



A UK Survey of Radiotherapy Skin Care by SCoR

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Summary

This survey was carried out to evaluate clinical skin care practice at radiotherapy departments across the United Kingdom. The results have been used to produce new guidelines, see Summary of Interventions for Acute Radiotherapy - Induced Skin reactions in cancer patients: A clinical guideline and also article published in Radiography Harris R, et al., Radiotherapy skin care: A survey of practice in the UK, Radiography (2011), doi:10.1016/j.radi.2011.10.040

Foreword

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Aim

The primary objective of the survey was to evaluate clinical skin care practice at radiotherapy departments across the United Kingdom. The results will be used to review guidelines issued by The Society and College of Radiographers to aid continuity and consistency of patient care by advocating the use of evidence-based practice.

Methods and Sample

A link to an on-line survey, using the Survey Monkey™ tool, was e-mailed to all radiotherapy department managers in the United Kingdom (N = 67) inviting them to provide one response per department. Sixty-one questions were grouped into eight themed sections.

Key results

Fifty-four departments responded within the allocated timeframe with a final response rate of 81%. Product use for skin conditions varies across departments and practice does not always reflect the current evidence base. Some outdated and unfounded practices are still being used. Limited data is collected routinely on skin toxicity making it difficult to quantify the extent of skin morbidity following radiotherapy with modern techniques.

Conclusions and recommendations

This survey offers a review of radiotherapy skin care practice across the United Kingdom. Existing skin care guidelines from the College of Radiographers require updating to ensure appropriate standardised care. It is recommended:

- That all radiotherapy departments monitor and document skin morbidity in a systematic way. Best practice should have standard pre-treatment assessment, and baseline and weekly reviews using a particular tool and process.
- Skin care practice should be agreed across the Cancer Network in line with the requirement for agreed radiotherapy protocols as recommended within the Cancer Peer Review Measures for Radiotherapy (England).
- Further high quality trials to investigate interventions for dry or moist desquamation are supported.
- National guidelines must be regularly reviewed and revised to ensure that they are consistent with emerging evidence.

Introduction

The Society and College of Radiographers (SCoR) last reviewed UK radiotherapy centre skin care practice in 2000 and produced accompanying guidelines for radiotherapy departments¹. A decade later, it is timely to re-assess what is actually happening in clinical practice with an aim to updating information thereby assisting continuity and consistency of patient care.

Skin reactions from external beam radiotherapy are one of the most common side-effects from treatment and are a factor which can limit dose. Megavoltage linear accelerators with skin sparing capabilities have significantly reduced the severity of reactions from radiotherapy². However, accelerated dose schedules with combined radiation chemotherapy regimens³ have increased the condition. The most severe reactions tend to be seen in those patients receiving high doses to large fields. Recently the use of Intensity Modulated Radiotherapy (IMRT) has been shown to offer the opportunity to reduce skin toxicity in some cases, especially the rates of dry and moist desquamation when treating cancers in the head and neck region^{4-10,11,112}.

Despite changes in practice and published guidelines^{1,11,12}, radiotherapy skin care appears to have changed little over the years with centres caring for their patients' skin in different ways; many relying on tradition rather than researched methodology. Consequently, a plethora of agents is being used on the skin in a non-standardised fashion^{13,14}.

Although it is unlikely that radiation reactions can be completely prevented, the current driver for many research projects is to minimise and delay the onset of symptoms. This is important to ensure that treatment is given as prescribed without interruption as delays within a course of radiotherapy have been shown to affect the treatment outcome¹⁵.

The extent of skin reaction is often dependent upon the clinical site being treated. For example, radical head and neck cancer radiotherapy usually requires an immobilisation device and these patients often receive combination chemotherapy. This can make these patients very vulnerable to intensified skin reactions and it is known that interruptions in radiotherapy for this category can have a detrimental effect to treatment outcome¹⁵.

The use of an effective evidence-based skin care protocol and monitoring system^{16,17} would assist in a researched approach to radiation skin care management, aiding product evaluation and justification of practice.

Background

Skin may react to radiotherapy in a number of ways. There are, however, three main levels of skin reaction routinely encountered in the modern radiotherapy department:

- erythema dry
- desquamation
- moist desquamation

Erythema is a reddening of the skin and is the first sign that the skin has been affected by radiation. This resembles a 'sun reaction' and the skin tends to feel warm, sensitive and tight¹⁸. Erythema reactions tend to occur at doses of 2000- 4000 cGy¹⁹.

Dry desquamation is an atypical keratinisation of the skin owing to the reduction of the clonogenic cells in the basal layer of the epidermis and the accompanying erythema is an inflammatory reaction²⁰: the skin will appear dry and scaly. In dry desquamation there is no transgression of skin integrity but this can be an irritating and itchy condition. Dry desquamation occurs mainly at doses of 3000 cGy and higher¹⁹.

Moist desquamation is the loss of the epidermis and has the potential to be a more serious situation as there is an open wound with potential for infection. The skin will look red and inflamed and the wound will secrete exudate. This can be a very uncomfortable and distressing condition. Moist desquamation tends to occur at doses of 4000 cGy and higher¹⁹.

In Barkham's 1993 assessment¹³, 52 % of UK radiotherapy departments reported dry desquamation as a common event and 85 % of departments reported moist desquamation as an occasional event. However, as Glean et al²¹ note, the incidence of skin reactions has not been accurately quantified in departments and practices have changed since Barkham's survey. Therefore, the extent of the problem appears to be largely unknown.

Turesson et al²² demonstrated that the number of basal cells in the epidermis declines during fractionated radiotherapy due to increased cell cycle arrest and reduced mitosis. The reduction in the basal cells causes a thinning of the epidermis and an inflammatory reaction. The variation in the reaction appears to be a genetic predisposition due to individual DNA repair capacity²³⁻²⁸, genetic radiosensitivity²⁹⁻³¹ and/or intravascular thrombin generation³². Specific genetic tests could therefore be used to predict those patients most likely to develop a severe radiotherapy reaction^{33,34}.

Certain clinical factors can also help to predict the possibility of a radiation reaction^{35,36}. Extrinsic factors are treatment-related, such as dose; volume; fractionation; adjuvant treatment; treatment in a skin fold area (ie inframammary fold or rectal cleft); use of bolus material; type of immobilisation; treatment technique³⁷. These factors need to be under constant review with changing work practices; for example, with the introduction of IMRT. Intrinsic factors are individual patient-related such as larger breast size;^{20,37} higher Body Mass Index (BMI);^{26,38,39} pre-existing conditions (eg psoriasis)^{22,40}. Such intrinsic factors may enhance a skin reaction and therefore should be recorded as a baseline and closely monitored^{12, 41-43}.

Gosselin⁴⁴ notes that some studies of skin care products did show promising results but comparative data across studies has not been assisted by the use of various assessment tools. By utilising skin care assessment tools on at least a weekly review basis, it would be possible to monitor and record a patient's skin reaction throughout the treatment stage. This would provide valuable data which could be audited and would contribute to the growing knowledge-base in order to develop skin care practice and determine when and for whom intervention is required.

