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NON-CIRCULATING



# Texas Preventable Disease

# NEWS

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Infant Botulism in Texas  
Malignant Melanoma

TEXAS STATE  
DOCUMENTS COLLECTION

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## INFANT BOTULISM IN TEXAS

Botulism is generally regarded as a food poisoning which results from ingestion of pre-formed toxin produced by the bacteria *Clostridium botulinum*. Infant botulism is an illness caused by the production of botulinal toxin in an infant's intestinal tract. The first symptom of infant botulism is usually constipation. The infants generally appear lethargic and listless. The child exhibits poor feeding because of diminished suck reflexes and crying becomes weak and feeble. Weakness progresses in a symmetrical, descending fashion over hours or days. The baby appears "floppy" with loss of head control and loss of extremity control.

*Clostridium botulinum* produce one of seven serologically distinct toxins designated by the letters A-G. Type A and type B organisms are responsible for over 90% of infant botulism cases in the United States. Type A generally is found in areas west of the Rocky Mountains. Type B organisms are distributed throughout the United States. Spores of *C. botulinum* are widespread in soil and dust throughout the world. Consumption of honey or corn syrup represents an important risk factor for infant botulism. These food items are not, however, the source of infection for most infant botulism cases. In most cases, the source of infection remains unidentified. Recent infant botulism cases in Texas are described below.

A total of 29 infant botulism cases was reported in Texas from 1979 through 1988. The annual number of reported cases ranged from zero in 1980 to six in 1984. No overall secular trend is apparent. The infants ranged in age from 1 to 27 weeks; 54% were 6 weeks of age or younger. A majority (59%) were female. Race and ethnicity were reported for 28 cases; 14 infants were white, and eight were Hispanic. The other six infants were black or Asian. The infants resided in 16 counties throughout Texas (Figure 1). Over half the cases resided in two

geographic areas. Seven infants (24%) resided in El Paso County, and nine infants (31%) resided in northeastern Texas. Infants had onset of illness in all months except October. No seasonal distribution is apparent.

Thirteen of the infants were vaginally delivered. Only two were considered premature. At birth, the infants weighed from 5 lb 12 oz to 8 lb 10 oz, with a median weight of 7 lb 7 oz. Four of the infants had been exclusively breast fed, and ten had been exclusively formula fed. Eighteen of the infants had been breast fed during some time before onset of illness.

The clinical features of the infant botulism cases are presented in Table 1. Poor feeding was noted for all infants. All infants were described as "floppy," with poor head control and weak extremities. A majority of infants were reported to have constipation (81%), an altered cry (85%), loss of facial expressions (83%), irritability (73%), and ptosis (59%). Eighteen infants required respiratory assistance. A feeding tube was required for 95% of the infants. All were hospitalized. Duration of hospitalization ranged from seven to 75 days with a median of 29 days. None received botulinum antitoxin. Outcome of illness was reported for 27 infants; none died.

Seventeen infants had illness caused by *C. botulinum* type A; 12 had illness caused by type B. The diagnosis for 21 infants was confirmed by the identification of *C. botulinum* organism and botulinum toxin in stool specimens. *C. botulinum* organisms only were cultured from stool specimens of seven infants, and toxin only was demonstrated in the stool specimen of one infant.

All thirteen cases from Bexar, El Paso, Dallas, Ochiltree, Randall, and Tarrant counties were type A. One case in Midland County and three cases in Harris County were also type A. Cases





## MALIGNANT MELANOMA\*

Malignant melanoma is a type of skin cancer derived from melanin-forming cells. If the cancer is diagnosed in its early stages, 89% of patients survive five years. However, if the diagnosis is made after the melanoma has spread, the proportion of patients reaching the five-year survival mark declines to 46%. Approximately 20% of diagnoses are made in the later stages of disease, reducing the overall five-year survival rate to 80%.<sup>1</sup>

Melanoma is generally more serious than non-melanoma skin cancers, such as basal or squamous cell cancers, primarily due to the more aggressive treatment involved. In addition to the cost of treatment, the impact on the individual includes greater risk of premature death, a greater extent of physical disfigurement, and psychological and social stresses associated with more aggressive treatment.

