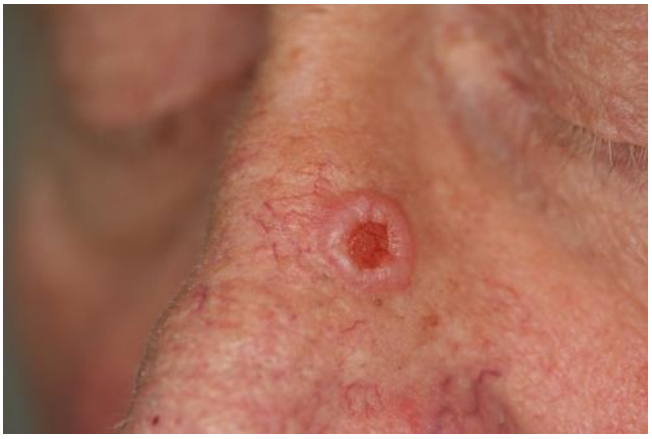
Cancer Association of South Africa (CANSA)

Fact Sheet
On
Basal Cell Carcinoma

Introduction

Basal cell carcinoma, or BCC, is a type of skin cancer. It involves the basal cells of the skin at the bottom of the epidermis. It is very common and accounts for the majority of skin cancers in South Africa. Most Basal Cell Carcinomas are very slow-growing and seldom spread to other parts of the body. It often starts as a small, red, shiny spot or nodule that may bleed occasionally.

[Picture Credit: Basal Cell Carcinoma Picture]



Hogue, L. & Harvey, V.M. 2019.

"Skin cancers are relatively rare in patients with skin of color; however, they are an important public health concern because of disparities in patient outcomes. Gaps in skin cancer knowledge exist because of lack of large-scale studies involving people of color, and limitations in data collection methods and skin classification paradigms. Additional research is needed to address questions regarding risk and reasons for disparate skin cancer outcomes in these patients. We summarize the clinical and epidemiologic features for basal cell carcinoma, squamous cell carcinoma, and melanoma and touch on some of their unique features in patients with skin of color."

Incidence of Basal Cell Carcinoma in South Africa

According to the outdated National Cancer Registry (2016), known for under reporting, the following number of Basal Cell Carcinoma cases was histologically diagnosed in South Africa during 2016:

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Group - Males 2016	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All males	8 263	1:20	21,15%
Asian males	37	1:160	3,79%
Black males	309	1:374	2,41%
Coloured males	830	1:20	18,09%
White males	7 087	1:5	35,40%

Group - Females 2016	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All females	6 160	1:38	14,55%
Asian females	30	1:333	2,41%
Black females	325	1:462	1,65%
Coloured females	634	1:41	13,71%
White females	5 171	1:8	31,91%

The frequency of histologically diagnosed cases of Basal Cell Carcinoma in South Africa for 2016 were as follows (National Cancer Registry, 2016):

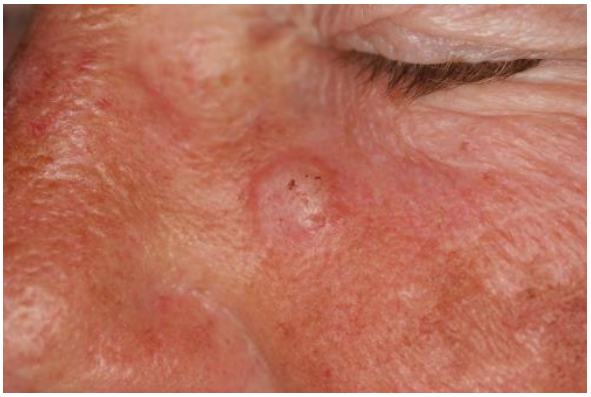
Group - Males 2016	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All males	12	53	264	891	1 655	2 303	2 152	933
Asian males	0	0	0	2	6	10	15	4
Black males	4	6	17	37	66	96	58	25
Coloured males	0	5	19	100	167	245	209	85
White males	8	42	228	752	1 416	1 952	1 870	819

Group - Females 2016	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All females	3	69	273	689	1 188	1 543	1 519	876
Asian females	0	0	1	5	4	7	7	6
Black females	1	17	33	39	66	79	70	21
Coloured females	0	5	26	65	126	152	172	88
White females	2	47	163	581	992	1 305	1 270	761

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for 'all males' and 'all females', however, always reflect the correct totals.

