RADIOTHERAPY DEPARTMENT

CLINICAL PROTOCOL

SKIN MALIGNANCIES

PURPOSE: To ensure that there is a documented Protocol for the treatment of Skin Malignancies which is clearly defined within a consistent and standard process.

SCOPE: Basal Cell Carcinoma
Squamous Cell Carcinoma
Bowen's disease
Merkel cell
T cell skin lymphoma
DLBCL (Diffuse Large B cell Lymphoma) Testis
Palliative – metastases
Metastatic skin deposits
Breast buds
Mesothelioma drain sites
Re current breast lesions
Keloids
Extra Mammary Paget's disease (EMPD)
Malignant Melanoma (Skin graft recurrence)
Lentigo maligna melanoma
Information to patients
Skin Care

AUTHORISED PERSONNEL: Consultant Clinical Oncologists
Specialist Registrars
Therapeutic Radiographers

RELATED PROCEDURES: **Refer to Departmental Procedures**

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Issued by: Carole Goodwill QMR

MANAGEMENT OF SKIN MALIGNANCIES

JUSTIFICATION

Recommendation from MDT meetings and appropriate investigations including examination/ examination under anaesthetic, surgery/ biopsy, review of histology, pathology, staging and radiological investigations (MRI, PET CT, Staging CT, Ultrasound as appropriate). The decision regarding treatment depends on staging, histology, performance status and patient choice.

Investigations

- Histology/cytology (skin scrape, punch biopsy, excision biopsy)
- FNA of enlarged lymph nodes
- Imaging in high risk sites to delineate deep extent and bone or cartilage involvement
- Neck ultrasound or CT neck for high risk sites involving the head & neck region i.e. ears, nasolabial fold, lips

Target volume

All patients are examined under a bright light with a magnifying glass/ dermatoscope

- **Squamous Cell Carcinoma** [SCC]: Planning target volume (PTV) = Gross tumour volume (GTV) + 1cm margin all around laterally & 5mm or more deep according to clinician's discretion. **NB** consider electrons for tumour thickness over 5mm and if the tumour is attached to bone or cartilage or is up against bone, may need discussion with physics.
- **Basal cell carcinoma** [BCC]: PTV = GTV + 0.5cm margin laterally (0.7cm-1cm if morphoeic, large, infiltrative or poorly defined) and 0.5 cm deep margin. If on mobile skin a 0.25cm deep margin is adequate.
- **Electron therapy** an additional 0.5cm-1cm margin is required laterally to account for penumbra of the electrons.
- Clinical photographs may need to be taken for record, clearly indicating the site, extent of lesion and orientation of the photograph.

Energy / modality

- Aim to cover PTV with the 90% isodose, both laterally and at depth.
- **Low energy photons** or **electrons** are used depending on depth, site, size & availability.
- Avoid electrons near eyes (lateral scatter) and for field sizes <4cm.
- If the external auditory meatus is included in the electron field, a wax block should be used to avoid funnelling effect on the eardrum.
- Be aware of using superficial X-rays over cartilage & bone due to risk of radio necrosis (absorption by photoelectric effect).

- Use of the appropriate thickness of lead shielding for the treatment energy should be used.

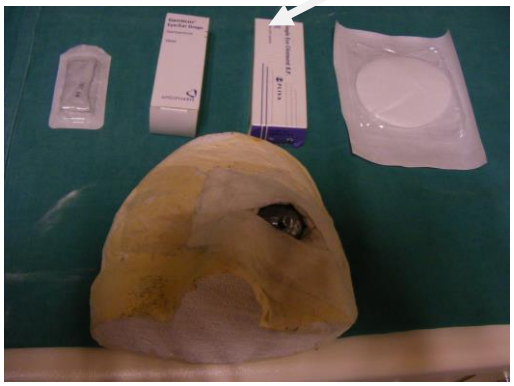
Types of shielding:

- Intranasal shielding using lead, the thickness of lead depends on the treatment energy used, to protect the cartilage and mucosa of the nasal septum, eg. When treating ala nasi lesions.

- Intra oral pb shielding is used, this shield is inserted behind the lip, for the radiotherapy treatment to lesions of the lip, this is to protect the gums and teeth from the exit beam of radiation.

- Build up using a tissue equivalent material (Wet gauze or wax (sxr), wax/ wet gauze also used for electrons) may have to be used to make up for lost tissue, thickness will be dependent on the energy used this can be up to 10 Mev electrons, or energies (40-120Kv) for superficial and 150-400kv for orthovoltage.

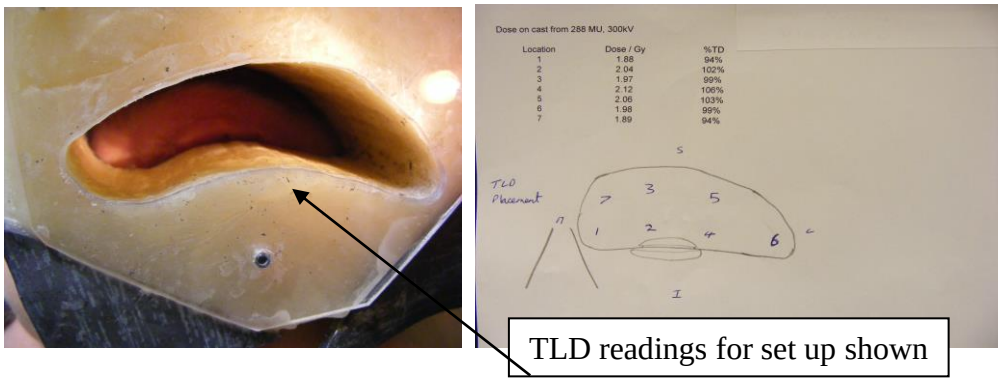
- Internal eye shield for lesions near the eye.



