What is Malignant Melanoma?

Malignant melanoma is a cancer which starts in normal looking skin or where a mole has developed. The epidermis is made up of three types of cells, squamous cells, basal cells and melanocytes. Melanocytes produce melanin which pigments the skin. It is from these cells that malignant melanoma arises.

There are four main types of melanoma which occur in the skin. Superficial spreading melanoma is the most common type and accounts for about 70% of cases. Nodular melanoma grows more quickly and accounts for about 10-20% of cases. Acral lentiginous melanoma accounts for about 2-8% of cases in those with white skin, but 35-60% in those with black skin. It usually occurs in the elderly, on the palms, soles or mucosal surfaces. Lentigo maligna represents about 4-10% of cases, and is commonly found on the head, neck and arms of the elderly.

Other rare types of melanoma include amelanotic melanoma (in which the melanoma loses its pigment and appears as a non-pigmented area), and desmoplastic melanoma (which resembles fibrous scar tissue). The other common types of skin cancer, such as squamous cell and basal cell carcinoma (C44), are less aggressive and more easily treated.

Risk Factors

Exposure To The Sun - UVB and to a lesser extent UVA, provoke skin damage and are a potential cause of cancer. Evidence suggests that several episodes of sunburn due to intense, intermittent sun exposure before teen or adolescent years, significantly increases the risk of developing a melanoma later in life. Coupled with changing lifestyles, foreign 'sunny' holidays are more commonplace and greater recreational time is spent outdoors, increasing levels of UV exposure. Evidence from current studies also shows that exposure to UVA radiation from sun beds is a significant risk factor for melanoma.

Age & Gender - Melanoma is most common in those aged 40-60, and extremely rare in childhood. 20% of cases occur in the age group 15-39 years. Although melanoma can affect most parts of the body, the most common site in women is on the legs, while in men it is on the trunk. Evidence shows that this is related to clothing cover and skin exposure.

Moles - The average young adult will have 25 moles (pigmented lesions). Those with 50-100 moles have an increased risk of developing melanoma as do people with atypical moles (moles that are large and irregular).

Skin Type - People whose skin burns easily are most at risk, typically people with fair, freckled skin, fair or red hair, and blue eyes. It has been estimated that white people are forty times more likely to develop melanoma than those with coloured or black skins.

Family History - The risk of developing melanoma is increased if more than one first degree relative (parent, sibling or child) has been diagnosed with this cancer. Genetic factors affecting skin pigmentation such as Xeroderma Pigmentosum (XP) have a profound upward effect on susceptibility.

Other conditions - Pre-existing medical conditions may increase the risk of melanoma. Organ transplant patients on immuno-suppressant drugs have a significantly increased risk.

Sources: Cancer Research UK, CancerBacup Website

*International Classification of Diseases, 10th Revision

Acknowledgement: Dr David de Berker Chair of Skin Cancer Tumour Panel
For more information please visit www.thescwcis.nhs.uk or telephone 0117 970 6474
**Symptoms**

Most melanomas start in normal skin. Less than a third develop in existing moles. Symptoms include an existing mole or dark patch getting larger, or a new one developing with a ragged or irregular outline that has changed colour or is a mixture of colours. Itching, crusting or bleeding are less common signs and are not specifically indicative of malignant melanoma.

**Diagnosis**

A biopsy is the only way to make a definite diagnosis of melanoma. This involves removing a sample of skin for histological examination. If a mole is malignant, further tests such as an x-ray or magnetic resonance imaging (MRI) scan, may be required to check for spread to other parts of the body.

**Breslow Thickness and Stage**

Once malignant melanoma has been diagnosed, the thickness of the tumour is assessed to decide on the most appropriate treatment and to give an idea of whether the melanoma may metastasise (spread) or re-occur in the future. The most common system used is the Breslow thickness scale where the tumour thickness can be measured down the microscope. Melanomas diagnosed with a Breslow thickness of less than 2mm are easily treatable.

The TNM staging system includes four stages whereby stage I defines a thin melanoma confined to the skin, and stage IV shows evidence of the tumour metastasising beyond the lymph nodes. Alternative staging systems include Clark levels, which remain of debatable significance. Clark level I defines a melanoma confined to the epidermis (*in situ*). Level II shows tumour cells 0.75mm or less within the papillary dermis and/or periadnexal connective tissue sheath. If the cells fill and expand the papillary dermis and are between 0.75mm and 1.4mm in thickness the tumour is classed as level III. Level IV defines a tumour between 1.5mm and 4.0mm in thickness with or without invasion of the reticular dermis. Level V tumours are greater than 4.0mm in thickness and/or invade subcutaneous fat.