Naylor and Mallet⁴⁵ undertook a literature review to investigate the products being used for radiotherapy skin reactions and the evidence base behind their use. They identified certain products where evidence contraindicated use:

- petroleum jelly⁴⁶⁻⁴⁸ as it may create a build up effect and is difficult to remove
- topical antibiotics unless there is a proven infection^{16.47.48}
- topical steroids on broken skin owing to the adverse effect on the wound healing process^{46.49-51}
- Gentian Violet owing to potential carcinogenic side effects^{16.50.52}.

Another important aspect of skin care during radiotherapy is that of patient well being. It may not be possible to stop or even reduce the rates of skin reaction from occurring, but there may be comfort and psychosocial benefits that skin care products provide⁴⁴. Therefore, there is a need for evaluation into the cost effectiveness of products being used on the skin. Recording of patient acceptability/satisfaction and compliance (as incorporated into some existing scales⁵³ are helpful indicators of how appropriate a product will be for future patients.

Method

Stage One - Literature Review

The aim of the survey was to explore skin care practice in radiotherapy departments across the United Kingdom. Prior to the survey production, an extensive literature review was undertaken of published articles from 1980 to October 2010.

Keywords in the literature search were: 'dermis' 'skin reaction' 'radiation effects' 'adverse effects' 'radiation dermatitis' 'erythema' 'moist desquamation' 'wound management' combined with search terms 'radiotherapy' and 'radiation therapy' - combining using Boolean logic.

Databases used were: MEDLINE Pubmed, CINAHL, PreMEDLINE, EBSCO EJS, Science Direct, ISI Web of Science.

Other search strategies were: reference chaining; following up references from reference lists of relevant articles; hand searching of key radiotherapy/cancer journals and conference proceedings with ready professional access and reference feedback by subject indexing key references.

Two recently published (ie within the last five years) systematic reviews of skin care literature^{54.55} proved invaluable in determining the more robust evidence base and highlighted key randomised controlled trials for inclusion and consideration.

In addition, skin care manufacturers' leaflets, websites and magazine/newspaper articles were considered as these provide readily available information for patients and staff which might influence practice.

Stage Two - Survey Production

A panel of experts was consulted regarding issues it felt required investigation in a survey of skin care practice. The panel consisted of a team from the Society and College of Radiographers, two leading nursing professionals, the Chair of the SCoR Research Group and the authors of the recent systematic reviews. Initially the survey was large and unfocussed as panel members had different aspects of care they felt required exploration. Two previous surveys into radiotherapy skin care practice aided the survey construction and focus.

D'haese et al⁵⁶ evaluated skin care during radiotherapy practice by nurses in Flanders, Belgium. They designed a 58 item questionnaire structured into 4 main sections: preventative advice; advice for erythema; dry desquamation and moist desquamation. Dividing the questionnaire into these key sections seemed a logical and easy format which the SCoR project team adapted.

Swamy et al⁵⁷ developed a questionnaire to explore variations in radiation oncologist practice across the USA in managing breast cancer that was specifically related to skin reactions. Their main

questions focussed on prophylactic skin care, risk factors, topical products used and percentages of patients with skin reactions. These themes were also built into the SCoR questions.

The final SCoR survey comprised 61 questions grouped into 8 sections (Table 1). Questions varied in type with a mixture of yes/no/don't know, multiple choice, and open ended/add comments.

A draft was reviewed by the SCoR Public and Patient Liaison Group and their comments were used to adapt certain questions. The survey was also piloted at one radiotherapy department prior to launch to discover if there were any inherent design and functionality flaws and to determine if the questions were answerable. Consequently, two questions were adapted due to pilot site feedback. The pilot site reported that the survey would take a maximum of thirty minutes to complete, which the panel felt was acceptable given the importance of the topic and relevance to everyday clinical practice.

Section	Number of questions
Pre-treatment - assessment	14
Pre-treatment - prophylactic skin care	6
During treatment - assessment	7
During treatment skin care - erythema	8
During treatment skin care - dry desquamation	8
During treatment skin care - moist desquamation	9
Post treatment - assessment and skin care	5
Review of guidelines	4

Distribution of survey questions

Sample

A link to an on-line survey, using the Survey Monkey™ tool, was e-mailed to all radiotherapy departmental managers in the United Kingdom (N = 67) and they were invited to provide one response per department. A 'back-up' pdf file was also provided which could be printed off and a hard copy sent in to SCoR headquarters if required (2 departments used this option). Anonymity was maintained for all respondents.

The survey was originally intended to run for 4 weeks with a 'reminder to complete' e-mail sent after 3 weeks. To aid a higher response rate, the survey remained open for a further 2 weeks after the deadline, ie a total of 6 weeks access.

Results and the evidence base

(N = 67)

Response rate = 54 (81%)

Fifty-four departments responded within the allocated timeframe with a final response rate of 81%. This was considered to be an excellent response rate. A typical response rate for an electronic survey is 50% or less⁵⁸, therefore at 81% we consider this sample is likely to be representative of radiotherapy departments across the United Kingdom.