Post auricular shielding (shown for electrons)

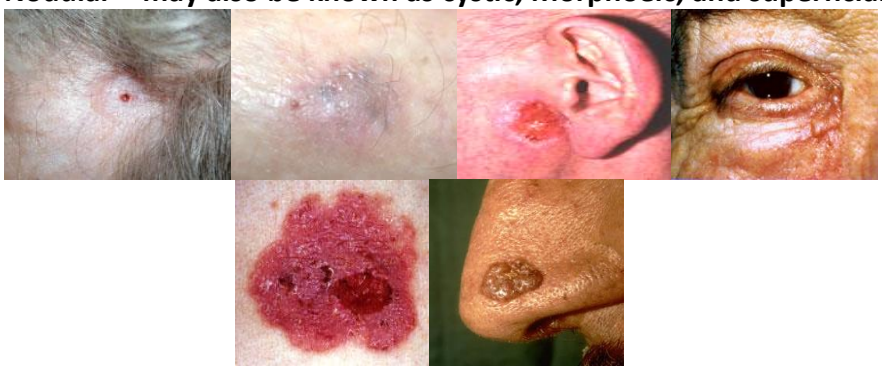
- Be aware of differences in SSD's over the treatment field and adjust dose calculations accordingly.

- TLD readings may be required if there are significant gradient changes over the treatment area.



BASAL CELL CARCINOMA

Types:
Nodular – may also be known as cystic, Morphoeic, and superficial



- Often found on the face or sun exposed areas on the body.
- Presents as small translucent growth, often with rolled edges
- May be pigmented (brown)/ there may be small blood vessels on surface
- May become open sore or bleed spontaneously then seem to heal over
- Sometimes partly pigmented - may be difficult to distinguish from melanoma

Clinical situation: Small superficial tumours (1-3cm)

Energy: SXT (90-170Kv) or Electrons

Dose Gy	Fractions	Fr/week	Overall time
18	1	1	1 day

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Clinical situation: Medium to larger superficial tumours (3-5cm)

Energy: SXT (90-170Kv) or Electrons

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
35	**5**	**5**	**1 week**

Clinical situation: for larger tumours:

40	10	5	2 weeks
	OR		
45	15	5	3 weeks

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Clinical situation: Frail elderly patients

Energy: SXT (90-170Kv) or Electrons

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
18 - 20	1	1	1 day
30	3	1	2 weeks

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Clinical situation: Large superficial tumours (>5cm)

Energy: SXT (90-170Kv) or Electrons

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
45	10	5	2 weeks
	***		
	OR		
50	20	5	4 weeks
	OR		
60	30	5	6 weeks

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(Electrons are best avoided for small < 4.0.cm diameter or equivalent) fields

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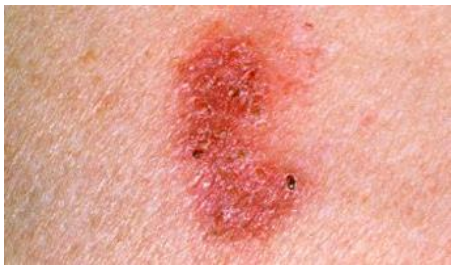
Treatment doses for Bowens disease (squamous cell carcinoma in situ) of the skin.



This is a type of cancer that spreads outwards on the surface of the skin. By contrast, invasive squamous cell carcinomas can grow inward and spread to the interior (lymph glands etc) of the body.
Bowen's disease looks like scaly reddish patches that may be crusted, can be mistaken for rashes, eczema, fungus or psoriasis (ref: pre cancerous skin lesion - on line)
Usually occurs on the hands and face but can occur on the lower legs, where there is more likely to be problems with healing (especially in older people)
Radiotherapy has good evidence of efficacy but poor healing on the lower leg.
Radiotherapy should be avoided at this site.

Treatment dose regimens using orthovoltage x rays:
Radical:
15Gy in a single exposure
26Gy in 4-5 treatments
35Gy in 7-10 treatments
45Gy in 15 treatmentS
Non –radical:
25Gy in 10 treatments reduces the risk in Grade 4 toxicity to extremity lesions without compromising cure.
(http://astro.abstractsnet.com/handouts/000535_2399post.pdf)

Squamous cell skin lesions (**1A category) unless otherwise stated.**

SQUAMOUS CELL CARCINOMA OF THE SKIN (excluding LIP)

Squamous cell
Of the scalp

Clinical situations; Dose; Fractionation; Overall time: As for BASAL CELL CARCINOMA

	Dose Gy	Fractions	Fr/week	Overall time
Also	50 Gy	15	5	3 weeks
Frail patients	36 Gy	4	1	3 weeks

Follow up: 4-6 weeks post treatment; maintain follow up for at least 2 years

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LIP – SQUAMOUS CELL CARCINOMA

Technique: Direct field; Pb cut out and internal Pb gum shield

Energy: 170 or 300KV or electrons depending upon thickness of tumour

Dose Gy	Fractions	Fr/week	Overall time
50	15	5	3 weeks

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Clinical situation: Small lip tumours

Energy: SXT (90-170Kv) or Electrons

Dose Gy	Fractions	Fr/week	Overall time
42.5	10	5	2 weeks

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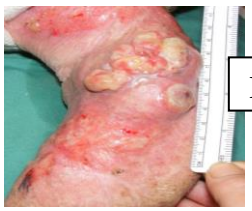
Treatment doses for Merkel cell cancers (MCC) of the skin:

Merkel cell skin lesions are classed as a **1A category**. These types of skin tumours are aggressive and more prone to spread to the lymphatic areas if not treated early.

Merkel cell is a rare tumour of the skin. Surgery is usually the treatment option of choice, followed by radiotherapy to prevent recurrence.



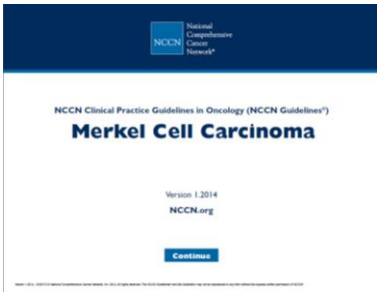
Merkel cell

Merkel cell carcinoma (MCC) is a radiosensitive tumor, and radiotherapy is currently used as an adjuvant treatment. Most clinical studies demonstrate better local control rates with adjuvant radiotherapy which may be considered after radical surgery especially if the tumour is large, invading deeply or recurrent.

