

# Improving management of radiotherapy-induced skin reactions: a radiographer's perspective

This article describes how Gloucestershire Oncology Centre (GOC) improved patient care by focusing on the assessment and management of radiotherapy-induced skin reactions (RISR). After opening a satellite unit and treatment regimens changing, there was a noticeable rise in patients needing skin care advice after their radiotherapy treatment had ended. It became apparent that healthcare professionals (HCPs) in the community needed more information about treating RISR. This led to the GOC creating skin care tools and developing an education programme for HCPs and patients to bring treatment in line with national guidelines.

## KEY WORDS

- ▶▶ Radiotherapy
- ▶▶ Skin care
- ▶▶ Skin reactions

In England, over half of the 275,000 people diagnosed annually with cancer receive radiotherapy treatment (Trueman, 2013). Many of these patients will experience a skin reaction to some extent. It is common practice for therapeutic radiographers to assess, monitor and manage radiotherapy-induced skin reactions (RISR) in patients receiving radiotherapy treatment for cancer.

RISR are a specific type of wound and require specialist knowledge in order to manage them appropriately. They occur when radiation damages the basal layer of the epidermis. As this layer rises to the skin surface damage is seen (Trueman et al, 2011) (*Figure 1*). RISRs gradually build up over 7–10 days from the start of treatment and continue to develop for 7–10 days after radiotherapy is completed. After reaching its peak, an RISR can then take days or weeks to heal completely depending on severity.

In 2011 the Society and College of Radiographers (SCoR) carried out a survey of all radiotherapy departments in the UK to find out how they were managing RISR. The results showed that there was a lack of consistency in the advice given to patients and a wide variety of products were being used to manage all grades of skin reaction (Harris et al, 2012). An example of the lack of consistent advice across the country was the continued use of aqueous cream as a moisturiser despite its classification

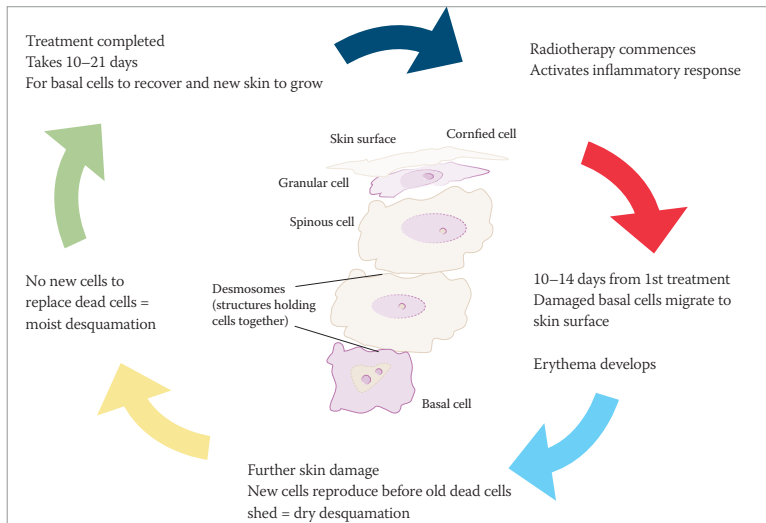
in the British National Formulary as a soap substitute. The SCoR clearly states it should not be used as a moisturiser (Harris et al, 2012) yet a repeat audit by the SCoR showed it was still being used for this purpose.

After this audit of national practice and a review of the literature, SCoR issued guidelines for radiotherapy departments to follow in an attempt to standardise patient care (SCoR, 2015). The SCoR showed there was a lack of significant evidence regarding the use of specific products to prevent or minimise skin reactions. The use of a moisturiser to maintain skin hydration and promote patient comfort was recommended. The avoidance of products containing sodium lauryl sulphate (SLS) and high levels of paraffin was suggested but there is no evidence to support the use of a named moisturising product (SCoR, 2015).

## METHOD

After the 2011 survey by the SCoR, a review of the products used to manage RISR in the radiotherapy (RT) department at Gloucestershire Oncology Centre (GOC) was undertaken. A range of products were used in order to give radiographers a choice of the most appropriate dressing dependent on the grade of reaction, area of body involved and patient preference and comfort. Many patients who experience a skin reaction that requires

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**Figure 1. Cycle of radiation skin damage**

a dressing during active treatment continue to need these dressings for a number of weeks afterwards. The choice of dressing may change as reactions develop. It was found that there is not one single ‘perfect’ dressing and this can make it confusing for the clinician and lead to unsuitable dressings being chosen.