Symptoms of Basal Cell Carcinoma

Basal cell carcinomas usually develop on sun-exposed parts of your body, especially on the head and neck. A much smaller number occur on the trunk and legs. Basal cell carcinomas can also occur on parts of the body that are rarely exposed to sunlight. Although a general warning sign of skin cancer is a sore that won't heal or that repeatedly bleeds and scabs over, basal cell cancer may look like:



[Picture Credit: Basal Cell Carcinoma]

- A pearly white or waxy bump. In darker skinned people, this type of cancer is usually brown or black
- A flat, scaly, brown or flesh-coloured
- More rarely, a white, waxy scar

Bartos, V. 2019.
"An interesting clinical feature of basal cell carcinoma (BCC) of the skin is a marked variation in tumor number, sites, and accrual. Some individuals develop only a single BCC lesion with no impact on health status, while a significant proportion is affected repeatedly with new primary tumors at various body sites. Approximately 29% of patients with a first BCC will develop at least 1 more lesion during their lifetime. The candidate predictors for multiple BCC development include younger age and a superficial BCC subtype at the time of the first diagnosis, red hair phenotype, initial or frequent tumor location on the trunk or on the upper limbs, and male gender. The pathogenesis of multiple BCC development does not seem to be related to greater UVR exposure. Individual genetic susceptibility may have a greater impact than extrinsic factors. In clinical practice, it is meaningful to estimate the probability of new BCC development in patients who have an initial lesion. A reliable prediction model for individualized risk stratification remains a subject of continued research; however, a focus on the risk factor profile is beneficial for clinical screening and may help clinicians to determine the individuals who should be followed up more closely."

Risk Factors for Basal Cell Carcinoma

- The following individuals are more likely to get basal cell carcinoma:
- Having a light-coloured skin
- Having a Freckled skin
- Blue, green, or grey eyes
- Blond or red hair
- Overexposure to X-rays or other forms of radiation
- Having many moles
- Many severe sunburns early in life (especially before age 18)
- Long-term
- daily sun exposure (such as the sun exposure people who work outside receive)

Laga, A.C., Schaefer, I.M., Sholl, L.M., French, C.A. & Hanna, J. 2019.
Objectives: Diagnosis of metastatic basal cell carcinoma (BCC) remains challenging, in part due to its rarity. With the advent of molecularly targeted therapies, recognition of this entity is more important than ever.
Methods: We identified 11 cases of metastatic BCC over a 13-year period. We analyzed these tumors in conjunction with their respective primary tumors by histomorphologic, immunohistochemical, and molecular genetic analyses.
Results: We identified three morphologic patterns of metastasis in BCC. The most common (seven cases) was characterized by completely typical features of BCC. Two cases showed marked squamous differentiation within BCC. The final two cases showed exclusively features of a poorly differentiated carcinoma. One of these was definitively classified by molecular analysis, as both the primary and metastatic tumors harbored the same inactivating PTCH1 mutation.
Conclusions: This study illustrates multiple distinct morphologic patterns in metastatic BCC and highlights the utility of ancillary molecular testing for accurate diagnosis.