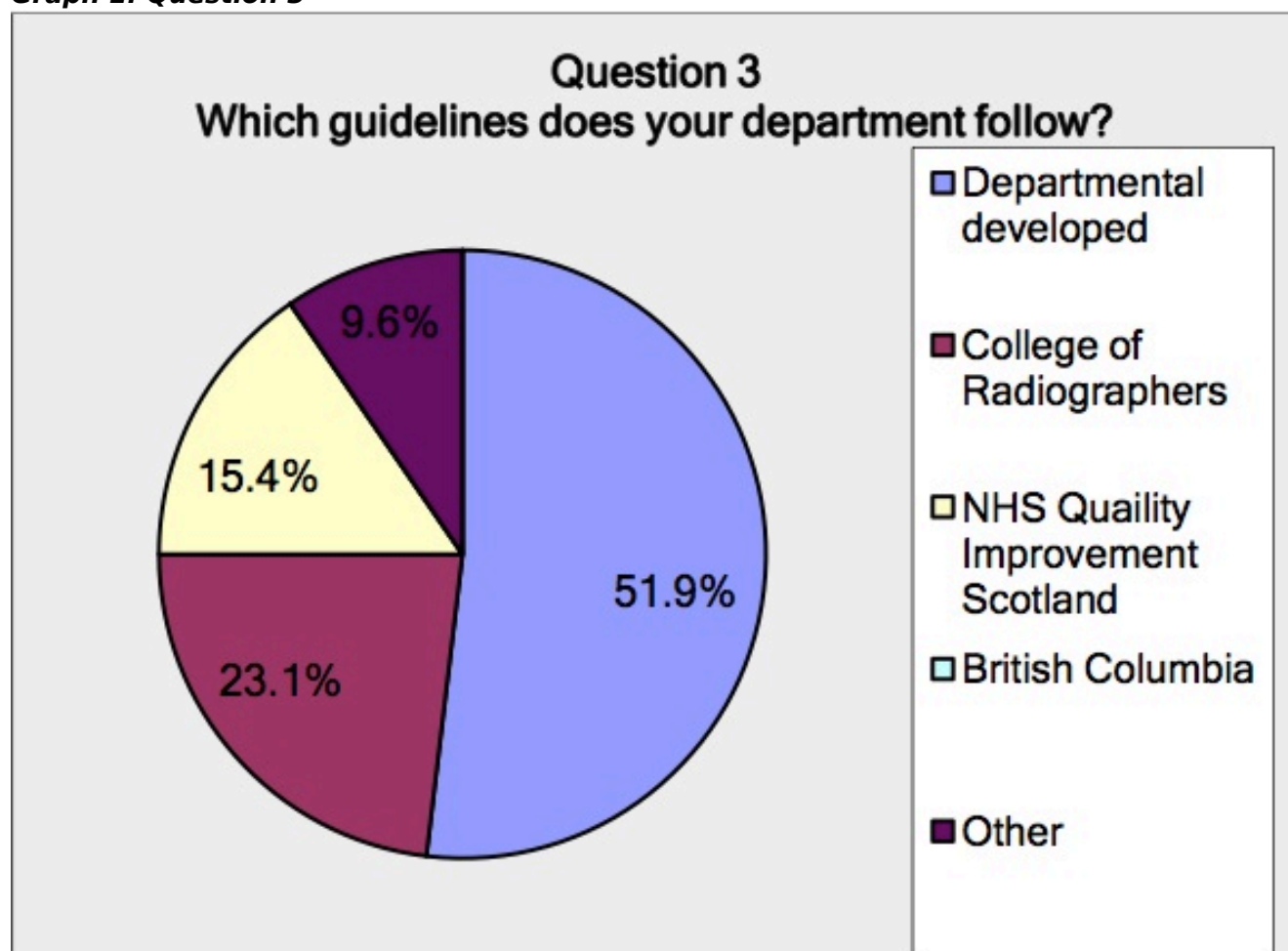
Due to the size of the survey, only the key results are reported in this paper.

Section 1 - Pre-treatment: Assessment

All departments stated that they provide verbal and written information to patients on how to care for their skin during radiotherapy. Forty-six departments stated that they had skin care guidelines/protocols for staff. Twenty-seven departments use their own guidelines or an adaptation

of existing guidelines, most of which have been updated in the last two years.

Graph 1: Question 3



Response count = 52

The evidence base for guidelines and protocols

The provision of patient information and guidelines for staff should aid consistency of information and compliance of health professionals, especially when staff transfer from one department to another²⁰.

D'haese et al⁵⁶ compared their 2009 and 2005 data⁵⁹ to determine if the principles of a specifically developed protocol had been followed and if outdated techniques, such as using talcum powder and gentian violet, had ceased. Overall results indicated that, despite introducing guidelines after the first survey, there were still some recommendations that had not been transferred into practice and there were still some discrepancies in skin care which could cause confusion.

This SCoR survey indicates that some of the College's 2000 guidelines¹ are actually being followed; however these are now outdated and need urgent revision.

Consistency of care and liaison

Forty two departments stated they knew their hospital had a Tissue Viability Nurse (TVN), or equivalent, but liaison with this person was not commonplace. This may be a factor which will limit the introduction and assessment of products.

Cumming and Routsis⁶⁰ discuss the importance of linking with other sectors of care to ensure improved communication and understanding and note the importance of consistency of care across

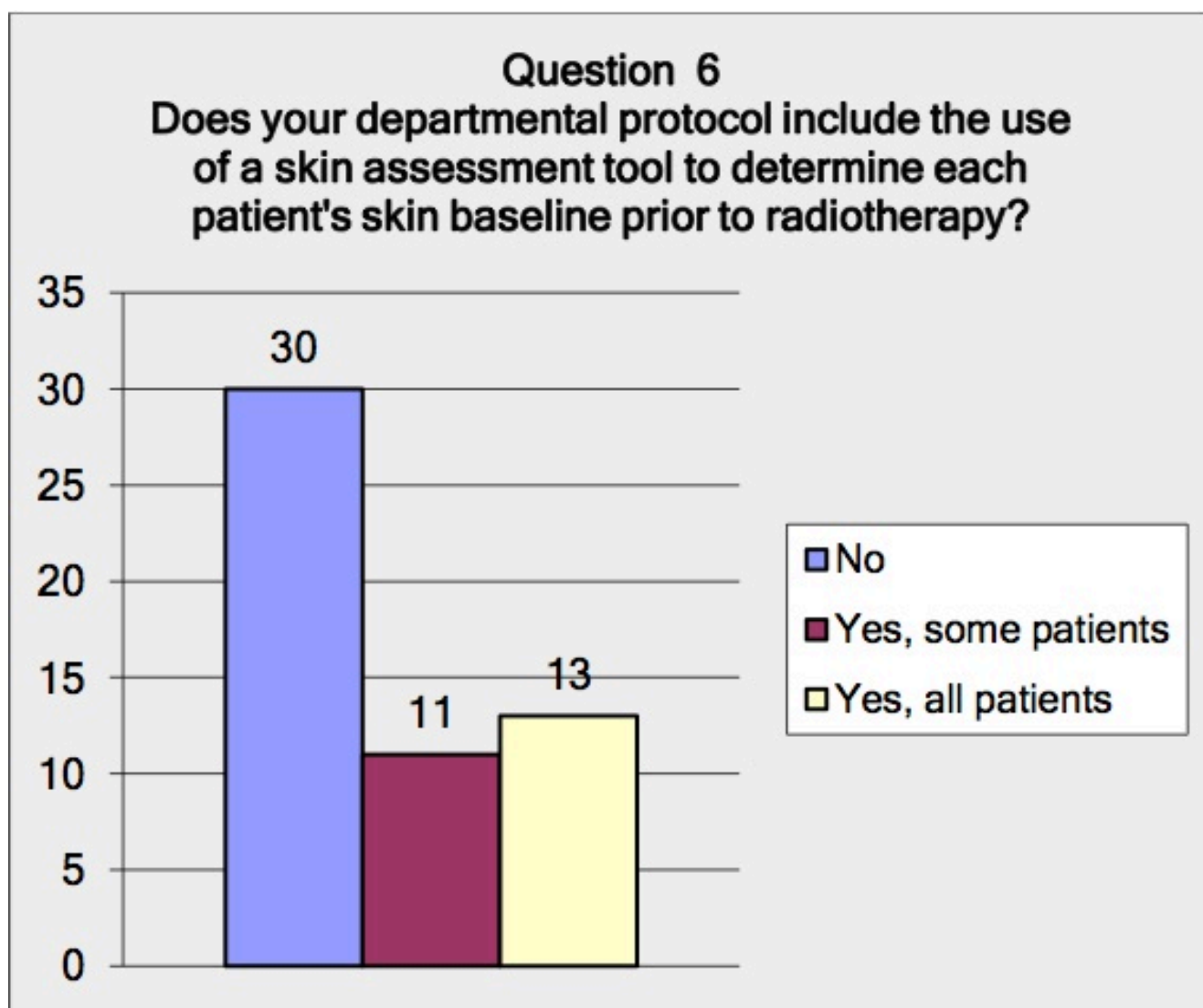
the care pathway to avoid patient and staff confusion⁶¹.