**LOCAL AUDIT**

In 2013 the radiotherapy department at GOC carried out an audit on a product (PolyMem®) in an attempt to find a product that could be used for a range of reactions and on a variety of anatomical sites in order to simplify choice while maintaining a high level of care. The positive feedback from radiotherapy staff and patients meant that the product was introduced as a choice for RISR management. After it was included in GOC’s radiotherapy skin care policy there was an expectation that a patient’s post-radiotherapy care would involve the continued use of this dressing. It soon became apparent that in the community there was a lack of experience or knowledge regarding the management of RISR. When patients went to their GP to request further supplies of the dressings and advice on skin care they met healthcare professionals (HCPs) who were not clear about the best way to manage the RISR. GOC radiographers experienced an increase in the number of phone calls received from both patients and HCPs needing advice. This lack of knowledge or understanding in managing RISR

is understandable as community HCPs could not be expected to be experts in this field.

**PATIENT EXPERIENCE**

At a similar time, the treatment regimen changed for breast cancer patients due to national standardisation of radiotherapy techniques. This came after the results of the START trial and the fractionation of treatment became shorter — 15 treatments (fractions) daily Monday to Friday over three weeks as opposed to five weeks of radiotherapy (Haviland et al, 2013). This patient group were finishing radiotherapy with low grade reactions which were then developing into dry or moist desquamation after treatment was complete. Patients can find this very distressing. The radiotherapy department experienced an increase in phone calls from these patients requesting advice — having not experienced significant RISR during treatment they were developing RISR that required dressings in the 1–2 weeks post-radiotherapy. All patients were given advice and information at the beginning of their treatment regarding the side effects they were likely to experience in the short and longer term. Cancer patients do wish to receive information but feel that they do not receive sufficient information in all areas (Cox et al, 2006). It was observed that this information is not always retained or remembered by the end of the course of their treatment. This may be due to the amount of information they receive and the level of psychological distress involved with treatment.

**SATELLITE UNIT**

GOC treats radiotherapy patients from a wide geographical area — patients may travel over two hours each way. In 2014 GOC addressed this by opening a satellite unit in Hereford to reduce travel times for patients from that region. An increase in numbers of patients being treated from that area was noted as more patients agreed to radiotherapy because the distances needed to travel had been reduced. This raised concerns regarding the post-radiotherapy care of patients in healthcare settings that may not be familiar with this patient group.

### INCREASE IN PHONE CALLS

The introduction of a new product, the delayed skin reactions and HCPs being unfamiliar with radiotherapy all led to an increase in the number of patients telephoning the department for advice about their skin reactions. In some instances a patient would be asked to return to the department for RISR assessment and management but this was not always possible due to staffing levels, availability of a room availability or the distance a patient had to travel.

Radiographers needed to offer advice over the telephone based on the patient's description of their skin reaction. The patients were referred to their GP or practice nurse if appropriate and specific products were requested. In some cases patients had already seen another HCP and were concerned about the advice they had received. Antibiotics were sometimes prescribed for an exuding skin reaction in the belief that it was infected as the HCP did not recognise that exudate production is a normal response to tissue damage and is necessary for the healing process (Trueman, 2013). Dressings were used that were inappropriate and in some cases this caused further damage to the irradiated skin. The area of desquamation does not always involve the whole of the treated area. Adhesive dressings were being attached to the surrounding area of irradiated skin which was then breaking down as the adhesive damaged the fragile skin. This was due to a lack of understanding of RISR and the issues involved with difficult-to-dress areas such as the inframammary fold, axilla, natal cleft and head and neck area. Advice and care depended on whether the HCP had any previous experience of dealing with a RISR and which products they had available.

An average increase in the number of telephone calls from patients from 1–2 calls a week to 1–2 a day was seen. We also received more calls from GPs and practice nurses requesting advice on how to care for the skin reactions. It became clear that it was not possible to manage the increased number of calls coming in as staffing did not allow for a radiographer to be away from the treatment unit

dealing with complex phone calls and it was not possible to see patients once treatment had finished. Patients were not receiving the best care possible and better support was required for those who had RISR.

### MOVING FORWARD

The department decided to start educating HCPs and patients. The objective was to improve continuity of care and the patient experience. Two main areas were highlighted:

- » Managing the increased need for care of patients' skin reactions after radiotherapy
- » Raising awareness and educating patients and HCPs about RISR to ensure patients had realistic expectations of how their skin would continue to react after completion of radiotherapy and to help HCPs appropriately care for patients with RISR.