The recommended dosing schedule is:

45-50 Gy for 5 weeks

56-65 Gy for tumors with positive margins (http://emedicine.medscape.com/article/870538-treatment)



Also observe the NCCN guidelines

National Comprehensive Cancer Network®

NCCN Guidelines Version 1.2014
Merkel Cell Carcinoma

NCCN Guidelines Index
Merkel Cell Carcinoma TOC
Discussion

PRINCIPLES OF RADIATION THERAPY

Dose recommendations for radiation therapy:

• Primary Site:	
▸ Negative resection margins	50-56 Gy
▸ Microscopic (+) resection margins	56-60 Gy
▸ Gross (+) resection margins or unresectable	60-66 Gy
• Nodal Bed:	
▸ No SLNB or LN dissection	
◊ Clinically (-) but at risk for subclinical disease	46-50 Gy
◊ Clinically evident lymphadenopathy	60-66 Gy[1,2]
▸ After SLNB without LN Dissection	
◊ Negative SLN biopsy: axilla or groin	Radiation not indicated[3]
◊ Negative SLN biopsy: head and neck, if at risk for false-negative biopsy	46-50 Gy[3]
◊ Microscopic N+ on SLNB: axilla or groin	50 Gy[4]
◊ Microscopic N+ on SLNB: head and neck	50-56 Gy[4]
▸ After LN Dissection	
◊ Lymph node dissection: axilla or groin	50-54 Gy[5]
◊ Lymph node dissection: head and neck	50-60 Gy

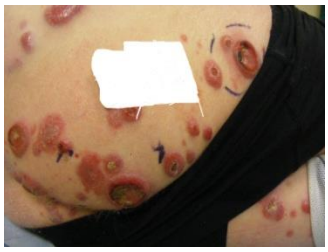
- Expeditious initiation of adjuvant radiation therapy after surgery is preferred as delay has been associated with worse outcomes.
- All doses are at 2 Gy/day standard fractionation. Bolus is used to achieve adequate skin dose. Wide margins (5 cm) should be used, if possible, around the primary site. If electron beam is used, an energy and isodose line (eg, 90%) should be used that will deliver adequate lateral and deep margins.
- Extremity and torso MCC: After negative SLNB and wide local excision (WLE), in most instances, radiation therapy is given to the primary site only. SLNB dictates the need for regional irradiation. If SLNB is negative, then regional nodal basins can be observed. If SLNB is not performed or is unsuccessful, consider irradiating nodal beds for subclinical disease. Irradiation of in-transit lymphatics is often not feasible unless the primary site is in close proximity to the nodal bed.
- Head and neck MCC: Risk of false-negative SLNB is higher, due to aberrant lymph node drainage and frequent presence of multiple sentinel node basins. The radiation field to treat the primary site is often overlying the draining lymph node beds. Treatment options for clinically node-negative MCC of the head and neck include:
  - Perform SLNB and WLE. If SLNB is negative, options are to irradiate the primary site ± nodal beds and in-transit lymphatics or observe;
    OR
  - Perform WLE without performing SLNB and irradiate the primary tumor site, in-transit lymphatics, and regional nodal sites.
- Palliation: A less protracted fractionation schedule may be used in the palliative setting, such as 30 Gy in 10 fractions.

[1]Lymph node dissection is the recommended initial therapy for clinically evident adenopathy in the axilla or groin, followed by postoperative radiation if indicated.
[2]Shrinking field technique.
[3]Consider RT when there is a potential for anatomic (eg, previous history of surgery including WLE), operator, or histologic failure (eg, failure to perform appropriate immunohistochemistry on SLNs) that may lead to a false-negative SLNB.
[4]Microscopic N+ is defined as single node involvement that is neither palpable clinically nor abnormal by imaging criteria that microscopically consists of small metastatic foci without extracapsular extension.
[5]Postoperative irradiation is indicated for multiple involved nodes or extracapsular extension.

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

MCC-B

T Cell skin lymphoma - mycosis fungoides :



These skin tumours can be treated using superficial Kv energy Xrays, showing a good response post radiotherapy treatment.
For mycosis fungoides and Sezary syndrome that are troublesome lesions (especially single lesions);

The photon energy used will be dependent on the thickness of the presented lesion and in confirmation, using the % depth dose charts for the field area being treated.

The treatment is planned carefully around the examined skin lesion/s (GTV) using a treatment margin (PTV) of 0.5 -1.0 cm.

A customized lead cut out may be needed if the treatment area is irregular in shape. The correct thickness of lead should be stated for the energy of x rays used.

The other form of radiation used for skin lymphomas is called *electron beam radiation*. It uses a beam of electrons that only penetrate as far as the skin, so there are few side effects to other organs and tissues.

Treatment doses:

Clinical situation: For small very superficial lesions

Energy: SXT (90-170Kv) or Electrons

Dose Gy	Fractions	Fr/week	Overall time
6Gy	1	5	1 day

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Larger deeper lesions can be given a treatment dose of:

Dose Gy	Fractions	Fr/week	Overall time
8Gy	2	5	2 days
12GY	3	5	3 days

Daily dose of 4 Gy

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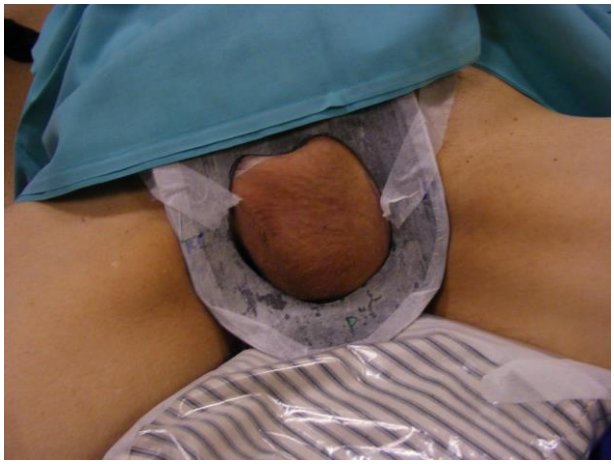
DLBCL – Testis

DLBCL is a high-grade non-Hodgkin lymphoma that has developed from B cells. It is called 'diffuse large B-cell lymphoma' because when it is examined under a microscope the cancerous lymphocytes, are abnormally large and they are spread diffusely throughout the biopsy specimen rather than being found in clusters. (http://www.lymphomas.org.uk/about-lymphoma/what-lymphoma/glossary#lymphocytes).

Treatment may involve the use of Rituximab-CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) often followed by radiotherapy or high-dose chemotherapy regimens. Stem cell transplants may be offered if this type of lymphoma relapses.

If the DLBCL has infiltrated the cerebrospinal fluid, methotrexate chemotherapy can be given directly into the spinal cord. DLBCL is very responsive to treatment with a large percentage of people being cured. (http://www.leukaemia.org.au/blood-cancers/lymphomas/non-hodgkin-lymphoma-nhl/diffuse-large-b-cell-lymphoma).