Little, M.P., Linet, M.S., Kimlin, M.G., Lee, T., Tatalovich, A., Sigurdson, A.J. & Cahoon, E.K. 2019.
Background: Basal cell carcinoma of the skin (BCC) is the most common cancer in populations of European ancestry. Although consistently linked with basal cell carcinoma of the skin in case-control studies, few prospective cohort studies have evaluated the shape of the exposure-response of basal cell carcinoma associated with cumulative radiant solar ultraviolet exposure (UVR).
Methods: We followed 63,912 white cancer-free US radiologic technologists from entry (1983-1998) to exit (2003-2005) with known ultraviolet irradiance at up to 5 residential locations. Using generalized-additive and relative risk models we analyzed the exposure-response of basal cell carcinomas associated with ambient cumulative ultraviolet radiant exposure using ground-based National Solar Radiation database Average Daily Total Global data and satellite-based National Aeronautics and Space Administration Total Ozone Mapping Spectrometer data.
Results: There were 2151 technologists with an incident primary basal cell carcinoma. Risk of basal cell carcinoma rose with increasing cumulative ultraviolet radiation exposure using both measures, such that 1 MJ cm^{-2} increased basal cell carcinoma risk by 8.48 (95% CI 5.22, 11.09, $p < 0.001$) and by 10.15 (95% CI 6.67, 13.10, $p < 0.001$) per 10,000 persons per year using the Average Daily Total Global and Total Ozone Mapping Spectrometer ultraviolet data, respectively; relative risk was likewise elevated. There was some evidence of upward curvature in the cumulative ultraviolet exposure response using both exposure measures with a greater increase in risk of basal cell carcinoma at higher levels of ultraviolet radiation exposure, but less evidence for curvature in relative risk. There are indications of substantial variation of relative risk with time after exposure and age at exposure, so that risk is highest for the period 10-14 years after ultraviolet radiation exposure and for those exposed under the age of 25.
Conclusions: We observed increases in risk of basal cell carcinoma and a similar exposure-response for ground-based and satellite ultraviolet radiation measures. Our observations suggest that interventions should concentrate on persons with higher levels of ultraviolet radiation exposure.

Reducing the Risk for Basal Cell Carcinoma
While BCCs and other skin cancers are almost always curable when detected and treated early, it is best to prevent them in the first place. Make these sun safety habits part of daily health care routine:

- Stay out of direct sunlight especially between 10:00 and 15:00
- Never stay in the sun until the skin burns
- Avoidance of tanning booths
- Wearing adequate protective clothing, including a broad-brimmed hat
- Wearing UV-blocking sunglasses (minimum UV400 protection)
- Use a broad spectrum 30 to 50 SPF according to skin colour
- Apply sunscreen at least 20 minutes before going out into the sun
- Reapply sunscreen every two hours including after swimming or excessive sweating
- Keep newborns out of the sun until at least 6 months of age
- Examine the skin head-to-toe every month
- See a doctor or other qualified health professional every year for a professional skin examination
- Avoid surfaces that reflect light more, such as water, sand, concrete, and white-painted areas

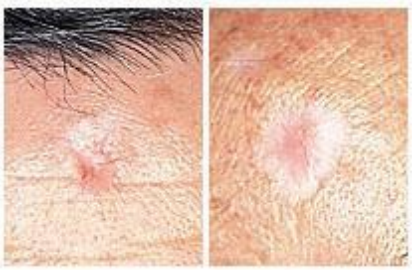
Bijlsma, M.F. & Roelink, H. 2017.

"UVR in sunlight causes mutations that drive basal cell carcinomas. However, the incidence of these tumors plateaus with prolonged exposure, but the incidence of other skin cancers increases. Makarova et al. now show that vitamin D_3 produced in the skin by UVR protects against its oncogenic effects by inhibiting Hedgehog signaling, whereas dietary vitamin D_3 does not."

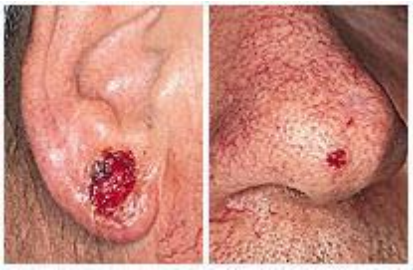
Five Warning Signs of Basal Cell Carcinoma

Frequently, two or more of features are present in one tumour. In addition, BCC sometimes resembles non-cancerous skin conditions such as psoriasis or eczema.

