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by: Kay Leonard

Same role, different skills:
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Brachytherapy:
exploring the role of nurses
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Radiotherapy Care
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Radiotherapy is an extremely important treatment modality but, being of little interest to the pharmaceutical industry, it is not always given the attention it deserves. There are relatively few nurses working in radiotherapy, and in many countries, the role of the nurse is less well defined than in other cancer specialties.

Around 60% of all cancer patients currently undergo radiotherapy. With new technologies emerging, greater use of combined chemotherapy and radiotherapy and increasing numbers of people developing or living with cancer, this number will rise in the coming years.

In this Newsletter you can read about some of the latest technological advances in radiotherapy as well as the management of common side-effects and the experience of the patient.

When radiotherapy treatment is over, patients continue to experience late side-effects which compromise the quality of their life and may be associated with second malignancies. With survival rates improving, it is crucial for nurses to understand these effects so they can inform and support patients after treatment. The first article provides an overview of late effects and includes an interview with Lars Hansen, who continues to experience effects many years later.

Nurses working in radiotherapy have an extremely important role to play informing and supporting the patient and relatives before, during and after treatment. In some European countries, nurses are also responsible for administering radiotherapy treatment. In our second article, ‘Same responsibility, different skills — radiotherapy nursing across Europe’ on page 14, we take a tour round Europe to learn more about the role of radiotherapy nurses in five different countries, bringing to light many differences.

One of the questions most commonly asked by nurses is how to care for the skin during radiotherapy. The article, “Caring for the skin during radiotherapy” on page 28, summarises current thinking in this area. Lena Sharp, from Sweden, then describes the importance of effective communication within the radiotherapy department, showing how patient safety can be improved.

New technologies demand new skills and knowledge. Annette Bøjen from Århus, Denmark, describes an innovative training initiative — the 3D accelerator in radiation therapy training — set to equip nurses for new roles. Christina Andersen, also from Denmark, explains the importance of information, communication and high-quality care for patients undergoing brachytherapy.

This newsletter only scratches the surface of what nurses need to know, but we hope to inspire you to learn and understand more about patients’ experience of radiotherapy. Nurses need to be proactive in educating themselves about new developments in treatment, or in supportive care or in symptom management. EONS is offering a new module to improve nurses’ knowledge and skills in radiotherapy, hoping to motivate more nurses to conduct research in this area too. Nurses have a huge amount to contribute to radiotherapy care, and have the potential to take a leading role in clinical research into the future.

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Mary Wells is a Senior Lecturer in Cancer Nursing at the University of Dundee, Scotland. Her clinical background is in radiotherapy care.
A Message from the Board

We have no doubt that our biennial Spring Convention in The Hague was a resounding success. The event was memorable for many reasons, not least the impact of Eyjafjallajökull, the Icelandic volcano. I was one of the many delegates whose plans were severely disrupted by the ash cloud. As I was in Scotland the morning I was due to travel to The Hague, I was one of the first people to feel the effects – my flight was cancelled and I was unable to join the event. We are in awe to the many ingenious initiatives taken by participants to overcome the chaos and help each other hatch plans to make their way back home.

Our work on planning the 8th Spring Convention which will be held at the end of April 2012 in Valencia is gathering pace. Similarly, the ECCO 16-ESMO 35, to be held from 23 till 27th September in Stockholm next year, is coming closer. We are introducing new procedures to regulate our capacity to maximise our share of the profit from this event which requires that we provide ECCO with up-to-date lists of national societies being members of EONS. This will enable them to identify EONS members and calculate our share of the surplus funds. Since this will have an effect on our finances and consequently our ability to carry out other EONS activities, society assistance on providing such lists is highly appreciated.

Your Board highly values contact with EONS members and, in addition to the Advisory Council held annually, we are planning to make personal contacts with national societies and we will be glad to present and discuss EONS at your national meetings. In the meantime, don’t forget to keep yourself fully informed about the latest news by accessing the EONS website at http://www.cancernurse.eu/

Ulrika Östlund
EONS Board Secretary

Learned Journal Makes Impact on Congress

The European Journal of Oncology Nursing, the official journal of EONS known as EJON, made a splash last month at the Spring Convention by sponsoring for the first time the internet zone. “We wanted to let people know about EJON” said Alex Molassiotis, Professor of Cancer Care at the University of Manchester and Editor-in-Chief of the journal. “We are very proud that EJON is the official journal of EONS and we wanted to contribute to the Spring Convention. We felt that sponsoring the internet zone would be a good way to do this. As well as promoting the journal, it really helped the delegates by enabling them to check for urgent emails”. EJON attracted a great interest from congress participants as it achieved another milestone. The journal published for the first time abstracts from oral presentations and posters in a supplement. Its publisher Sarah Jenkins noted the importance of this achievement and said, “The Proceedings Book was published in print for the delegates to the Spring Convention. It will also be published online and we expect the abstracts to be widely read in Europe but also by subscribers in North America and Asia. It was great to publish the Proceedings Book as an official supplement of EJON and we look forward to doing it again in the future”.