**Sources:** CancerBACUP Website, Cancer Net Website and TNM Classification of Malignant Tumours, Fifth Edition

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**Symptoms, Diagnosis, Stage and Treatment**

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**Treatment**

A patient's treatment will be dependant upon the stage at which their cancer is diagnosed.

**Stage I (less than 1.5mm thick)** - The tumour will be removed along with a margin of healthy skin. No additional treatment should be necessary, but the patient must be vigilant and attend regular follow up appointments. Sun protection measures are advised.

**Stage II or III Intermediate/High Risk (1.5-4.5 mm thick)** - The tumour will be removed as in stage 1, and lymph nodes will also be removed for examination. In some specialist hospitals a sentinel node biopsy may be performed to find out if the melanoma has spread to the lymph nodes. Only the sentinel node (the first node through which lymphatic fluid flows from a tumour) is removed for testing, and if it contains melanoma, all the lymph nodes in the area are then removed (block dissection). This method is still being assessed in research trials.

In addition to surgery, the patient may also receive immunotherapy. This form of treatment often involves the use of substances called biological response modifiers (BRMs). The body normally produces these substances in small amounts in response to infection and disease. Vaccines for melanoma are still under trial, but are produced in a laboratory using the patient's own cancer cells (or a combination of many different types of cancer cell). The antibodies that result from this process can then be administered to the patient as treatment to fight any cancer cells in transit. Treatment with Interleukin-2 and Interferon to suppress tumour cells are under trial at present.

Chemotherapy and radiotherapy may also be used. Currently, chemotherapy cannot cure a melanoma that has spread beyond its initial site, but may be used to stop or slow the growth for a time, and radiotherapy can also be helpful. If melanoma returns in the arms or the legs, isolated limb perfusion may be an option. In this case the blood supply to the limb is interrupted and a high dose of chemotherapy given solely to the limb. Elsewhere in the skin high intensity lasers may be used to destroy any returning melanoma cells.

**Stage IV Advanced Cancer (with distant metastases)** - Curative treatment may not be an option as cancer from the original tumour will have spread to other organs such as the lungs, brain or liver. In this case palliation using radiotherapy is an effective way to reduce symptoms.

**Clinical Trials** - Research into new ways of treating malignant melanoma is continually taking place. Patients may volunteer to participate in clinical trials to evaluate promising cancer therapies.

**Sources:** Cancer Research UK and CancerBACUP Website
Average Age Standardised Incidence Rates For 1998-2000 At County Level

Comparisons are shown graphically to illustrate significant variations in incidence rates between malignant melanoma (C43) and the more frequently occurring, but less aggressive non-melanoma (C44) skin cancers.

**Malignant Melanoma (C43)**

**Non-Melanoma Skin Cancers (C44)**

For England and Wales the 1997 national age standardised rate for malignant melanoma in males is 7.5 per 100,000 population, and 8.8 per 100,000 in females. The South West figures are therefore substantially above the national average. The 1997 national figures for non-melanoma skin cancers are currently unavailable.

Source: South West Cancer Intelligence Service Registry Data (County Areas as in 1996)

Age Specific Incidence Rates For The South West In 2000

**Malignant Melanoma (C43)**

**Non-Melanoma Skin Cancers (C44)**

The England and Wales national incidence rate for malignant melanoma in people under 30 years old is 1.3 per 100,000 population, and 1.8 per 100,000 population in the South West. National figures are unavailable for non-melanoma skin cancers.

Source: South West Cancer Intelligence Service Registry Data
For England and Wales the 1990-2000 national age standardised rate for malignant melanoma mortality in males is 2.5 per 100,000 population, and 2 per 100,000 in females. The South West figures are significantly higher than the national average. The South West survival figures are in line with England and Wales national figures for 1 year survival rates, and just above average for 5 year survival rates (national figures from StatBase, www.statistics.gov.uk).

The distribution of malignant melanoma in males and females across England and Wales, shows the greatest incidence for residents in the South West and Oxford regions.

The most common site for developing melanoma is on the trunk in males, and on the lower limbs in females. This body distribution is evident in fair skinned populations of other countries where exposure to the sun is high.