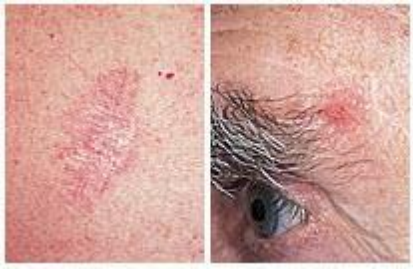
Only a trained physician or health care professional, such as an oncology nurse of specialist in diseases of the skin, can determine for sure. If any of the warning signs are observed or some other worrisome change in the skin is noticed, one should consult a physician immediately.



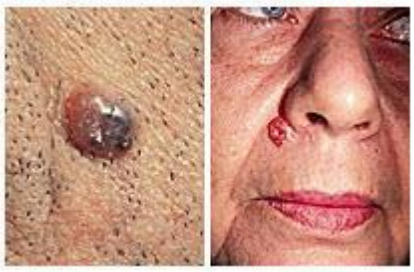
A scar-like area that is white, yellow or waxy, and often has poorly defined borders; the skin itself appears shiny and taut. This warning sign may indicate the presence of an invasive BCC that is larger than it appears to be on the surface.



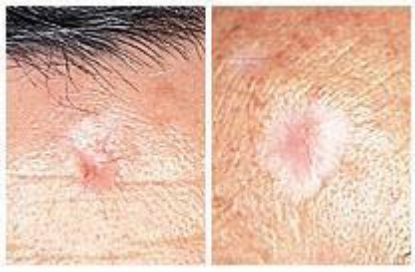
An open sore that bleeds, oozes, or crusts and remains open for a few weeks, only to heal up and then bleed again. A persistent, non–healing sore is a very common sign of an early BCC.



A reddish patch or irritated area, frequently occurring on the face, chest, shoulders, arms, or legs. Sometimes the patch crusts, and it may also itch. At other times, it persists with no noticeable discomfort.



A shiny bump or nodule that is pearly or translucent and is often pink, red, or white. The bump can also be tan, black, or brown, especially in dark-haired people, and can be confused with a mole.



A scar-like area that is white, yellow or waxy, and often has poorly defined borders; the skin itself appears shiny and taut. This warning sign may indicate the presence of an invasive BCC that is larger than it appears to be on the surface.

Diagnosis of Basal Cell Carcinoma (BCC)

Basal Cell Carcinoma of the skin can be mistaken for other, more benign lesions. The only way to accurately diagnose basal cell carcinoma (BCC) of the skin, is with a skin biopsy.

In the event of any skin changes, one should visit a dermatologist for an accurate assessment.

Peris, K., Fargnoli, M.C., Garbe, C., Kaufmann, R., Bastholt, L., Seguin, N.B., Bataille, V., Marmol, V.D., Dummer, R., Harwood, C.A., Hauschild, A., Höller, C., Haedersdal, M., Malvehy, J., Middleton, M.R., Morton, C.A., Nagore, E., Stratigos, A.J., Szeimies, R.M., Tagliaferri, L., Trakatelli, M., Zalaudek, I., Eggermont, A., Grob, J.J.;&European Dermatology Forum (EDF), the European Association of Dermato-Oncology (EADO) and the European Organization for Research and Treatment of Cancer (EORTC). 2019.