Skin assessment

Thirty eight departments stated that skin assessment prior to radiotherapy would be conducted by a radiographer.

McIlroy et al⁶² note the importance of a dedicated and consistent treatment review.

Graph 2: Question 6



Response count = 54

Thirty departments do not use a skin assessment tool prior to radiotherapy despite recent NHS Quality Improvement Scotland guidelines¹² emphasising the need for a baseline assessment of the patient's current skin condition.

The Radiation Therapy Oncology Group (RTOG) skin assessment tool⁶³ is the most commonly used by 20 departments. An evaluation of different scoring systems by Lopez et al²⁴ favoured the RTOG system⁶³ overall. A few of the other available systems are: 'RISRAS';⁵³ photographic;⁶⁴ Skin Toxicity Assessment Tool (STAT) system;⁶⁵ Spectrophotometric NIR spectroscopy;⁶⁶ laser Doppler perfusion imaging and digital photo⁶⁷⁻⁷⁰.

Despite numerous papers emphasising the potential risk factors^{36, 37} which may exacerbate a skin reaction, 36 respondents (67%) reported no formal documentation and 22 (41%) do not review skin care products that a patient currently uses.

Section 2 - Pre-treatment: Prophylactic skin care

Table 2: Question 16

Question 16		
If yes, which prophylactic skin care product(s) does your department recommend? (please tick all that apply)		
Answer Options	Response Percent	Response Count
None	0.0%	0
Aqueous Cream	68.4%	26
Chamomile and Almond Oil	0.0%	0
Aloe vera	13.2%	5
Calendula	2.6%	1
Biafine	0.0%	0
Hyaluronic Acid	0.0%	0
Sucralfate Cream	0.0%	0
Diprobase Cream	7.9%	3
Skin sealant or barrier product i.e. Cavilon	5.3%	2
Other	7.9%	3
N/A	31.6%	12
If other, please specify		9
	<i>answered question</i>	38
	<i>skipped question</i>	16

Prophylactic skin care

Twenty six departments use aqueous cream as a prophylactic treatment. Wells et al's³⁹ findings did not find sufficient evidence to support aqueous or sucralfate for prophylactic use.

Tsang and Guy⁷¹ found that in people with healthy skin, use of aqueous cream was associated with reduced stratum corneum thickness and increase in transepidermal water. Their study suggests that more research is needed into the effect of aqueous cream and also the sodium lauryl sulphate it contains, which is known as a skin irritant.

Five departments recommend Aloe vera for prophylactic skin care. Richardson et al's⁴³ systematic review of Aloe vera use for prophylactic skin care concludes there is no evidence to recommend this product.

Swamy et al⁵⁷ note 75 % of their respondents agreed on the importance of using a prophylactic agent despite the lack of prospective trial data to support this practice.

The products most commonly used were those that would be used for the treatment of reactions when they occurred.

Section 3: During treatment: Assessment

Forty-two departments specify the type of soap to use: 'Simple®', 'Dove®' or 'none' being the most common answers.

Nine specify the type of deodorant to use: 'none' or 'Pitrok®'⁷² being the most common answers.

D'haese et al⁵⁶ note that the main areas of variations across departments in their study related to washing instructions and the use of soap. This is also confirmed by earlier studies by Barkham¹³ and Lavery⁷³. The traditional patient advice of not washing the affected area with soap and water or even using water alone is also questioned by Porock and Kristjanson³⁷. Campbell and Illingworth⁷⁴ conducted a randomised controlled trial of 99 patients receiving breast radiotherapy and recorded no significant differences across cohorts (this is also confirmed in other studies.^{75, 76}) Roy's⁷⁶ study concluded that those patients who washed actually had lower rates of skin reaction than those who were advised not to wash.

Bolderston et al's⁵⁴ systematic review reflects that the evidence indicates that gentle skin and hair washing should be unrestricted for patients and there should be no restriction to using a specific type of soap^{74, 76-80}.

Some departments insist that deodorant should not be used, in line with the College's 2000 guidelines¹, despite the availability of more updated evidence^{72, 80-85}. Bolderston et al's⁵⁴ systematic review highlights that the traditional reasons for not using soap and deodorant were:

1. a bolus effect
2. a secondary radiation effect on the skin due to metallics.

Burch et al⁸² note no real increase in surface dose due to skin care products or deodorants but emphasise that there may be chemical irritants within products that can cause a reaction.

Keeping our traditional advice may be a factor affecting patient social well being. For example, breast cancer patients who are advised not to use a deodorant often cite this as one less area of control they have in their life⁸⁶. Additionally, we need to consider whether or not patients actually comply with these instructions⁴⁴.

Section 4 - During treatment: Erythema

Table 3: Question 29

Question 29		
If yes, which skin care product(s) does your department recommend for erythema? (please tick all that apply)		
Answer Options	Response Percent	Response Count
None	0.0%	0
Aqueous Cream	98.0%	49
Chamomile and Almond Oil	0.0%	0
Aloe vera	16.0%	8
Calendula	0.0%	0
Biafine	0.0%	0
Hyaluronic Acid	0.0%	0
Sucralfate Cream	0.0%	0
Diprobace Cream	14.0%	7
Skin sealant or barrier product ie Cavilon	8.0%	4
Other	16.0%	8
N/A	0.0%	0
If other, please specify		12
	answered question	50
	skipped question	4

Products used for skin reactions

Aqueous cream is used by 49 departments as a product to alleviate erythema. This is a relatively cheap readily available moisturising agent, and is currently recommended by the College's 2000 guidelines¹.

Aloe vera is used by 8 departments. Even with a seemingly harmless substance like Aloe vera there is conflicting evidence ie Kaufman et al⁸⁷ concludes that Aloe vera slowed down the wound healing process.

Evaluation and cost effectiveness

Only 1 department is conducting a randomised controlled trial into the clinical effectiveness of a topical agent for erythema.

There are no assessments of the cost effectiveness of using creams and topical agents for erythema. Swamy et al⁵⁷ reflected that little work had been conducted on the cost effectiveness of practice^{41,88,89}. With the introduction of more expensive skin care treatments to a vulnerable clientele market, health care professionals need to consider if such products are more effective than their cheaper comparators and why centres choose one product over another.

