy changes. Education on prevention meets one need as evidenced by the rate of incidence statistics for the state of



New Jersey. Outcomes resulting from school health education on the prevention, detection, and screening of melanoma will not have immediate impact on the incidence rates but will rather provide a foundation of support for long-term sun-safe programs and policies within the school setting. Sun-safe community promotion can augment existing sun-safe messages, if present, or encourage the school administration to review existing instruction and policies relating to sun safety.

Secondly, schools can promote sun safety through updated policies and by providing environmental support. School policies may address such issues as scheduling outdoor activities before or after those times of day when the sun’s rays are most intense and by encouraging all participants in outdoor activities to wear sun-safe clothing, hats, and sunscreen. Providing environmental support by increasing the amount of shade on the school campus is an important way schools can decrease student exposure to the sun. Increasing shade may include planting additional trees in open spaces, erecting temporary and permanent shade structures in such places as lunch areas and playgrounds, and making indoor space available to students for days and/or times when the sun’s rays are especially intense.

Community education. Strong evidence exists that melanoma is being detected earlier than previously, particularly after community educational campaigns.²⁵ Community education efforts include spreading awareness of the damaging effects of natural and artificial UVR, the importance of practicing sun-safe behaviors, and the need to perform self-screening and how to recognize potentially malignant changes.

Worksite education. Employers can have a significant impact on employee behavior by providing employees with education on prevention, detection, and screening for melanoma. The Melanoma Workgroup recommends encouraging employers statewide, particularly those whose employees spend time outdoors, to provide melanoma education to all employees.

GOAL ME-3 To increase the practice of prevention behaviors among youth by instructing students in all New Jersey public school districts on prevention, detection, and screening for melanoma and other skin cancers.

Objective ME-3.1

To include in the curriculum of all public schools, and enhance where necessary, instruction on prevention, detection, and screening for melanoma and other skin cancers. This is supported by New Jersey Statutes Titles 18A:40-32 Cancer Awareness Week and 18A:40-33 Cancer Awareness Program for School-Aged Children.

Strategies

ME-3.1.1 Train representatives from school districts about melanoma and skin cancer prevention, detection, and screening.



- ME-3.1.2** Implement incentives for training by providing professional development hours or continuing education credits relating to skin cancer.
- ME-3.1.3** Partner with other healthcare organizations to train appropriate professionals in school districts on proven skin cancer prevention programs, e.g., Sun Safe Communities.
- ME-3.1.4** Educate parents at PTO/PTA meetings regarding prevention, detection, and screening for melanoma and other skin cancers.
- ME-3.1.5** Implement an awareness project via the school district’s internal media capabilities to educate students about prevention, detection, and screening for melanoma and other skin cancers by providing interactive information about melanoma and other skin cancers. Websites must be approved and listed by the school.
- ME-3.1.6** Develop a partnership with a pharmaceutical company to launch a school-based skin cancer awareness campaign in conjunction with the company sunscreen product.

GOAL ME-4 To increase the proportion of school districts that provide structural sun protection and have sun-safe environmental policies.

Objective ME-4.1

To survey and evaluate the facilities and policies of all school districts to determine which schools have structural sun protection and sun-safe environmental policies.

Strategy

- ME-4.1.1** Establish a baseline of school districts that have sun-safe policies and encourage improvement of their sun-safe policies where necessary.

GOAL ME-5 To promote worksite education by employers to employees on prevention, detection, and screening for melanoma and other skin cancers.

Objective ME-5.1

To partner with employers in providing employee education on prevention, detection, and screening for melanoma and other skin cancers.



Strategies

- ME-5.1.1** Create and track an awareness campaign encouraging employers statewide to provide employee education on prevention, detection, and screening for melanoma and other skin cancers.
- ME-5.1.2** Pilot and implement presentations to employers, emphasizing those industries with “sun-exposed” employees, e.g., agricultural, construction, childcare, recreation, etc. and then roll out to other industries.

GOAL ME-6 To educate the community on prevention, detection, and screening for melanoma and other skin cancers.

Objective ME-6.1

To provide public health educational opportunities relating to skin cancer to the citizens of New Jersey at the local level.

Strategies

- ME-6.1.1** Develop, implement, and track community public health education programs on prevention, detection, and screening for melanoma and other skin cancers.
- ME-6.1.2** Use public service announcements and media campaigns to educate the public on prevention, detection, and screening for melanoma and other skin cancers.