Radiotherapy given to the contra lateral testis has shown to prevent testicular relapse. (http://jco.ascopubs.org/content/early/2011/06/03/JCO.2010.31.4187.full.pdf)(http://jco.ascopubs.org/content/29/20/2766)



Radiotherapy set up for scrotal/testis DLBCL

Clinical situation:

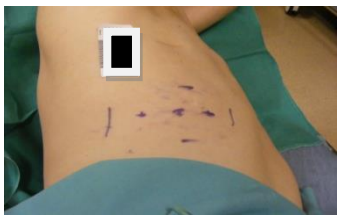
The treatment dose can be given as:

Energy: Orthovoltage 300Kv

Dose Gy	Fractions	Fr/week	Overall time

24Gy	12	5 day	2.5 weeks

Rib and other bone metastases: palliative (pain relief) radiotherapy.



The treatment field area is planned using anatomical, radiological or bone scan information. The planned treatment area is manually marked on the treatment set, using the indication of pain expressed by the patient during examination of the treatment area. The treatment area includes the planned treatment volume (PTV), which includes a 1-2 cm margin around the painful area.

The treatment energy used is in the ortho voltage range using 300Kv photons. This energy of X rays gives high absorption in bone tissue. The main interaction process at lower radiation energies is the photoelectric effect, which induces the absorbed dose in bone to be higher than the dose in the surrounding tissue.

Clinical situation:

The treatment dose for treating bone metastases can be given as:

Energy: Orthovoltage 300Kv

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
8Gy - 10 Gy 1	5	1 day	

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20Gy	5	5	1 week

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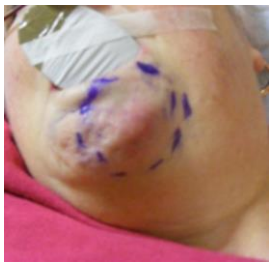
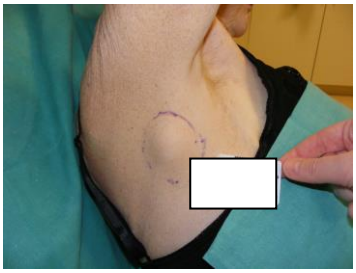
Metastatic skin deposits commonly seen in lung and breast:

These metastatic skin deposits tend to present as raised lesions (bumps) under the skin.





Visual examination and palpation will indicated the actual size and depth of the lesion. A treatment margin (PTV) of 1-2cms around the examined lesion is marked. The treatment energy will be decided by the depth of the lesion and confirmation using the % depth dose charts.

Clinical situation:

Energy: SXT – DXT (90: 170: 300) Kv
Depending on the depth of lesion

The treatment dose for treating metastatic skin deposits can be given as:

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
8Gy - 10 Gy 1	5	1 day	

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For larger treatment areas -

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
20Gy	5	5	1 wk

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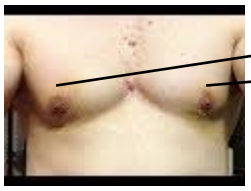
Breast buds irradiation:



Prophylactic breast irradiation can be given as an attempt to prevent gynaecomastia and possible induced breast pain before taking bicalutamide also known as Casodex. The etiology is thought to be an altered ratio of estrogen to androgen levels.[2,3]
(http://jco.ascopubs.org/content/24/18/2958.full#ref-3)

Treatment can also be given using electrons. The energy of electrons will be dependent on the depth of breast tissue involved.

The treatment area is planned using a circular field which covers the nipple and raised breast tissue.

The breast tissue can be examined by pinching breast tissue between the thumb and forefinger - true proliferation can be felt as a distinct disc of tissue under the skin.

The energy of X rays used for the treatment will be dependent on the depth of breast tissue, confirmation using the % Depth dose charts, usually 170Kv-300Kv photons.

A single treatment dose of 8Gy – 10Gy can be given to the right and left breast fields. Patients are advised to start the Casodex post radiotherapy

Clinical situation:

Energy: DXT (170: 300) Kv
Depending on depth of breast tissue

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
8 Gy – 10Gy 1	5	1 day	

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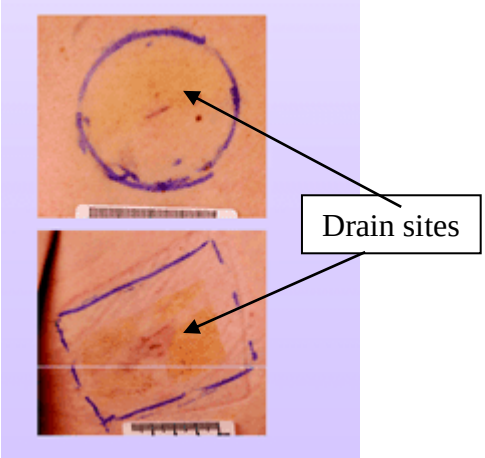
Drain sites irradiation for Mesothelioma:



Patients with mesothelioma usually require pleural aspiration, pleural biopsy or thoracoscopy during diagnosis. Following these procedures there is a recognised risk of malignant seeding along the track of the needle or trocar, causing subcutaneous nodule formation. Prophylactic drain site irradiation is currently used to prevent tumour nodule formation in pleural mesothelioma.

A treatment margin of >2 cm around the drain site is marked.

A treatment dose of 21Gy in 3 fractions is given, on alternate days, using 300Kv photons.

Clinical situation:

Energy: DXT (170: 300) Kv

Dose Gy	Fractions	Fr/week	Overall time
21 Gy	3	3	1 week

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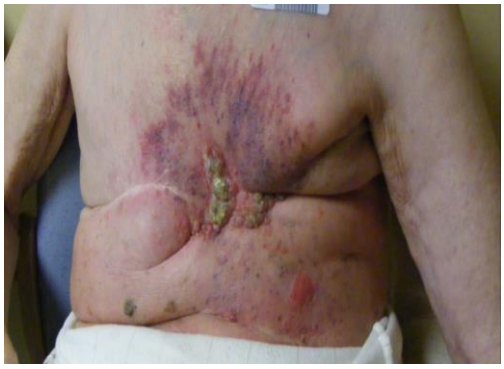
Recurrent breast lesions:

Palliative treatment to regress growth



Clinical situation:

Energy: DXT (170: 300) Kv

Depending on %depth dose required

Treatment doses:

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
8 Gy	1 5	1 day	

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Dose Gy	**Fractions**	**Fr/week**	**Overall time**
36GY	6	1	5 weeks