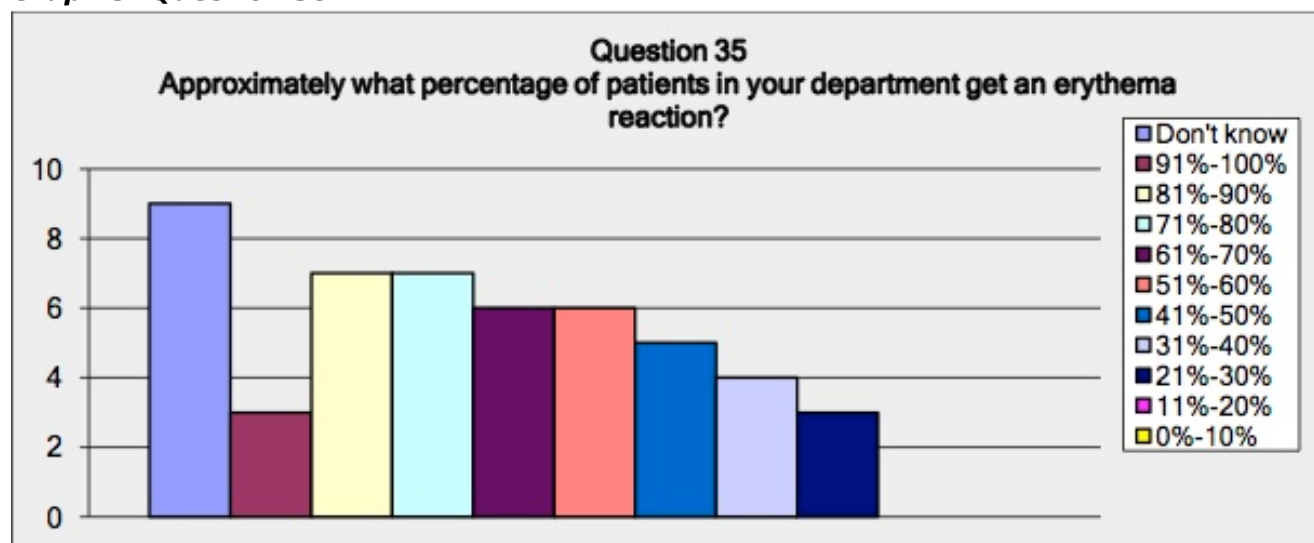
The extent of erythema

Maddocks-Jennings⁹⁰ citing Fisher et al⁴¹ state that 87% of patients will experience a moderate to severe skin reaction to radiotherapy. Porock and Kristjanson³⁷, based on work from King et al⁹¹ and De Conno et al⁹² state that 95% of patients will experience some degree of skin reaction. Butcher and Williamson's⁹³ systematic review also states this figure of 95 %^{37,43}. Recent published results from Gosselin et al¹⁹ record 95 % of women receiving radiotherapy for breast cancer actually experienced a skin reaction, this occurring usually by week four.

The results from the SCoR survey tend to indicate that the extent of the erythema is actually

unknown as it is unquantified. So what is the extent of the problem?

Graph 3: Question 35



Response count = 50

Section 5 - During treatment: Dry desquamation

Table 4: Question 37

Question 37		
If yes, which skin care product(s) does your department recommend for dry desquamation? (please tick all that apply)		
Answer Options	Response Percent	Response Count
None	0.0%	0
Aqueous cream	79.5%	35
Hydrocortisone 1%	54.5%	24
Mometasone Furoate Cream	0.0%	0
Biafine	0.0%	0
Sucralfate Cream	0.0%	0
Hyaluronic Acid	0.0%	0
Other	18.2%	8
N/A	2.3%	1
If other, please specify		17
answered question		44
skipped question		10

Twenty four departments are using hydrocortisone 1 % for dry desquamation in line with the CoR 2000 guidelines¹; this is despite current contradictory evidence^{18, 48, 94, 95}. Kaufman et al⁸⁷ conclude that 1% hydrocortisone cream may be effective owing more to its moisturising action rather than the anti-inflammatory effect and that it may reduce itching^{45, 47}. Bolderston et al's⁵⁴ systematic review concluded that no study reported significant differences in resultant skin reaction.

Section 6 - During treatment: Moist desquamation

Table 5: Question 45

Question 45		
If yes, which skin care product(s) does your department recommend for moist desquamation? (please tick all that apply)		
Answer Options	Response Percent	Response Count
None	0.0%	0
Paraffin or Lanolin Gauze	6.7%	3
Hydrocolloid Dressing	40.0%	18
Silicone Dressing e.g. Mepitel	46.7%	21
Gentian Violet	4.4%	2
Dermofilm	0.0%	0
Second Skin	2.2%	1
Hydrogel	73.3%	33
Lyof foam	15.6%	7
Other	28.9%	13
N/A	0.0%	0
If other, please specify		20
	<i>answered question</i>	45
	<i>skipped question</i>	9