### ETIOLOGIC FACTORS

Solar ultraviolet radiation is the most important exposure related to malignant melanoma. Other risk factors relate to the effects of solar ultraviolet radiation. For example, individuals with no tanning ability are shown to have a three- to four-fold increased risk of developing malignant melanoma. Whites have a much greater risk (>10 fold) of developing this cancer as compared to blacks due to less pigmentation. The risk of developing melanoma increases with proximity to the equator due to the increasing directness of ultraviolet rays. The risk is also higher for individuals with light complexions, fair hair, or light eyes or others who burn easily. Malignant melanoma is also thought to have a genetic component since it is found more frequently among individuals with xeroderma pigmentosum and dysplastic nevus syndrome, two genetically determined diseases. In addition, individuals with a family history of malignant melanoma have a two- to three-fold risk of developing the disease. Other risk factors that have been suggested include occupational exposure to ionizing radiation, use of oral contraceptives, menopausal estrogen use, immunosuppression and viral infections. Further research is needed to understand more fully the influences of these possible risk factors.

It is also common to find malignant melanoma arising at anatomic sites not usually exposed to the sun. This is not observed with other types of skin cancers. Malignant melanoma is frequently seen in professional and managerial workers, who spend much of their working days indoors. It is believed that for malignant melanoma to occur, the effect of total sun exposure must be modified by other factors such as intense sunburn at an early age, intermittent intense exposure to ultraviolet radiation, or the presence of precursor lesions.

Rates of melanoma also vary by population density, with an increased risk noted in suburbia. This is consistent with the observation that melanoma risk is higher among upper socioeconomic groups. This association also raises the possibility that some of the increased risk may result from more frequent diagnoses among the more affluent who have better access to medical care.

### PUBLIC KNOWLEDGE, ATTITUDES, AND BEHAVIORS

There is little published research describing current knowledge, attitudes, and behaviors with respect to sun exposure and skin cancer. It is clear that large numbers of people purchase suntanning products and sunbathe. The belief is widely held that a tan looks healthy and is viewed by many as physically attractive. Further indication of these attitudes is found in the increasing popularity of commercial tanning salons and home tanning beds.

Despite the popularity of tanning, the increasing use of sunscreens and sunblocking products would indicate a growing awareness of the potential risks involved in sun exposure. Knowledge of these products is limited, however. Stern, Weinstein, and Baker found individuals who reported sunscreen use were actually using products with little or no sun-protective qualities.<sup>2</sup> Johnson and Lookingbill found one third of the adults surveyed reported using sunscreens in order to promote tanning. The ability of sunscreens to stimulate melanogenesis has yet to be proven.<sup>3</sup> More research is needed on current knowledge, attitudes, and behaviors related to the sun and other ultraviolet radiation in order to develop effective educational and motivational techniques to encourage the public to reduce any excess ultraviolet exposure.

\*Adapted from: NY State Dept of Health. *Epidemiology Notes* 1988;3(11).

## LIMITATIONS OF SUNSCREEN USE

Sunscreens are designed to either act as a barrier to sun (eg, titanium dioxide) or to absorb sunlight in the wavelength region (290-320 nm) considered to be responsible for skin cancers. The most popular of the latter type is para-aminobenzoic acid (PABA).<sup>4</sup> A grading system is in place that rates sunscreens according to their sun protective factor (SPF). This represents the ratio of the minimal ultraviolet dose needed to produce erythema 24 hours after exposure with and without sunscreen. The ability of sunscreens to prevent cancers has been demonstrated experimentally in animals. Their effectiveness, however, has not been shown in human studies due to the difficulty in replicating conditions encountered by human users.<sup>5</sup>

Sunscreen effectiveness depends mainly on proper application. A study was conducted involving 50 regular users of sunscreen with previous solar skin damage, a group expected to be highly motivated. It was found that many sun-exposed areas such as eyebrows, ears, behind the ears, hands, and neck were not protected on a daily basis. In addition, sunscreen effectiveness is also limited by other factors such as heat, wind, humidity, perspiration, and water exposure.<sup>5</sup> The risk of skin cancer could conceivably increase if individuals apply sunscreens improperly and depend on the sunscreen for protection while increasing their sun exposure.

The most effective preventive measures are avoiding excess sun exposure and using sun barriers such as clothing and hats. The proper application of sunscreen is necessary for maximal effectiveness. This includes the application

of sunscreen to all sun-exposed parts and frequent reapplication, especially after swimming or physical activity.

## EARLY DETECTION

Early detection of malignant melanoma is important to increase the individual's chance of survival. Melanomas often begin as growths similar to moles that grow in size, change color, become ulcerated, and bleed easily when injured. Malignant melanoma can rapidly metastasize, but is curable if detected early and given proper treatment. Individuals should be reminded of the warning signs of melanoma which include: an asymmetrical mole, where one half does not match the other; ragged, notched, or blurred edges; nonuniform pigmentation; a sudden or continuing increase in the size of a mole.

Exposure to ultraviolet radiation is the most important risk factor for malignant melanoma. The evidence suggests that reduction of unprotected sun exposure could substantially reduce morbidity and mortality from both malignant melanoma and other forms of skin cancer.

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