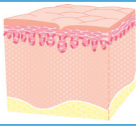

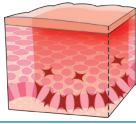

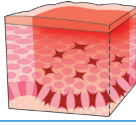

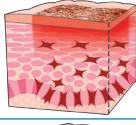

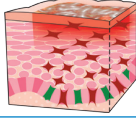
### PATIENT EDUCATION

Patients were informed at the outset of their radiotherapy treatment that it was possible they would develop a skin reaction after they finished their treatment. This was reiterated at their radiographer-led review appointments during treatment and also at the end of treatment. Radiographers believed that this advice had always been given but more emphasis was now placed on it. The SCoR (2015) guidance included a skin care information sheet. This was adopted by the GOC radiotherapy department and given at the start of treatment to all patients at risk of developing RISR. Patients were identified by the area of body being treated and the dose received.

Post-radiotherapy skin care advice sheets were also developed specifically for those groups of patients at risk of developing more severe RISR after radiotherapy, such as patients with breast, gynaecological, and head and neck cancer. It was important to ensure patients' expectations were managed realistically. These advice sheets describe what a patient can expect from skin reactions that develop after radiotherapy and present advice on how to manage it and seek further support. Specific products are listed for patients to show to HCPs in primary care when requesting appropriate non-adhesive dressings.

## RTOG Assessment Tool and Intervention Rationales

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| Assessment / Observation  | Effects of Radiotherapy on Skin Cells   | Rationale  |
|---|---|--|
|  <p>RTOG 0<br/>No visible change to skin</p>   |  | To promote hydrated skin & maintain skin integrity   |
|  <p>RTOG 1<br/>Faint or dull erythema. Mild tightness of skin and itching may occur</p>                  |  | To promote hydrated skin, patient comfort and maintain skin integrity. To treat itchy skin. To reduce pain, soreness and discomfort. |
|  <p>RTOG 2<br/>Bright erythema / dry desquamation. Sore, itchy and tight skin</p>                        |  | As RTOG 1  |
|  <p>RTOG 2.5<br/>Patchy moist desquamation<br/>Yellow/pale green exudate. Soreness with oedema</p>       |  | To promote comfort. Reduce risk of complications of further trauma and infection. To reduce pain, soreness and discomfort            |
|  <p>RTOG 3<br/>Confluent moist desquamation.<br/>Yellow/pale green exudate.<br/>Soreness with oedema</p> |  | To promote comfort<br>Reduce risk of complications of further trauma and infection   |
| <p>RTOG 4<br/>Ulceration, bleeding, necrosis (rarely seen)</p>  |   |  |

Images with kind permission of Audrey Scott Macmillan Head and Neck Clinical Nurse Specialist, Mount Vernon Cancer Centre.

**Please can you ensure that all patients on discharge are given one week's supply of the dressings they are on. Please review the RTOG score weekly.**

| RTOG Dressing Selection |   |
|-------------------------|---|
| RTOG 0                  | <ul style="list-style-type: none"> <li>Apply moisturiser</li> </ul>   |
| RTOG 1                  | <ul style="list-style-type: none"> <li>Apply moisturiser to soothe and/or consider Cavilon prophylactically</li> <li>Sore Nipples consider Hydrosorb</li> <li>Pre wet PolyMem</li> </ul>  |
| RTOG 2                  | <ul style="list-style-type: none"> <li>Apply moisturiser to soothe and/or consider Cavilon prophylactically</li> <li>Sore Nipples consider Hydrosorb</li> <li>Intrasite Gel/Intrasite Conformable</li> <li>1% hydrocortisone cream BD to soothe pruritis</li> <li>Polymem Range of dressings</li> <li>Mepitac silicone tape.</li> <li>Duoderm Thin Hydrocolloid: can stay in place for 3-5 days depending on the exudate levels</li> <li>Duoderm spots/strips</li> </ul>                                  |
| RTOG 2.5                | <ul style="list-style-type: none"> <li>Polymem Range of dressings</li> <li>Aquacel Extra: can stay in place for up to 3 days depending on exudate levels. Cover with a secondary dressing such as Mepilex Border Lite</li> <li>Mepilex Border Lite</li> <li>Mepitac Silicone Tape</li> <li>Sore Nipples consider Hydrosorb</li> <li>Eclipse superabsorbent dressings for heavy exuding wounds</li> <li>Intrasite Gel 8g + 10mgs morphine combination. Apply OD/BD depending on the pain levels</li> </ul> |
| RTOG 3                  | <ul style="list-style-type: none"> <li>Polymem Range of dressings</li> <li>Aquacel Extra: can stay in place for up to 3 days depending on exudate levels. Cover with a secondary dressing such as Mepilex Border Lite.</li> <li>Mepilex Border Lite</li> <li>Mepitac Silicone Tape</li> <li>Sore Nipples consider Hydrosorb</li> <li>Intrasite Gel 8g + 10mgs morphine combination. Apply OD/BD depending on the pain levels</li> </ul>   |
| RTOG 4                  | <ul style="list-style-type: none"> <li>Intrasite Gel 8g + 10mgs morphine combination. Apply OD/BD depending on the pain levels.</li> <li>Aquacel Extra: can stay in place for up to 3 days depending on exudate levels. Cover with a secondary dressing such as Mepilex Border Lite.</li> <li>Eclipse superabsorbent dressings for heavy exuding wounds</li> </ul>  |
| Malodorous Wounds       | <ul style="list-style-type: none"> <li>Clinisorb for odour control</li> <li>Carboflex for odorous and moderate to heavy exuding wounds</li> <li>PolyMem Max for moderate to heavily exuding wounds</li> </ul>   |

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It was felt that these steps were a significant improvement in preparing and supporting patients who were at risk of RISR.