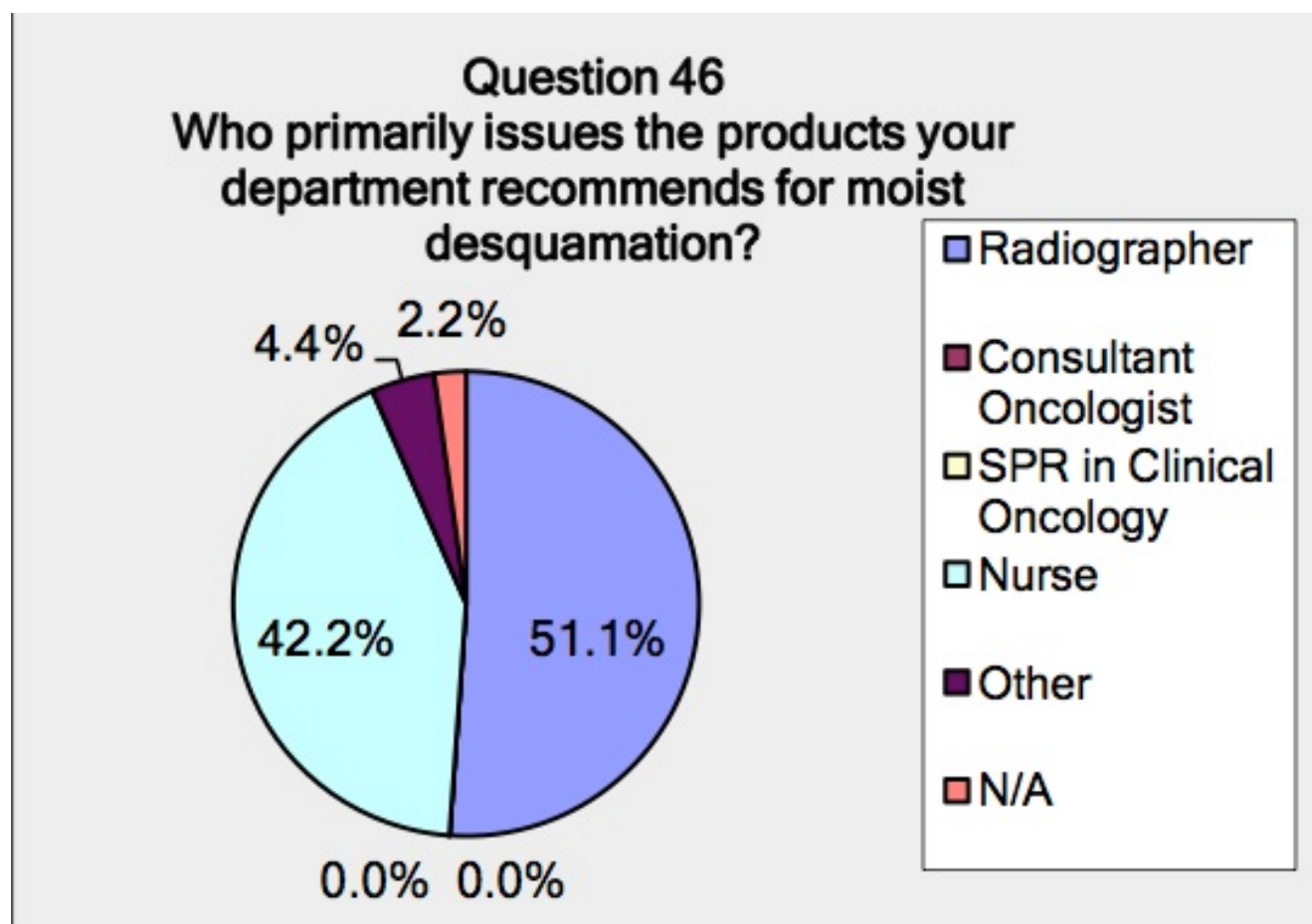
Moist desquamation skin care

A variety of products and dressings are used for moist desquamation but hydrogels still seem to be most popular with 33 departments using them, in line with the CoR 2000 guidelines¹.

Dyson et al⁹⁶ investigated moist versus dry care of irradiated skin and documented more rapid vascularisation with moist wound care. Field and Kerstein⁹⁷ also noted that maintaining a moist wound environment facilitates the wound healing process. Momm et al⁹⁸ conclude that using a moist skin care product, such as 3% urea lotion, delays both the occurrence and severity of acute skin reactions. However, later work by Macmillan et al⁹⁹ concludes that the use of hydrogels for moist desquamation is not supported and that hydrocolloid dressings or hydrogels may actually exacerbate the condition and delay wound healing^{99,100}.

Lanolin and gentian violet are still in use despite the evidence to contraindicate this practice^{16,101}.

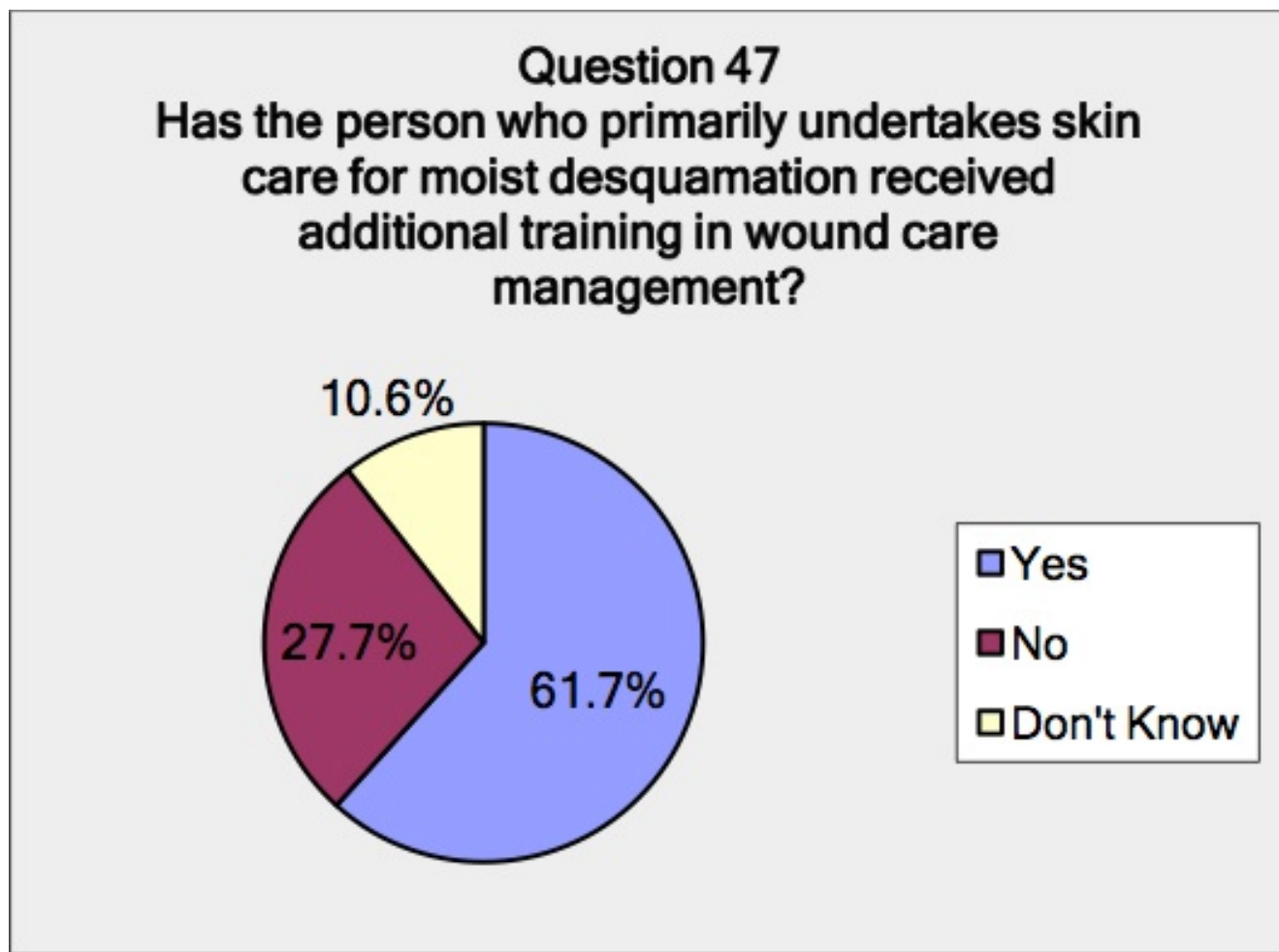
Graph 4: Question 46



Response count = 45

It is interesting that management of moist desquamation appears to be shared almost equally between radiographers and nurses.