TREATMENT

Surgery remains the most effective treatment for melanoma. Radiation and chemotherapy have proven ineffective. Until 1998, interferon was the only FDA-approved treatment for melanoma; however, it was generally used as an adjuvant therapy to surgery. In 1998, the FDA approved interleukin-2 for the treatment of metastatic melanoma.

Any lesion considered suspicious should be removed for pathologic examination. Excision with removal of the entire lesion with a narrow margin of normal skin is the preferred method of biopsy.²⁶ Incisional or punch biopsy is acceptable when it is not feasible to remove the entire lesion because of anatomic or cosmetic concerns. In these circumstances, the blackest area of a flat lesion and the thickest portion of a raised nevus should be sampled. Shave biopsies are not recommended when melanoma is suspected.

Clinical trials that have shown the most promise over the last decade have centered on immunotherapy and biotherapy.²⁷⁻³⁸ Both have shown measurable success. In 1998 the FDA approved the use of high-dose interleukin-2 (IL-2) for the treatment of metastatic melanoma. Autologous, polyvalent, and peptide



vaccines have shown promise at different disease stages and are being tested in clinical trials throughout the world.³⁹⁻⁴³

Many melanoma clinical trials are available to residents of New Jersey. The Eastern Cooperative Oncology Group, for example, conducts trials in many sites around New Jersey. Investigator-initiated trials are also available at medical facilities such as The Cancer Institute of New Jersey and its affiliates.

Research has minimized the size of the excision required at the primary site. The introduction of the Sentinel Node Biopsy (SNB) has reduced the need for node resections, and the SNB has proven to be a very accurate predictor of metastatic disease.²⁶ Recent testing of the TA90 glycoprotein antigen has also shown diagnostic promise. Dendritic Cell vaccinations in different combinations have been positive in early testing. Photographic Mole Mapping has become popular with high-risk patients as a monitoring device.

The critical issue, nevertheless, is that the overall cure rate for melanoma is low, and current research is resulting in treatment evolution at a rapid pace. As many clinical trials as possible should be made available in New Jersey to facilitate state-of-the-art treatment for all New Jerseyans. Information on the evolution of available treatment must be continually updated for medical professionals and patients alike.

GOAL ME-7

To ensure that all persons diagnosed with melanoma receive care from New Jersey hospitals and healthcare professionals with demonstrated proficiency in the diagnosis and treatment of melanoma.

Objective ME-7.1

To develop resource material discussing melanoma treatment options and clinical trial information for patients.

Strategies

ME-7.1.1 Promulgate current treatment options as essential considerations in the treatment of melanoma, such as sentinel node biopsy, interferon alpha-2b.

ME-7.1.2 Encourage participation in clinical trials for melanoma, e.g., vaccine therapy.

RESEARCH AND SURVEILLANCE

Mutations in the *p16* gene have been shown to increase the risk of developing melanoma. The *p16* gene, when functioning normally, acts as a tumor suppressor, preventing the abnormal proliferation of cells. When the gene is damaged, however, cells grow unimpeded, leading to tumor development. Approximately 20% of families with hereditary melanoma have the *p16* genetic mutation.⁷



A newly developed test is able to detect mutations in the *p16* gene in order to identify high-risk individuals. This recent advance will allow physicians not only to identify high-risk individuals, but also to target screening and early intervention toward those most at risk.

Research is ongoing into the development of new mechanisms for melanoma prevention, early detection, diagnosis, and treatment. Recent advances in genetics have yielded promising new technologies that may very soon significantly boost the fight against melanoma. The Melanoma Workgroup will closely monitor new and emerging research in melanoma and partner with organizations to ensure that both patients and physicians remain up to date on the most currently available technologies and resources.

GOAL ME-8

To ensure that New Jersey residents and physicians remain up to date on the most currently available melanoma technologies and resources.

Objective ME-8.1

To continue to monitor and disseminate current information on advances in melanoma prevention, screening, diagnosis, and treatment.

Strategies

- ME-8.1.1** Work with stakeholders to disseminate, as they become available, evidence-based advances to healthcare providers through CME offerings.
- ME-8.1.2** Conduct periodic literature reviews to determine the state of the science in melanoma research and to identify potentially promising new technologies.

Objective ME-8.2

To continue to monitor current melanoma incidence, mortality, and survival data in New Jersey.

Strategy

- ME-8.2.1** Request appropriate data, as needed, from the New Jersey State Cancer Registry and other applicable sources.



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