"Basal cell carcinoma (BCC) is the most common malignant tumour in white populations. Multidisciplinary experts from the European Dermatology Forum, the European Association of Dermato-Oncology and the European Organization of Research and Treatment of Cancer collaborated to develop recommendations on diagnosis and treatment of BCC. A new classification into 'easy-to-treat (common) BCC and 'difficult-to-treat' BCC is proposed. Diagnosis is based on clinicodermatoscopic features for 'easy-to-treat' BCCs. Histopathological confirmation is mandatory in ambiguous lesions and in BCCs located in high-risk areas. The first-line treatment of 'easy-to-treat' BCC is complete surgery. Microscopically controlled surgery shall be offered for high-risk BCC, recurrent BCC and BCC in critical anatomical sites. Topical therapies (5% imiquimod, 5% fluorouracil) and destructive approaches (curettage, electrocautery, cryotherapy, laser ablation) should be considered in patients with low-risk superficial BCC. Photodynamic therapy is an effective treatment for superficial BCC and thin nodular BCC. The therapy for a 'difficult-to-treat' BCC should preferentially be discussed by a multidisciplinary tumour board. Hedgehog inhibitors, vismodegib or sonidegib, should be offered to patients with locally advanced and metastatic BCCs. Immunotherapy with anti-programmed cell death 1 (PD-1) antibodies is a promising therapeutic option, currently being investigated in clinical trials. Radiotherapy represents a valid alternative to surgery for BCC on

the face, especially in elderly patients. In patients with naevoid basal cell carcinoma syndrome (NBCCS), close surveillance and regular skin examinations are required to diagnose and treat BCCs at early stage. Long-term follow-up is recommended in patients with high-risk BCC subtypes, high-risk sites, multiple BCCs and NBCCS."

Stanoszek, L.M., Wang, G.Y. & Harms, P.W. 2017.
CONTEXT: Basal cell carcinoma (BCC) is the most common human malignant neoplasm and is a frequently encountered diagnosis in dermatopathology. Although BCC may be locally destructive, it rarely metastasizes. Many diagnostic entities display morphologic and immunophenotypic overlap with BCC, including nonneoplastic processes, such as follicular induction over dermatofibroma; benign follicular tumors, such as trichoblastoma, trichoepithelioma, or basaloid follicular hamartoma; and malignant tumors, such as sebaceous carcinoma or Merkel cell carcinoma. Thus, misdiagnosis has significant potential to result in overtreatment or undertreatment.
OBJECTIVE: To review key features distinguishing BCC from histologic mimics, including current evidence regarding immunohistochemical markers useful for that distinction.
DATA SOURCES: Review of pertinent literature on BCC immunohistochemistry and differential diagnosis.
CONCLUSIONS: In most cases, BCC can be reliably diagnosed by histopathologic features. Immunohistochemistry may provide useful ancillary data in certain cases. Awareness of potential mimics is critical to avoid misdiagnosis and resulting inappropriate management.

Staging of Basal Cell Carcinoma
Staging is the process of determining whether cancer has spread and, if so, how far. It is important to know the stage of the disease in order to plan treatment.

Stages are numbered in Roman numerals between 0 and IV:

- **Stage 0.** Cancer is found only in the original tumour in the skin. Stage 0 is also called carcinoma *in situ*
- **Stage I.** The tumour is 2 centimetres wide or smaller.
- **Stage II.** The tumour is larger than 2 centimetres and may have spread from the epidermis into the dermis.
- **Stage III.** The cancer has spread to areas below the skin
-
- **Stage IV.** The cancer can be any size and has spread to distant lymph nodes or

Treatment of Basal Cell Carcinoma
Basal cell carcinoma very rarely spreads to other parts of the body, although it can grow into nearby tissues if not treated. Choice of treatment depends on factors such as the tumour size and location, the patient's age, general health, and preferences.