Graph 5: Question 47



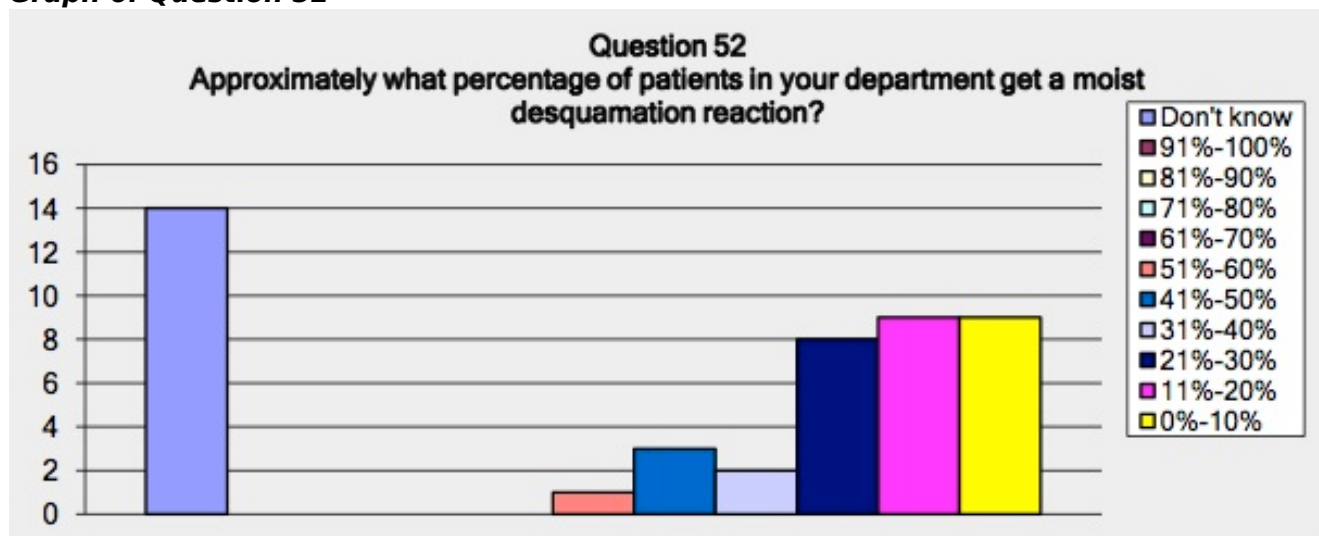
Response count = 47

It is welcoming to note that 29 departments stated that those undertaking care of moist desquamation have received additional training in wound care management.

Only three departments are conducting randomised controlled trials into the clinical effectiveness of a topical agent for moist desquamation.

There is one on-going assessment into the cost effectiveness of a product.

Graph 6: Question 52



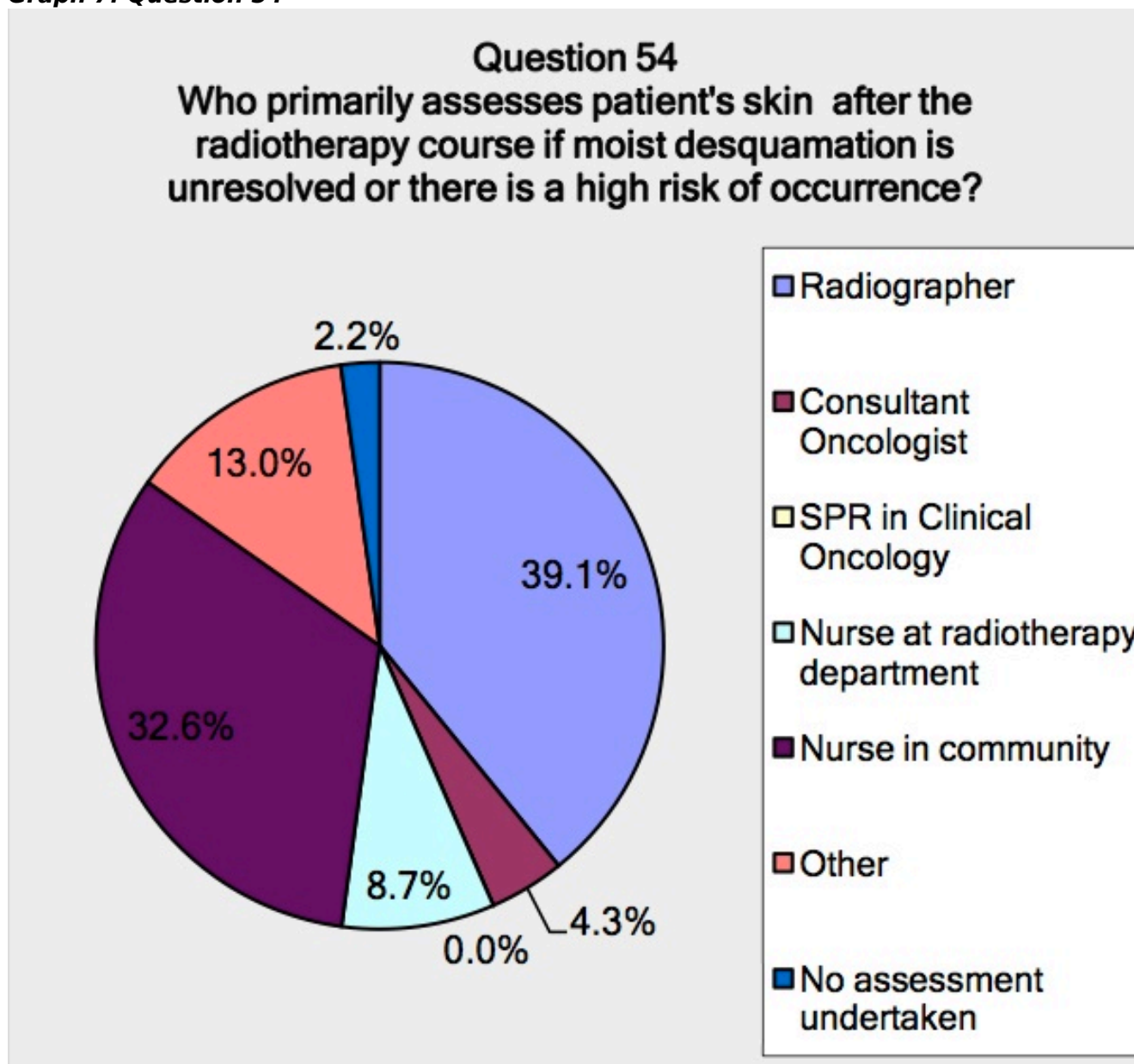
Response count = 46

Kedge's⁵⁵ systematic review notes the extent of moist desquamation seems to be unknown as varying figures are quoted^{37, 41, 102}. The results of this survey would seem to confirm that view.

Section 7 - Posttreatment: Assessment and skincare

Nurses in the community are frequently expected to continue with moist desquamation care after radiotherapy. Most departments stated they supply 2-3 days worth of moist desquamation products to a patient at the end of radiotherapy. Therefore, there may be problems with product supply and continuity of care.