Ulrika Östlund
EONS Board Secretary
EONS 8
Spring Convention

25-28 April 2012
VALENCIA, SPAIN

Save the Date

The European Oncology Nursing Society presents:

www.ecco-org.eu
At tending the spring convention again highlighted for me the importance of giving nursing an individual voice in the policy making process. Equally important is the need to give a forum for discussion for those of us coming from countries where developments in cancer nursing are not yet as established as for instance in Britain. Policy affects nurses and patients alike, as illustrated by Sara Faithful in the opening session, when she stressed that cancer nurses will probably be in short supply if, in the years to come, we do not address the attractiveness of the profession. In addition, EU policy makes it easier for nurses to move around, which can only lead to a brain drain in countries with fewer resources. Patient mobility is governed by more complex regulations, with freedom of choice closely tied to the ability to pay, at the moment.

Given the complexity of the issues involved and the diversity of definitions and roles of cancer nursing in different countries, discussing and comparing national achievements and stumbling blocks, searching for best practice models and a “European curriculum” will help cancer nurses be heard in the policy-making process, not only at the national but also at the supranational level.

Petra Riemer-Hommel
When the leaders of EONS and the US Oncology Nursing Society (ONS) discussed whether to use material from the ONS Leadership Development Institute in two workshops at the conference, the consensus was a clear yes. The collaborative effort, chaired by their respective presidents Sultan Kav and Brenda Nevidjon, showed that leadership has universal themes, despite the diversity of countries and their healthcare systems.

Mary Gullatte from the US and Sara Faithfull from the UK combined lectures, group activities, and fun exercises to engage participants. Being asked to draw a pig in one of the case studies raised many chuckles, but it proved how small groups can identify system barriers and solutions to them. Making a clear distinction between English and American phrases and colloquialisms led to an animated session engaging participants to help each other clarify information. In the word choice exercise, the result was a colour that described characteristics of the person. Participants were given a piece of ribbon for the dominant and second colour, and wore them in their name tag. It was a fun way to reflect on one's leadership characteristics with none being right or wrong.

Throughout the conference, I learned something new in each session and enjoyed being in a community of oncology nurses. The subsequent challenge posed by the volcano and the resilient response by nurses made this conference unique and gave us all many great stories to tell.

Brenda Nevidjon

Alex Lindenburg, Nurse Manager at the Vlietland Hospital in the Netherlands, used power points with music and fireworks to show how the ‘Magnet’ principle was used to bring back the 3 Ps, Passion, Pleasure and Professionalism. He called for action “Think Big, start Small, but just Do it!”

Erwin Humer
Icelandic volcano:

Needs must when the devil drives

When Eyjafjallajökull came to life in Iceland this spring, it left thousands of travellers stranded and shocked. Among them were hundreds of participants at EONS 7th Spring Convention in The Hague. For many, their home journeys became the stuff of travellers’ tales.

Turning Lemons Into Lemonade

The EONS congress was such a wonderful opportunity to see old friends, make new ones, and learn so much. Who would have guessed that a volcano with an unpronounceable name would impact on our journey? As one who travels a great deal, I should be prepared for such mishaps. This one, however, stretched the limits of previous experiences, but I learned new lessons and reinforced old ones. There were four of us from the United States who banded together to hatch ways to get back home. “Strength in numbers,” became our motto. By facing together a common ordeal, we were able to support each other and make the best of a stressful predicament. We experienced the good hearts of so many people time and again. Everyone at the conference was helpful and so concerned about our well-being. We were grateful for that extension of caring. Creativity was rife as delegates set out to search for every possible option to get home. Key to it all was a positive attitude and a flexible approach. Technology is amazing and helped us to stay in contact with family and work colleagues. We were stuck, so we set out to turn it into an adventure and took every opportunity to see more of the Netherlands. We visited Delft, Amsterdam’s museums and Utrecht, and we became experts on the Hague’s transit system and the Dutch train system.

Luck was with us, and we were able to rebook our travel as the skies began to open up. We were all able to head home on the following Thursday, so no one had to be “the last woman standing”. All in all, it will be an unforgettable conference with many wonderful, lasting memories, despite the antics of Eyjafjallajökull.