Once weekly – for elderly patients presenting with large /deep tumours

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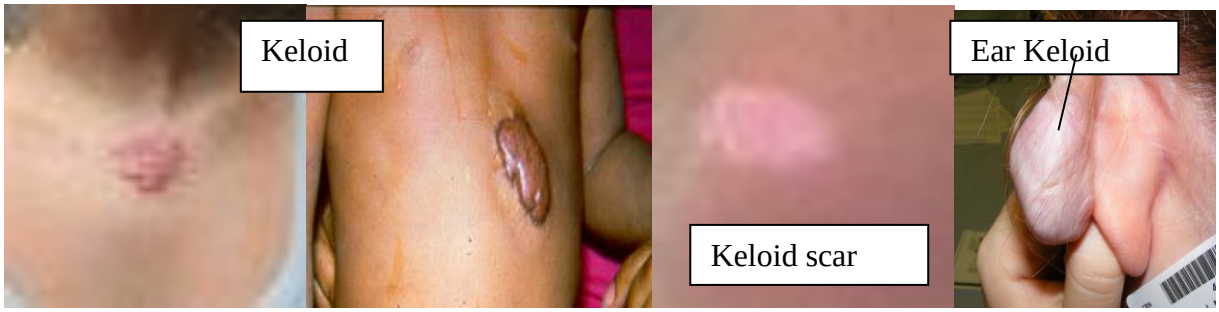
KELOIDS

NON – MALIGNANT
Radiotherapy is given Postoperative to the **keloid scar** to prevent re growth of epithelial tissue: atypical fibroblasts (collagen)



Clinical situation:

Energy: SXT (90Kv) or Electrons

Dose Gy	Fractions	Fr/week	Overall time
12	2	1	1 week *

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Keloids: 1st fraction given within 24 hours of surgery & 2nd 1 week later
The PTV is planned with a field to cover the keloid scar adequately. This is a prophylactic treatment to prevent recurrence of the keloid reforming.

Keloids form within scar tissue characterized by a collection of atypical fibroblasts (collagen) tending to overgrow in the affected area, sometimes producing a lump many times larger than that of the original scar. Although they usually occur at the site of an injury, keloids can also arise spontaneously. They can occur at the site of a piercings and even from something as simple as a pimple or scratch. They can also occur as a result of severe skin scaring or infection at a wound site,

Extra Mammary Paget's disease (EMPD)

Extramammary Paget disease (EMPD) is a rare cutaneous adenocarcinoma described as an apocrine gland tumour occurring in both a benign and a malignant form, with metastatic potential (1). The areas of the body affected—vulva, perianal region, penis, scrotum, perineum, and axilla—generally contain large concentrations of apocrine glands.

Perianal Paget disease occurs more commonly in women and usually begins in or after the 5th decade (3). In contrast to Paget disease of the nipple commonly associated with an underlying ductal carcinoma.

Radiotherapy has successfully been used for curative intent in patients not considered suitable for surgery, and for the use of postoperative radiotherapy after resection (2,3,4).

A photon or electron field directed to the affected region of the vulval and perineum area can be used to achieve local control.

A review of literature for cases of EMPD treated by radiotherapy in which dosage, modality, and outcomes are described below

TABLE I Radiotherapy for perianal Paget disease (EMPD)

Reference	*Patient*		*History*	*Treatment type*	*Dose/ fractions*	*Modality*	*Outcome*
	Age	*Sex*					
Lock *et al.*, 1977[17]	85	Female	PPD 11×5 cm	Primary	14.4 Gy/12	Neutrons	No recurrence at 23 months
Secco *et al.*, 1984[16]	85	Male	Chemoradiation	Primary	30 Gy/15	—	No recurrence at 30 months
Jensen *et al.*, 1988[15]	—	—	—	—	30 Gy	—	Local recurrence at 6 months
Thirlby *et al.*, 1990[14]	69	Male	Incomplete resection and chemoradiation	Primary	50 Gy/25	20 MeV electrons	No recurrence at 14 months
Brierley and Stockdale, 1991[12]	76	Female	—	Primary	54 Gy/12	11 MeV electrons	No recurrence, died 13 months post RT
	84	Female	—	Primary	50 Gy/25	100 kV X-rays	No recurrence at 31 months
Besa *et al.*, 1992[11]	72	Female	PPD 4.5 cm	Primary	56 Gy/28	^{60}Co γ-rays	No recurrence at 21 months
Goldman *et al.*, 1992[13]	75	Male	PPD 3×3.5 cm, incomplete excision	Adjuvant	66 Gy/33	—	No recurrence at 16 months
Amin, 1999[5]	71	Male	PPD 13×12 cm, 4 prior partial excisions	Recurrence	50 Gy/10	300 kV X-rays	No recurrence at 10 years
Velenik *et al.*, 2008[18]	80	Female	PPD 8×5 cm	Primary	45 Gy/15	80 kV X-rays	No recurrence at 28 months

RT = radiotherapy.

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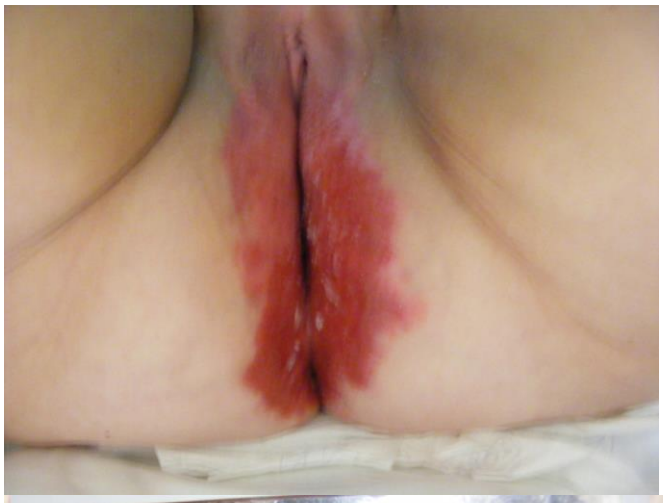
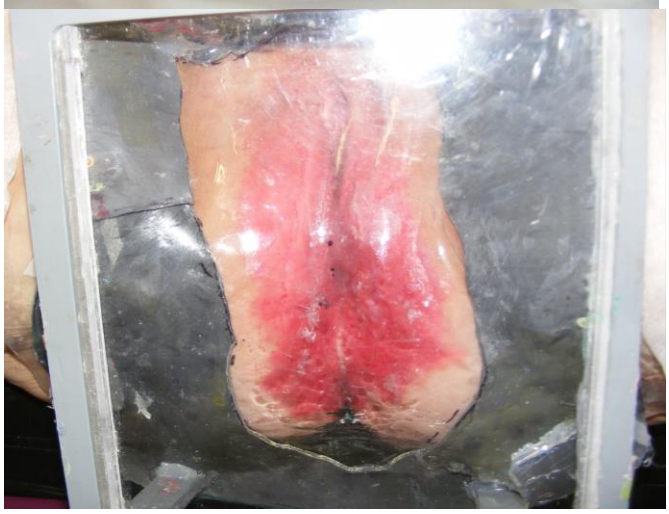
4. Besa P, Rich TA, Delclos L, Edwards CL, Ota DM, Wharton JT. Extramammary Paget's disease of the perineal skin: role of radiotherapy. *Int J Radiat Oncol Biol Phys* 1992;24:73–8.