### RISR ASSESSMENT AND MANAGEMENT

A more complicated problem was how to ensure that HCPs in both hospital and community settings were able to appropriately care for patients with RISR. Radiographers at GOC found that HCPs who did not work with radiotherapy patients on a regular basis had limited knowledge or confidence in treating RISR. This included GPs, practice and community nurses as well as ward staff. The following areas that needed attention were identified:

- ▶▶ How to recognise an RISR
- ▶▶ How to assess an RISR
- ▶▶ How to manage an RISR
- ▶▶ How to get this information to the appropriate HCPs across a wide geographical area.

RISR progress through different stages and are graded according to the internationally recognised and validated Radiation Therapy Oncology Group (RTOG) scoring criteria (Cox et al, 1995). Once a reaction is graded, an appropriate means of management can be chosen according to its severity. An assessment and management tool was adapted using photographs of each RTOG grade along with the rationale behind caring for each grade (Trueman, 2011) (*Figure 2*). On the reverse, appropriate dressing selections were linked to each grade of reaction — a selection was necessary as different healthcare providers have different formularies. The tool needed to be clear and easy to use. The information fitted onto an A5 card — appropriately sized to be folded into a pocket or placed on a noticeboard. It was designed to help HCPs with little experience of RISR be able to identify, assess and manage patients' skin reactions.

### HCP EDUCATION

Patients attend GOC from Gloucestershire, South Worcestershire, Herefordshire and Powys. This means that the HCPs caring for the patients are also in these widespread areas. A skin care pack was created which included an explanatory

covering letter and the assessment tool. This was sent to all care settings including GP practices/practice nurses, district/community nurse bases, hospital wards and support environments such as The Haven in Hereford and the Maggie's Centre in Cheltenham.

As well as distributing the assessment tool, sessions were arranged in order to launch the pack and to pass on information and knowledge. The author presented at a number of study days and conferences across the counties that refer patients to GOC.

After PolyMem® was introduced as the main dressing of choice for managing RISR at GOC staff at the centre were invited to take part in producing a guide to dressing RISR using PolyMem®. This was to address the problems all HCPs have in applying dressings to difficult areas of the body. A cutting guide was created which followed the layout of a cookery book, listing 'ingredients' needed to dress a reaction and images depicting the process. This guide was then added to the skin care pack and issued to all the settings who had already received it.

### DISSEMINATION

The assessment tool and cutting guide were shown to the SCoR and were then forwarded to all radiotherapy managers in the UK. The cutting guide has also been presented nationally and internationally and is being translated and used in other countries. It is a huge step forward in promoting consistency of care for people receiving radiotherapy. It is not possible to delay or prevent an RISR or promote healing during active treatment but the focus should be on promoting patient comfort and avoiding exacerbation. The work described in this article makes steps towards these goals by identifying and describing appropriate products, educating patients and HCPs, and sharing knowledge across healthcare settings.

### DISCUSSION

The steps taken by GOC to improve care of RISR has had great success but there are still areas that need to be improved. These include ensuring that all HCPs who treat people with RISR are educated and supported to deliver

high quality care. This requires thought and consideration as to how to reach such a varied range of clinicians – from practice and community nurses to GPs and ward/hospice staff in both community and acute settings. At GOC patients continue to see HCPs who are unsure about how to look after their RISR and phone calls are still received from HCPs who have not seen the skin care pack. The education programme of study days needs to be ongoing in order to cascade new information.

## CONCLUSION

There are still gaps in the literature regarding RISR. High quality research-based evidence is limited regarding the use of products to manage these skin reactions. This is possibly for a number of reasons – radiographers have only recently begun to widely publish the work that they are carrying out and skin care is such an enormous topic with so many products available it is difficult to identify what to audit or research. Current pressures on clinical work also means that carrying out research is not a priority. Further research on the prevention, delay in onset and reduction in severity of RISR is recommended. A multi-centre project should

be undertaken. Products need to be identified and assessed for their use for RISR and continued education and raised awareness of RISR should be a priority for healthcare providers. **WUK**

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