In 1981, our Melanoma Cooperative Group at New York University first computed trends for United States lifetime melanoma risk.\(^1\) We estimated that the lifetime risk of an American developing melanoma at that time was one in 250 (up from one in 1,500 in 1930). Also, we predicted that the risk would reach one in 150 before the year 2000. This projection was criticized by some as being too "dire."

In fact, it turned out that the prediction was markedly too conservative. The one in 150 risk level was reached in 1985.\(^2\) The dramatic increase in melanoma incidence has continued with an estimated 38,300 new invasive cases\(^3\) and up to an additional 30,000 to 50,000 in situ cases this year alone.\(^4\) The lifetime risk of an American developing invasive melanoma has now reached one in 87 (one in 70 for white males) in 1996.\(^5\) Melanoma rates are now rising faster than for any other cancer in men and second only to lung cancer in women.\(^6\) Should this six percent annual increase in melanomas continue, the American lifetime risk will reach one in 75 by the year 2000 (Fig. 1).

Review of United States incidence data shows that this dramatic rise in melanoma is real and not due to artifact:
1. Melanoma incidence is increasing worldwide faster than any other cancer.\(^7\)
2. The increase is not due to better surveillance techniques.\(^5\)
3. Evolving histologic criteria used for the diagnosis of melanoma have not affected incidence.\(^8\)
4. Better cancer counting methods in general have not led to an incidence increase.\(^9\) In fact, there is strong evidence to suggest that the true number of melanomas may be underestimated because it is not a reportable cancer in most states. Also, socioeconomic pressures are causing more melanomas to be treated in an outpatient setting. This leads to these cancers being undercounted where hospital-based registry data are used.\(^10\)
5. The death rate from melanoma also continues to rise about two percent annually. However, survival rates for people with stage I melanoma have also been rising, improving from 50 percent in the 1950s to almost 90 percent today.\(^3\) The only way this apparent paradox can exist is if incidence rates are increasing even more rapidly (Fig. 2).

This continuing increase in incidence of melanoma will lead to an emergence of a number of future problems in terms of morbidity, mortality, and health care costs. Effectively dealing with these issues will require a three-pronged approach:
1. **Public awareness and understanding of melanoma must be improved.** The primary causative factor in the development of melanoma, ultraviolet radiation exposure, is also one that is easily minimized
by behavior modification—sun protection and/or avoidance. Marks\textsuperscript{11} in his article in this issue of CA describes methods that have been successful in increasing awareness and modifying behaviors related to melanoma in Australia. A recent study showed that only one third of Americans knew that melanoma was a skin cancer.\textsuperscript{12} With the highest rate of melanoma in the world, Australia has been a leader in the public education effort, and the techniques presented in the article can and should be extrapolated worldwide.

Even more important may be the fact that melanoma is probably the most clear-cut case of a cancer where early detection and treatment are key. Survival is inversely related to lesion thickness, ranging from 97 to 99 percent for tumors less than 0.75 mm in thickness to less than 50 percent for lesions greater than 3 mm.\textsuperscript{13} Recognizing the critical importance of this issue, 11 years ago, our group at New York University developed the ABCDs of early melanoma (asymmetry, irregular border, uneven color, and diameter greater than 6 mm) to provide a framework for improved detection of this cancer in its earliest treatable phase by both health care providers and the lay public.\textsuperscript{14} The ABCDs, along with the technique of self-examination of the skin, have been proven in subsequent studies to be effective in achieving their desired goals.\textsuperscript{15,16} Using these two approaches as building blocks and incorporating new technologies, more specific methods to enhance early detection will need to be developed in the future.

2. Better methods are needed for identifying those at highest risk. Public education programs are most efficient when they focus on people at higher risk. Melanoma risk models exist currently that can help in the process of identifying
Mass melanoma screening programs, such as those sponsored by the American Academy of Dermatology and the American Cancer Society, not only identify tumors in the population, but also provide a “teachable moment” to those at highest risk. The future will hopefully yield more specific genetic and/or biologic risk models to make these efforts even more effective.

3. More specific therapies for melanoma need to be developed. Although most localized melanomas can be treated by simple, surgical excision, as noted by Urist in this issue, prognosis drops dramatically when tumor has spread to and beyond the regional lymph nodes. Morton and Barth review the current state of treatment for advanced disease and present their experience with the development of an immunotherapy approach. The ultimate in therapy would be a true vaccine that could be given to those at greatest risk, thereby eliminating those individuals’ chance of developing melanoma altogether. Hopefully, given a focus by several research groups toward this goal, it may be achievable in the not-too-distant future.

Currently, despite all of the existing prevention and early detection efforts, melanoma incidence, absolute numbers of thick lesions, and deaths continue to rise. Given the latency period from the time of the inciting insult to the melanocytes until the cancer becomes clinically apparent, even major changes in public behaviors may not have a significant impact for 10 to 20 years. This continued rising incidence will make enhancements in awareness, diagnosis, and treatment even more critical. Innovative approaches, such as those presented in this issue of CA, will hopefully begin to make a difference in the more immediate future.
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