What causes basal cell carcinoma?

The cause of BCC is multifactorial.

- Most often, there are DNA mutations in the patched (PTCH) tumour suppressor gene, part of hedgehog signalling pathway.
- These may be triggered by exposure to ultraviolet radiation.
- Various spontaneous and inherited gene defects predispose to BCC.

What are the clinical features of basal cell carcinoma?

BCC is a locally invasive skin tumour. The main characteristics are:

- Slowly growing plaque or nodule
- Skin coloured, pink or pigmented
- Varies in size from a few millimetres to several centimetres in diameter
- Spontaneous bleeding or ulceration.

BCC is very rarely a threat to life. A tiny proportion of BCCs grow rapidly, invade deeply, and/or metastasise to local lymph nodes.

Types of basal cell carcinoma

There are several distinct clinical types of BCC, and over 20 histological growth patterns of BCC.

Nodular BCC

- Most common type of facial BCC
- Shiny or pearly nodule with a smooth surface
- May have central depression or ulceration, so its edges appear rolled
- Blood vessels cross its surface
- Cystic variant is soft, with jelly-like contents
- Micronodular, microcystic and infiltrative types are potentially aggressive subtypes
- Also known as nodulocystic carcinoma

Thin, translucent rolled border
Multiple microerosions

Basal cell carcinoma

Superficial basal cell carcinoma

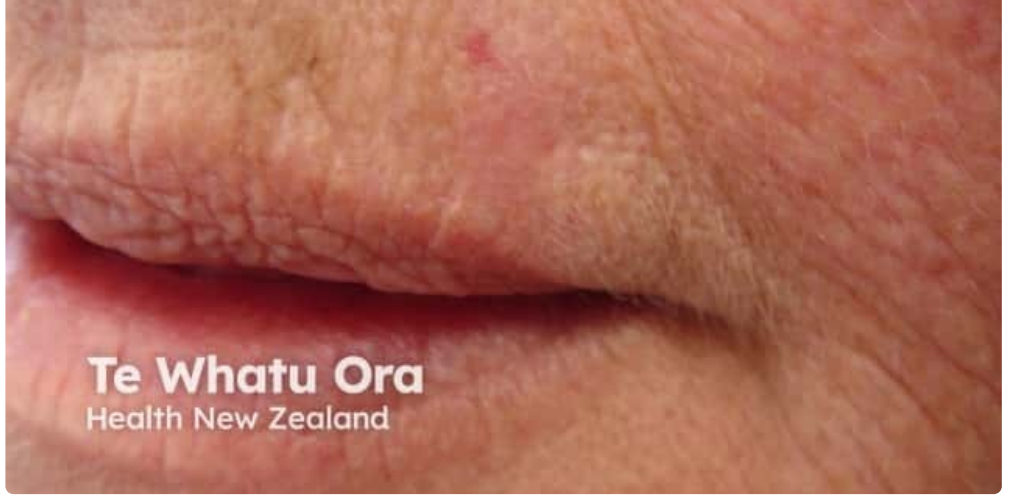
Superficial basal cell carcinoma, face

Superficial basal cell carcinoma, back

Morphoeic BCC

Usually found in mid-facial sites
Waxy, scar-like plaque with indistinct borders
Wide and deep subclinical extension
May infiltrate cutaneous nerves (perineural spread)
Also known as morpheic, morphoeiform or sclerosing BCC

Morphoeic basal cell carcinoma



Morphoeic basal cell carcinoma

Basosquamous carcinoma

Mixed basal cell carcinoma (BCC) and squamous cell carcinoma (SCC)
Infiltrative growth pattern
Potentially more aggressive than other forms of BCC
Also known as basosquamous carcinoma and mixed basal-squamous cell carcinoma

Basal cell carcinoma

Basisquamous cell carcinoma

Complications of basal cell carcinoma

Recurrent BCC

Recurrence of BCC after initial treatment is not uncommon. Characteristics of recurrent BCC often include:

- Incomplete excision or narrow margins at primary excision
- Morphoeic, micronodular, and infiltrative subtypes
- Location on head and neck.

After PDT

After superficial surgery

After fluorouracil

After imiquimod

Excision biopsy

Excision means the lesion is cut out and the skin stitched up.

- Most appropriate treatment for nodular, infiltrative and morphoeic BCCs.
- Should include 3 to 5 mm margin of normal skin around the tumour.
- Very large lesions may require flap or skin graft to repair the defect.
- Pathologist will report deep and lateral margins.
- Further surgery is recommended for lesions that are incompletely excised.

Mohs micrographically controlled excision

Mohs micrographically controlled surgery involves examining carefully marked excised tissue under the microscope, layer by layer, to ensure complete excision.

- Very high cure rates achieved by trained Mohs surgeons.
- Used in high-risk areas of the face around eyes, lips and nose.
- Suitable for ill-defined, morphoeic, infiltrative and recurrent subtypes.
- Large defects are repaired by flap or skin graft.

Superficial skin surgery

Superficial skin surgery comprises shave, curettage, and electrocautery. It is a rapid technique using local anaesthesia and does not require sutures.

- Suitable for small, well-defined nodular or superficial BCCs.
- Lesions are usually located on trunk or limbs.
- Wound is left open to heal by secondary intention.
- Moist wound dressings lead to healing within a few weeks.
- Eventual scar quality variable.

Cryotherapy

Cryotherapy is the treatment of a superficial skin lesion by freezing it, usually with liquid nitrogen.

- Suitable for small superficial BCCs on covered areas of trunk and limbs.
- Best avoided for BCCs on head and neck, and distal to knees.
- Double freeze-thaw technique.
- Results in a blister that crusts over and heals within several weeks.
- Leaves permanent white mark.

Photodynamic therapy

Photodynamic therapy (PDT) refers to a technique in which BCC is treated with a photosensitising chemical, and exposed to light several hours later.

- Topical photosensitisers include aminolevulinic acid lotion and methyl aminolevulinate cream.
- Suitable for low-risk small, superficial BCCs.
- Best avoided if tumour in site at high risk of recurrence.
- Results in inflammatory reaction, maximal 3–4 days after procedure.
- Treatment repeated 7 days after initial treatment.
- Excellent cosmetic results.

Imiquimod cream

Imiquimod is an immune response modifier.

- Best used for superficial BCCs less than 2 cm diameter.
- Applied three to five times each week, for 6–16 weeks.

Targeted therapy.

Targeted therapy refers to the hedgehog signalling pathway inhibitors, vismodegib and sonidegib. These drugs have some important risks and side effects.

How can basal cell carcinoma be prevented?

The most important way to prevent BCC is to avoid sunburn. This is especially important in childhood and early life. Fair skinned individuals and those with a personal or family history of BCC should protect their skin from sun exposure daily, year-round and lifelong.

- Stay indoors or under the shade in the middle of the day.
- Wear covering clothing.
- Apply high protection factor SPF50+ broad-spectrum sunscreens generously to exposed skin if outdoors.
- Avoid indoor tanning (sun beds, solaria).

Oral nicotinamide (vitamin B3) in a dose of 500 mg twice daily may reduce the number and severity of BCCs.

What is the outlook for basal cell carcinoma?

Most BCCs are cured by treatment. Cure is most likely if treatment is undertaken when the lesion is small.

About 50% of people with BCC develop a second one within 3 years of the first. They are also at increased risk of other skin cancers, especially melanoma. Regular self-skin examinations and long-term annual skin checks by an experienced health professional are recommended.