Graph 7: Question 54



Response count = 46

An evaluation of the treatment after care requires a review to ensure local continuity of care across the pathway, a general need highlighted by a recent Department of Health cancer patient experience survey¹⁰³.

Section 8 - Review of Guidelines

Table 6: Question 58

Question 58 Guidelines review					
Answer Options	In the last 2 years	In the last 4 years	In the last 6 years	Over 6 years ago	Response Count
When did your department last update skin care information for patients?	39	6	0	2	47
When did your department last update skin care guidelines/protocols for staff?	36	6	0	2	44
<i>answered question</i>					47
<i>skipped question</i>					7

Most departments have recently reviewed and updated their skin care advice. This is encouraging to note, although it is unknown if the guidelines have been reviewed in line with current evidence.

Limitations of the survey

There are certain limitations to the survey that need to be recognised and which may have affected results.

As the survey was sent to each radiotherapy departmental manager and they selected who completed the survey and anonymously returned data, it is unknown who and what centre answered. Therefore, it is also unknown if the responses expressed are individual views or departmental policy.

It is not possible to know if each question was fully understood in the manner intended as there was no 'face to face' follow up. The questions that appeared to cause the greatest confusion were those where percentages of skin reaction were asked. The disparity in results could be owing to misinterpretation of the question, although the authors believe this reflects the unknown statistics as departments do not routinely record this data.

It is unknown if all questions were answered honestly or if the survey was given the answer that the respondent felt was correct. It may be that more departments use gentian violet in reality but the respondents felt that this was an incorrect response to declare.

Issues for consideration

As noted by Russell³⁵, if the underlying cause of a radiation reaction is physiological and the extent is genetically predisposed, there will be inter-patient variation which may make conducting clinical trials in this area statistically compromised. It would appear that topical agents are unlikely to realistically affect the above as noted by Russell^{35,37} although as a few studies have shown statistically significant results,¹⁰⁴ perhaps we should be focussing on symptomatic amelioration. The type of regime applied preventatively and to erythema appears to have no influence in a skin reaction occurring.

Comparing radiotherapy skin care study data is difficult as there is often unclear methodology, differing patient allocation, and different skin assessment scales and follow-up data.⁵⁵ Overall study data shows no significant difference between cheaper aqueous cream and more expensive alternatives.^{39,105} Gosselin⁴⁴ also notes that there is no evidence to suggest using products prophylactically as we do not know who will get skin reactions and what type of reaction they will get.

Are we actually providing skin care advice to patients based on traditional knowledge and a paternalistic approach to healthcare? Currently, some of the skin care provided may not actually alleviate the problem and indeed may even compound the effect. This area of patient care is time consuming and expensive therefore, as health professionals, we need to understand what we are doing and more importantly why.²⁰ Urgent research is required to enable a more consistent approach to patients receiving radiotherapy and to inform a review of available guidelines.

An effective skin care protocol¹⁶ will:

- aid continuity and consistency of care
- promote skin assessment
- encourage evidence-based practice
- simplify documentation and recording
- educate both patients and staff.

D'haese et al⁵⁶ reflect that the variation in product utilisation could be reduced if evidence-based recommendations were adopted. They note that changing practice is a 'long-term process' and that in order to change outdated traditional practice, good translation of research findings into the clinical setting is a necessity, which will be an on-going process that requires monitoring.

Kedge⁵⁵ notes that the College of Radiographers' (CoR) guidelines¹ are out of date. Indeed they are ten years old and require urgent review. In light of updated evidence, particular attention needs to be paid to the recommendations of those guidelines:

- not to use deodorant
- the use of aqueous cream for erythema
- the use of hydrocortisone 1 % for dry desquamation
- the use of hydrogels and hydrocolloids for moist desquamation.

This survey illustrates that the CoR 2000 guidelines¹ are still followed by the majority of departments, therefore if updated guidelines are issued, this will provide a good base to afford the critique and evaluation of skin care practices. With a wide variety of products currently available to both primary and secondary care markets, there are bound to be variations in product utilisation and availability; therefore, careful assessment and justification is paramount with considerations such as:

- what is the variation of ingredients in products that use the same generic name eg Aloe vera, aqueous cream?
- is a product actually worth the cost?
- how available and reliable is the supplier?
- how often does a product need to be applied?
- how easily is the product applied?

Conclusion

Faithfull et al¹⁰⁶ note 'a growing awareness of the need for evidence-based practice in radiotherapy' but that there are 'well documented disparities between clinical practice and research findings which could underpin care'; reflecting that supportive care is often based on no, little, or poor evidence. They also emphasise that although there are numerous products for radiotherapy skin care available, there is no consensus as to the best practice, causing an inconsistency of care⁶¹; a view which has been confirmed by this survey.

McQuestion¹⁰⁷ reviewed published studies for the prevention and management of radiotherapy skin

reactions and note insufficient evidence to recommend any specific topical or oral product. Schreck et al¹⁰⁸ found no benefit in either creams or powders and reflect that the lack of effect may be explained by underlying pathophysiological processes which cannot be influenced by topical agents^{35,109}. Gosselin et al¹⁹ found none of the three care products they tested to be superior to a placebo of sterile water mist.

Bolderston et al⁵⁴ and Wickline¹⁰⁹ note that the quality and quantity of studies evaluating topical agents was not sufficient to support or refute any specific product. Many different products are in use across the United Kingdom, often at considerable expense, which may be difficult to justify. Therefore the body of evidence is insufficient to provide clinicians with comprehensive guidelines for the prevention and management of radiation induced skin reactions. For example, research is required to determine how often a treatment course is interrupted as a result of a patient's skin reaction.

Although the majority of skin reactions tend to subside after a few weeks, some can be prolonged, uncomfortable and distressing, thereby affecting a patient's quality of life¹⁰². Therefore, a focus for skin care may need to be on alleviating symptoms and providing comfort. As noted by Gosselin et al 'patients prefer to take action rather than do nothing'¹⁹.

Can radiotherapy skin care be improved? Yes, but there needs to be more evidence and documentation of practice. The College needs to urgently publish new guidelines based on the current evidence available to provide a foundation and radiotherapy departments need to routinely monitor, assess and document skin reactions using grading systems and noting intrinsic and extrinsic related factors, thus assisting in the overall data collection and management of irradiated skin.

Recommendations

All radiotherapy departments should monitor and document skin morbidity in a systematic way. Best practice should have standard pre-treatment assessment and baseline, and weekly reviews using a particular tool and process. Skin care practice should be agreed across the Cancer Network, in line with the requirement for agreed Radiotherapy protocols as recommended within the Cancer Peer Review Measures for Radiotherapy (England)¹¹⁰.

Further high quality trials to investigate interventions for dry or moist desquamation are urgently required. National Guidelines must be regularly reviewed and revised to ensure that they are consistent with emerging evidence. Evaluation into treatment aftercare should be reviewed to ensure local continuity of care across the pathway. Audit into patient preference and compliance with skin care information and products should be undertaken.

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