EMPD of the vulva and perianal skin prior to starting radiotherapy



Patient 'set up' cast with platform, used in radiotherapy treatment.

- Due to the extended SSD (standoff) and treatment field gradient TLD's were done to verify the overall doses across the field area.

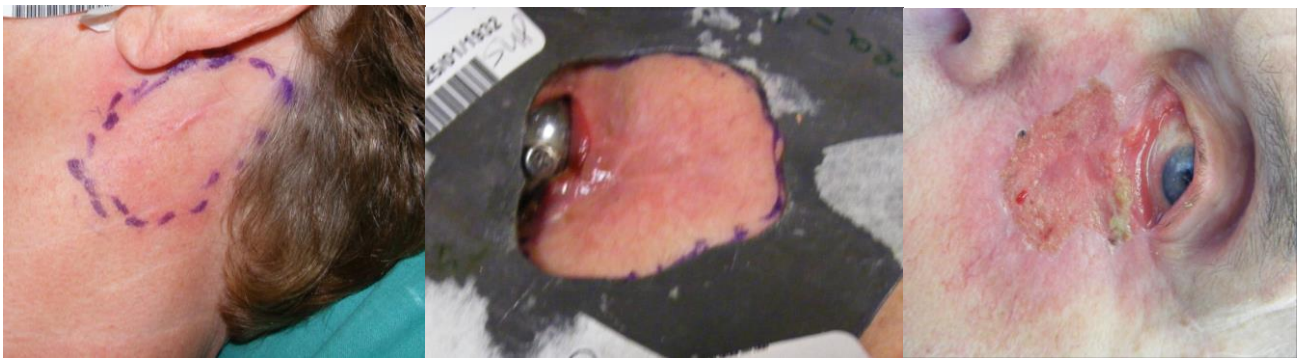
Clinical situation: Vulva and perianal EMPD

Energy: SXT (170) or Electrons

Dose Gy	**Fractions**	**Fr/week**	**Overall time**	
45GY	15	5	3weeks	*
50-60Gy	20-30	5	5-6 weeks	

***

Surgical or skin graft recurrence:



For certain types of skin cancers, typically BCC and SCC, tissue may be taken away depending on the size and type of the cancer. A skin graft is used where a thin sheet of skin is removed from the donor site and placed over the area that needs to be covered.
In the event that the skin cancer has re occurred on a surgical site, then radiotherapy may be an option to prevent further growth and cure the skin cancer.

Clinical situation:

Energy: SXT (90-170Kv) or Electrons depending on the depth dose required

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
40Gy	10	5	2 weeks
		***	

Malignant Melanoma

It is known that UV light damages DNA inside skin cells and these changes can cause normal skin cells to become cancerous.
One of the commonest skin cancers is Melanoma.
The **ABCDE** rule is a guide to the usual signs of melanoma. Be aware of any of the following features:

- **A is for Asymmetry:** One half of a mole or birthmark does not match the other.
- **B is for Border:** The edges are irregular, ragged, notched, or blurred.
- **C is for Color:** The color is not the same all over and may include shades of brown or black, or sometimes with patches of pink, red, white, or blue.
- **D is for Diameter:** The spot is larger than 6 millimeters across (about ¼ inch – the size of a pencil eraser), although melanomas can sometimes be smaller than this.
- **E is for Evolving:** The mole is changing in size, shape, or color.

There are 2 scales that look at how deeply the melanoma has gone into the skin. These are called the

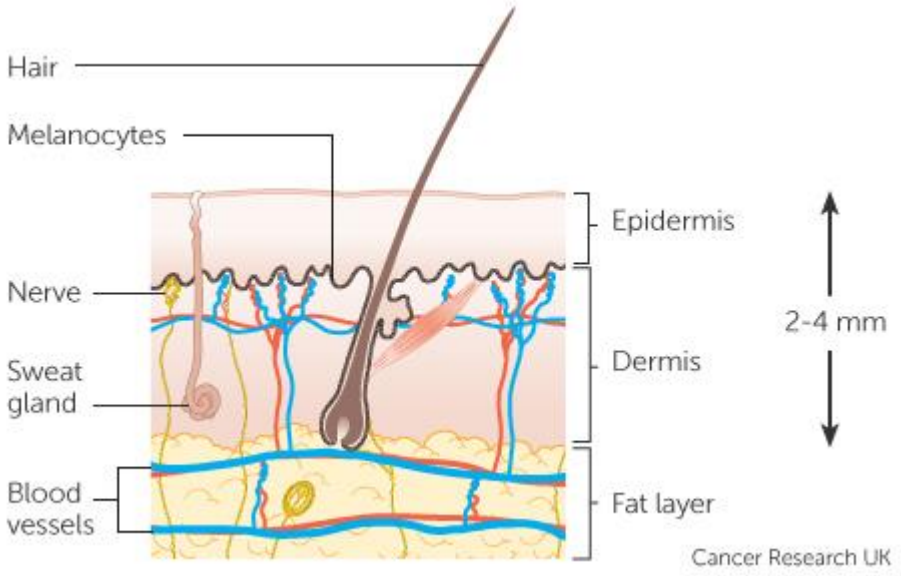
- Clark scale
- Breslow scale

When a melanoma is removed, the sample is sent to a laboratory. A pathologist then examines the melanoma and looks at how deeply it has gone into the skin. The Clark and Breslow scale are used for staging melanoma.