Treatment may include one or more of the following:

- Curettage and Electrodesiccation
- Simple Excision

- Mohs' surgery
- Radiation Therapy Immune Response Modifiers, Photodynamic Therapy, or Topical
- Targeted Therapy for Advanced Basal Cell

Garbutcheon-Singh, K.B. & Veness, M.J. 2019.
"The global incidence of non-melanoma skin cancer continues to increase as the global population ages with the highest incidence in the world occurring in Australian and New Zealand patients. There are numerous treatment options available for non-melanoma skin cancer patients of which radiotherapy is an efficacious and versatile tissue preserving non-surgical (or medical) option. In patients where excision may not be an option (medically/technically inoperable) or considered less ideal (e.g. cosmetic outcome), radiotherapy offers an excellent option. Following surgery, adjuvant radiotherapy in patients with unfavourable pathology can decrease the risk of recurrence and associated morbidity. Elderly and co-morbid patients with poor performance status can benefit from short-course hypofractionated radiotherapy in the setting where surgery is not an option. As with any modality, radiotherapy has advantages and disadvantages and it is therefore important for clinicians to appreciate these. We aim to present an update for clinicians that manage patients with non-melanoma skin cancer on the role of radiotherapy."

Bertozzi, N., Simonacci, F., Greco, M.P., Grignaggini, E. & Raposio, E. 2019.
AIM: Basal Cell Carcinoma (BCC) alone accounts for 80% of cases of non-melanoma skin cancer (NMSC), which characteristically develops on sun-exposed skin. Indeed the most common site of BCC is the head and neck region (80%). The purpose of this study to review the experience of our center with BCC in the head and neck region to report the sites of occurrence and treatment.
MATERIALS AND METHOD: We retrospectively reviewed 77 patients with BCC of the head and neck, who revived surgical treatment within our plastic surgery division. Basic demographic data, cancer site and size, surgical treatment and histological data were collected. The mean follow-up period was 12 months.
RESULTS: The study population included 37 males and 40 females, with a mean age of 74.12 years. The nasal unit was the main site of BCC (31.82%), followed by the periorbital (13.64%) and cervical (12.5%) units. Primary closure was the main surgical procedure performed (72.5%), followed by local flap (26.1%) and full-thickness skin grafts (1.4%). The safety resection margin ranged from 4.5 to 9 mm, with a 98.7% complete removal rate. Neither recurrence nor any newly-developed lesions were reported during follow-up in any patient.
DISCUSSION: Our work reflects the shift in the incidence of BCC, which now seems to be more frequent in females. Furthermore, our data strengthens the association between UVR exposure and BCC, confirms its predilection to occur on the nasal unit and validates surgical excision as the gold standard treatment for skin cancer.

De Albuquerque, I.O., Nunes, J., Longo, J.P.F., Muehlmann, L.A. & Azevedo, R.B. 2019. Photodynamic therapy in supervicial basal cell carcinoma treatment. 2019 Sep;27:428-432. doi: 10.1016/j.pdpdt.2019.07.017. Epub 2019 Jul 23.
"Basal cell cancer (BCC) is an epithelial neoplasm that arises from basal cells, which constitute the lower layer of the epidermis. Global statistics have shown the progressive increase in the incidence of skin cancer in several countries. The cumulative exposure to solar radiation (ultraviolet B) in the first two decades of life represents the critical risk for the disease. Preclinical and clinical trials have shown photodynamic therapy (PDT) as a promising innovation for treatment of skin cancers, especially to the non-melanoma group. The authors reviewed trials with photodynamic therapy in superficial basal cell carcinoma with different photosensitizers to better evaluate how PDT modifies the natural history of sBCC. We conclude trials should not assess only the immediate efficacy but the

main goal of long-term effectiveness of the protocols in order to generate best evidence for clinical practice."

Complications of Basal Cell Carcinoma
Complications of basal cell carcinoma may include:

- A risk of
- An increased risk of other types of skin
- Cancer that spreads beyond the

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References and Sources Consulted or Utilised

American Cancer Society
http://www.cancer.org/cancer/skincancer-basalandsquamouscell/detailedguide/skin-cancer-basal-and-squamous-cell-treating-basal-cell-carcinoma

Bartos, V. 2019. Development of multiple-lesion basal cell carcinoma of the skin: a comprehensive review. *Sisli Etfal Hastan Tip Bul*. 2019 Nov 19;53(4):323-328. doi: 10.14744/SEMB.2019.08058. eCollection 2019.