The Clark scale:

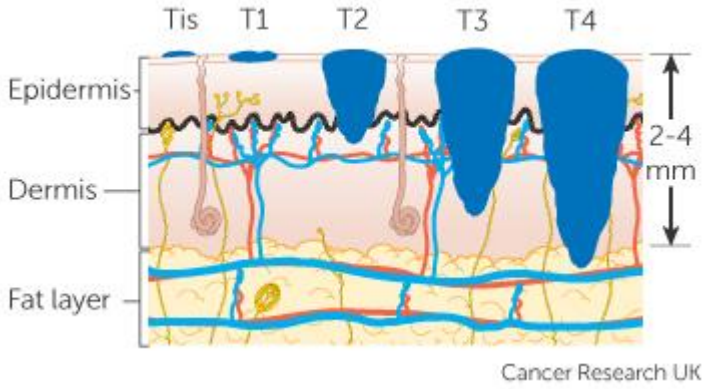
This is a way of measuring how deeply the melanoma has grown into the skin and which levels of the skin are affected.

Main layers of the skin (shown below)



The Breslow scale

For the Breslow scale, a pathologist measures the thickness of the melanoma with a small ruler, called a micrometer. This informs of the primary tumour thickness, or the Breslow thickness, in millimetres (mm)indicating how far the melanoma cells have reached down through the skin from the surface. The Breslow thickness is used in the TNM staging system for melanoma.



Staging melanoma: finding out if the melanoma has spread from its original site in the skin.
(American Joint Committee on Cancer (AJCC) cutaneous melanoma staging guidelines (2009).

Stage	Characteristics
Stage 0	In situ melanoma including lentigo maligna
Stage 1	Thin melanoma <2 mm in thickness
Stage 2	Thick melanoma > 2 mm in thickness
Stage 3	Melanoma spread to involve local lymph nodes
Stage 4	Distant metastases have been detected

Treatments for Melanoma:

Surgery:
When a diagnosis of melanoma is made by skin biopsy, the site will probably need to be excised again to help make sure the cancer has been removed completely.

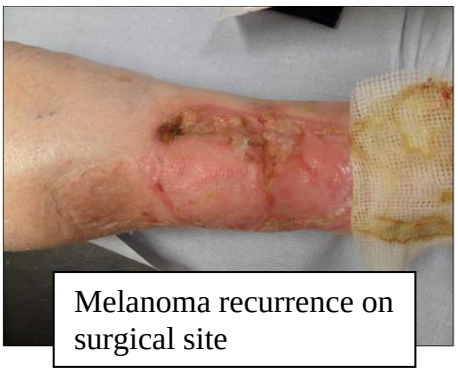
Immunotherapy:
Drugs such as Ipilimumab (Yervoy) may be used to boost the immune response, blocking the CTLA-4, protein on T cells that normally helps keep them in check.
Ipilimumab has been shown to help some people with advanced melanomas live longer, and is already being used to treat some people with advanced melanoma.

Adjuvant Therapy:
Interferon-Alfa as adjuvant therapy
Patients with thicker melanomas often have cancer cells that have spread to other parts of the body. Even if all of the cancer seems to have been removed by surgery some of these cells may remain in the body. Interferon-alfa can be used as an added (adjuvant) therapy after surgery to try to prevent these cells from spreading and growing. This **may** delay the recurrence of melanoma.

(http://www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-treating-general-info)

Radiotherapy:

Radiation therapy is not often used to treat the original melanoma that started on the skin, as melanomas are known to be radio resistant.



Melanoma recurrence on surgical site

Radiation therapy can be used to treat melanoma that has come back (recurred) after surgery, either in the skin or lymph nodes, or to help treat distant spread of the disease.

Palliative radiation therapy is not expected to cure the cancer, but it might help shrink it or slow its growth for a time to help control some of the symptoms.

Clinical situation:

Energy: SXT – DXT (170: 300) Kv
Depending on the depth of lesion/s

The treatment dose for treating re current melanoma deposits can be given as:

Dose Gy	Fractions	Fr/week	Overall time
30Gy - 35Gy	10	5	2 weeks
	***		

Lentigo maligna melanoma:
Lentigo maligna is a precursor to lentigo maligna melanoma, a potentially serious form of skin cancer. Lentigo maligna is also known as Hutchinson melanotic freckle.

This image shows the progression across the lesion from lentigo maligna to invasive melanoma but it was all < 1 mm thick.

(http://dermoscopymadesimple.blogspot.co.uk/2010/09/lentigo-maligna.html)

Dose Gy	Fractions	Fr/week	Overall time
40Gy - 60Gy	20-30	5	4-6 weeks

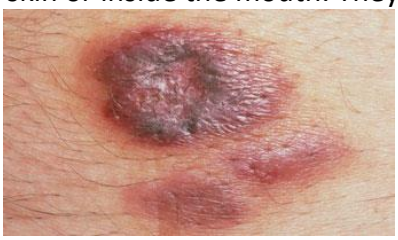
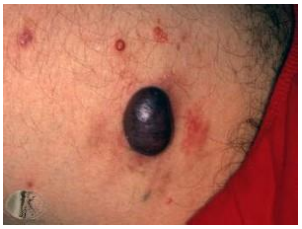
***

Kaposi's Sarcoma:

Because the natural history of Kaposi sarcoma (KS) is variable, assessment of therapy may be difficult. Treatment usually is based on the extent of disease and the patient's immune status
(http://emedicine.medscape.com/article/2006845-overview)

Kaposi's sarcoma is a rare type of cancer caused by a virus. It can affect the skin and internal organs.

It's mainly seen in people with a poorly controlled or severe HIV infection. It can also affect some people who have a weakened immune system for another reason, as well as people who have a genetic vulnerability to the HHV-8 virus to multiply to high levels in the blood, which increases the chance it will cause Kaposi's sarcoma.

The most common initial symptom is the appearance of small, painless, flat and discoloured patches on the skin or inside the mouth. They're usually red or purple and look similar to bruises.  

Over time, the patches may grow into lumps known as nodules and may merge into each other.