Basal Cell Carcinoma
http://pictures.doccheck.com/en/photos/483/2032/nodular-basal-cell-carcinoma/?utm_source=DocCheck&utm_medium=DC%2BWeiterf%C3%BChrende%20Inhalte&utm_campaign=DC%2BWeiterf%C3%BChrende%20Inhalte%20pictures.doccheck.com

Bertozzi, N., Simonacci, F., Greco, M.P., Grignaggini, E. & Raposio, E. 2019. Single center evidence for the treatment of basal cell carcinoma of the head and neck. *Acta Biomed*. 2019 Jan 22;90(1):77-82. doi: 10.23750/abm.v90i1.6395.

Bijlsma, M.F. & Roelink, H. 2017. Skin-derived Vitamin D_3 protects against basal cell carcinoma. *J Invest Dermatol*. 2017 Dec;137(12):2469-2471. doi: 10.1016/j.jid.2017.07.816.

Carcinomaprognosis.com
http://www.carcinomaprognosis.com/basal-cell.php

De Albuquerque, I.O., Nunes, J., Longo, J.P.F., Muehlmann, L.A. & Azevedo, R.B. 2019. Photodynamic therapy in superficial basal cell carcinoma treatment. 2019 Sep;27:428-432. doi: 10.1016/j.pdpdt.2019.07.017. Epub 2019 Jul 23.

DermNet NZ
http://www.dermnetnz.org/lesions/alm.html

Devine, C., Srinivasan, B., Sayan, A. & Ilankovan, V. 2017. Epidemiology of basal cell carcinoma: a 10-year comparative study. *Br J Oral Maxillofac Surg*. 2017 Dec 15. pii: S0266-4356(17)30746-5. doi: 10.1016/j.bjoms.2017.11.018. [Epub ahead of print]. PMID: 29254873.

Ferrucci, L.M., Cartmel, B., Clare, R.A., Choy, C.C., Kershaw, T., Leffell, D.J & Mayne. S.T. 2017. Cross-sectional assessment of ultraviolet radiation-related behaviors among oung people after a diagnosis of melanoma or basal cell carcinoma. *J Am Acad Dermatol*. 2017 Dec 29. pii: S0190-9622(17)32896-7. doi: 10.1016/j.jaad.2017.12.056. [Epub ahead of print] No abstract available. PMID: 29291957.

Garbutcheon-Singh, K.B. & Veness, M.J. 2019. The role of radiotherapy in the management of non-melanoma skin cancer. *Australas J Dermatol*. 2019 Mar 31. doi: 10.1111/ajd.13025. [Epub ahead of print]

Harvard Medical School
http://www.health.harvard.edu/newsletters/Harvard_Health_Letter/2006/May/recognizing_and_treating_basal_cell_carcinoma

Hindawi Publishing Corporation
http://www.hindawi.com/crim/dm/2012/157187/

Hogue, L. & Harvey, V.M. 2019. Basal cell carcinoma, squamous cell carcinoma, and cutaneous melanoma in skin of color patients. *Dermatol Clin*. 2019 Oct;37(4):519-526. doi: 10.1016/j.det.2019.05.009.

Laga, A.C., Schaefer, I.M., Sholl, L.M., French, C.A. & Hanna, J. 2019. Metastatic basal cell carcinoma. *Am J Clin Pathol*. 2019 Nov 4;152(6):706-717. doi: 10.1093/ajcp/aqz089.

Little, M.P., Linet, M.S., Kimlin, M.G., Lee, T., Tatalovich, A., Sigurdson, A.J. & Cahoon, E.K. 2019. Cumulative solar ultraviolet radiation exposure and basal cell carcinoma of the skin in a nationwide US Cohort using satellite and ground-based measures. *Environ Health*. 2019 Dec 27;18(1):114.
doi: 10.1186/s12940-019-0536-9.

Macmillan
http://www.macmillan.org.uk/Cancerinformation/Cancertypes/Skin/Aboutskincancer/Typesofskincancer.aspx

Medline Plus
http://www.nlm.nih.gov/medlineplus/ency/article/000824.htm

Medscape
http://www.medscape.com/viewarticle/556958_13

Medscape Reference
http://emedicine.medscape.com/article/276624-differential

National Cancer Institute
http://www.cancer.gov/about-cancer/treatment/clinical-trials

Paolino, G., Donati, M., Didona, D., Mercuri, S.R. & Cantisani, C. 2017. Histology of non-melanoma skin cancers: an update. Biomedicines. 2017 Dec 20;5(4). pii: E71. doi: 10.3390/biomedicines5040071. Review. PMID: 29261131.

Peris, K., Fargnoli, M.C., Garbe, C., Kaufmann, R., Bastholt, L., Seguin, N.B., Bataille, V., Marmol, V.D., Dummer, R., Harwood, C.A., Hauschild, A., Höller, C., Haedersdal, M., Malvehy, J., Middleton, M.R., Morton, C.A., Nagore, E., Stratigos, A.J., Szeimies, R.M., Tagliaferri, L., Trakatelli, M., Zalaudek, I., Eggermont, A., Grob, J.J.;&European Dermatology Forum (EDF), the European Association of Dermato-Oncology (EADO) and the European Organization for

Research and Treatment of Cancer (EORTC). 2019. Diagnosis and treatment of basal cell carcinoma: European Consensus-based Interdisciplinary Guidelines. *Eur J Cancer*. 2019 Sep;118:10-34. doi: 10.1016/j.ejca.2019.06.003. Epub 2019 Jul 6.

Piva de Freitas, P., Senna, C.G., Tabai, M., Chone, C.T. & Altemani, A. 2017. Metastatic basal cell carcinoma: a rare manifestation of a common disease. *Case Rep Med*. 2017;2017:8929745. doi: 10.1155/2017/8929745. Epub 2017 Nov 27. PMID: 29279714.

Skin Cancer Foundation
http://www.skincancer.org/skin-cancer-information/basal-cell-carcinoma/the-five-warning-signs-images#panel1-5
http://www.skincancer.org/skin-cancer-information/basal-cell-carcinoma/bcc-prevention-guidelines
http://www.skincancer.org/skin-cancer-information/basal-cell-carcinoma/bcc-treatment-options
http://www.skincancer.org/skin-cancer-information/mohs-surgery/mohs-overview
http://www.skincancer.org/skin-cancer-information/ask-the-experts/can-darker-skinned-people-get-skin-cancer

Stanoszek, L.M., Wang, G.Y. & Harms, P.W. 2017. Histologic mimics of basal cell carcinoma. *Arch Pathol Lab Med*. 2017 Nov;141(11):1490-1502. doi: 10.5858/arpa.2017-0222-RA.

PubMed Health
http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001827/

Skin Cancer Foundation
http://www.skincancer.org/skin-cancer-information/basal-cell-carcinoma/bcc-prevention-guidelines
http://www.skincancer.org/skin-cancer-information/ask-the-experts/can-darker-skinned-people-get-skin-cancer

Stanford Cancer Institute
http://cancer.stanford.edu/skincancer/basal_cell_carcinoma/staging.html
University of Maryland Medical Center
http://www.umm.edu/imagepages/9099.htm#ixzz2MZsVBIKB

Waldman, R.A. & Grant-Kels, J.M. 2017. Malignant skin tumors: kids are not just little people. *Clin Dermatol*. 2017 Nov - Dec;35(6):517-529. doi: 10.1016/j.clindermatol.2017.08.003. Epub 2017 Aug 4. PMID: 29191344.