Internal organs can also be affected, including the lymph nodes, lungs and the digestive system, which can cause symptoms such as:

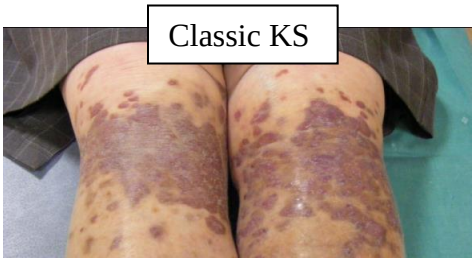
- uncomfortable swelling in the arms or legs (lymphoedema)
- breathlessness, coughing up blood and chest pain
- nausea, vomiting, stomach pain and diarrhoea

(http://www.nhs.uk/conditions/Kaposis-sarcoma/Pages/Introduction.aspx)

Types of Kaposi's Sarcoma

1. (EPIDEMIC) HIV related - one of the main types of cancer to effect people with HIV
2. CLASSIC Kaposi's sarcoma mainly affects middle-aged and elderly men of Mediterranean or Ashkenazi Jewish descent. Ashkenazi Jews are descended from Jewish communities that lived in central and Eastern Euro This type of KS is a slow growing cancer and is normally only found in the skin, particularly on the lower legs and feet.

Classic KS



3. Transplant-related Kaposi's sarcoma is a rare complication of an organ transplant. Transplant-related Kaposi's sarcoma can be aggressive, radiotherapy or chemotherapy may be used.
4. ENDEMIC African Kaposi's sarcoma is common in parts of Africa and is one of the most widespread types of cancer in that region.

Radiotherapy often produces good therapeutic results with classic nodular KS but tends to be only palliative in patients with KS-AIDS (http://emedicine.medscape.com/article/2006845-overview)

KS will often present as multicentre lesions. Cutaneous lesions can be treated with low energy photons or electrons depending on thickness, site and size of the lesion, with a margin of 0.5-1cm. (PTV=GTV + 0.5-1cm)

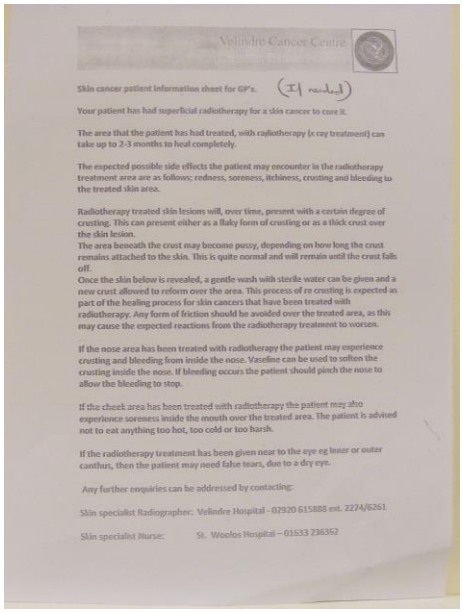
Clinical situation: (The treatment dose for treating Kaposi's sarcoma depending on size and depth) can be given as:

Energy: 90 – 170 – 300Kv (depending on depth of lesions)

Dose Gy	**Fractions**	**Fr/week**	**Overall time**
For single or small lesions < 4 cm			
6-8Gy	1	1	Single exposure
	***		
If there is a cluster of lesions or a single lesion >4 cm			
12 Gy	3		alternate days
Larger areas involving the extremities and other body sites:			
	Use: megavoltage, photons or electrons		
20Gy	5	5	1 week
	**		
For very large areas:			
60 Gy	30	5	5weeks

(http://www.londoncancer.org/media/76382/london-cancer-skin-radiotherapy-guidelines-2013-v1.0.pdf)

Information to patients:



Velindre Cancer Centre

Skin cancer patient information sheet for GP's.

Your patient has had superficial radiotherapy for a skin cancer to cure it.

The area that the patient has had treated, with radiotherapy (x ray treatment) can take up to 2-3 months to heal completely.

The expected possible side effects the patient may encounter in the radiotherapy treatment area are as follows; redness, soreness, itchiness, crusting and bleeding to the treated skin area.

Radiotherapy treated skin lesions will, over time, present with a certain degree of crusting. This can present either as a flaky form of crusting or as a thick crust over the skin lesion.
The area beneath the crust may become pussy, depending on how long the crust remains attached to the skin. This is quite normal and will remain until the crust falls off.
Once the skin below is revealed, a gentle wash with sterile water can be given and a new crust allowed to reform over the area. This process of re crusting is expected as part of the healing process for skin cancers that have been treated with radiotherapy. Any form of friction should be avoided over the treated area, as this may cause the expected reactions from the radiotherapy treatment to worsen.

If the nose area has been treated with radiotherapy the patient may experience crusting and bleeding from inside the nose. Vaseline can be used to soften the crusting inside the nose. If bleeding occurs the patient should pinch the nose to allow the bleeding to stop.

If the cheek area has been treated with radiotherapy the patient may also experience soreness inside the mouth over the treated area. The patient is advised not to eat anything too hot, too cold or too harsh.

If the radiotherapy treatment has been given near to the eye eg inner or outer canthus, then the patient may need false tears, due to a dry eye.

Any further enquiries can be addressed by contacting:

Skin specialist Radiographer: Velindre Hospital - 02920 615888 ext. 2274/6261

Skin specialist Nurse: St. Woolos Hospital – 01633 236362

Information sheet given to patients on completion of radiotherapy to BCC and SCC skin lesions referred from the RGH dermatology

Warn of risk of delayed healing and necrosis after treatment to skin lesions on the back and lower parts of the leg (especially oedematous legs).

Follow up: 4-6 weeks post treatment, depending on the type of diagnosis treated. Discharged after complete healing – usually after 1st or 2nd OP visit

Or

3 months so that assessment can be made after the acute reaction has completely resolved

Or

For skin diagnosis, relating to patients who have been referred for radiotherapy, from the dermatologists or the Royal Gwent skin Clinic the skin follow up form needs to be completed each month and sent via e mail to Liz Freeman. This is so that a phone follow up for the RGH skin patients can be undertaken.

Phone follow - up: 2-3 months post radiotherapy treatment,
By, the dermatology skin specialist cancer nurse. Patients are asked to contact the skin specialist radiographer/s if no phone follow up has occurred after the 2 month period.

Follow up of PBL skin patients

Skin follow up form

Send via e-mail at the end of each month
To Liz Freeman Specialist dermatology nurse at Royal Gwent Hospital in Newport
E-mail: Liz Freeman (Aneurin Bevan Health Board Dermatology)

Name / DOB	V number / NHS number	Tel Number	Date Finished	Treatment Site

SKIN CARE

Refer to Departmental Skin Care Policy.QPWI 10