Paula Rieger

The Vikings and the volcano

Thousands of years ago the Vikings charged in all over Europe, not known for their good manners. This April, a smaller horde of Vikings, once again, were on the move, braving the wrath of Eyjafjallajökull to roam back home, again with no improvement on the manners.

Around thirty Vikings, known today as Scandinavians, were among the 670 participants stuck in the Hague after attending a Spring convention – with beautiful houses, good bars and eateries, and nice folks – not a bad place to be marooned in. At first the plan was to rent a bus, but there was no room for the Danes – actually it had all to do with feuds between footballing nations! The Swedes and Norwegians took the coach to Copenhagen then reached home by train. Three Danes were left behind. A profiteering agency demanded €1500 to rent them a car. In the end, a lovesick husband came to the rescue. He drove for 12 hours, spent one night in the Hague and drove them back. An award has now been named after the gallant husband.

Birgitte Grube
The Spring Convention in the dream flowerland of The Netherlands left us with unforgettable memories. But what will remain etched on the mind of our delegation from Turkey was the incredible trip to get back home following the widespread disruption caused by the Icelandic volcano. At first, Iceland seemed to us very far, but as the ash cloud hurriedly spread all over Europe we soon realised the world indeed is very small. Even though the sky was sunny and clear over the Hague, all flights were cancelled indefinitely. No tickets were available for trains or buses, no cars to rent, no alternative plans, not even hotel reservations for some of us – it was a real crisis. Then came a glimmer of hope when we discovered we could rent a bus that was on its way back to Turkey having brought participants from Turkey to the Hannover Fair. By midnight on April 19th, 38 Turkish delegates boarded the bus at an empty Schiphol airport, which was deserted and desolate. That was the beginning of our long journey, the most exciting and adventurous experience for many of us, which for two and half days took us across Germany, Austria, Italy and Greece. Nature was still asleep in the Northern Alps, but we were delighted to see it waking up when we reached Italy. While driving near Innsbruck, we suddenly realised we had to race against the clock to catch the last ferry for Greece, leaving Italy at 7 pm. After a mad dash throughout Italy, breaking the speed limits, and having to spend hours on our mobiles to persuade the port authorities in Ancona to delay departure of the ferry by half an hour, we managed to board on time. It was a luxurious nine-floor cruiseship, with glittering facilities – bars, casino, swimming pools and shopping malls. Our delightful cruise on the Adriatic Sea ended at Igoumenitsa in Greece at around noon. Our last leg in Greece was a dream – we enjoyed a beautiful spring sunshine, a wonderful fish and wine dinner at Kavala, and crossed the Turkish border at around midnight. By Wednesday noon, we were finally all safely back home.

Nurgun Platin

CRISIS, ADVENTURE AND A HAPPY END

56 hours on the road

Just like the hundreds of our colleagues attending congress, we in the Greek delegation took the awful news in our stride. Our one food for thought was to find the quickest means to get back home. We hatched two plans – one was to travel by road through Croatia, Serbia and FYROM – which needed passports – and the other was to go via Italy and take a ferry. Only three of our 10-strong delegation group had passports, so we jumped at the offer from the Croatian colleagues to travel with them on a bus organised by their travel agency. We just had to pay the driver. We started at the crack of dawn on Sunday, and drove endlessly along the motorways, stopping every four hours for the driver to rest. Our Croatian friends, in particular Barcka who spoke English, were very hospitable and polite and made us feel we were all one family, the big family of oncology nurses. On arrival in Croatia, we were treated to coffee, as we did not have any Croatian Cuna. Barcka helped us all the way through, even taking us to the station and making sure we took the right coach to Belgrade with enough provisions for the trip. Barcka, our heartfelt thanks! We could not have made it without you. From there on, things went pear-shaped. The very slow train we took from Belgrade was terrible. The toilets were dirty and, as there were no facilities, we could not get a drink for over 20 hours. When we finally reached Thessaloniki, we were devastated to learn that the connecting train was not due to leave for another five hours, so we had to rent a car. Five hours later, we were home after 56 hours on the road – a big experience, but let’s all hope it won’t happen again.

Dimosthenis Papageorgiou

‘I’ve been travelling so long’

Took a tram to catch a train to catch a bus to catch a coach to catch a ferry to catch a taxi to catch a train to catch a train to catch a taxi to catch a train to be picked up to get to my car to get home.

Simon Roxborough
Radiotherapy is the cornerstone of modern cancer management with an estimated 50–60% of all people with cancer receiving radiation either alone or in combination with surgery and or chemotherapy at some point. Advances in radiotherapy planning and treatment techniques, such as three-dimensional planning and intensity modulated radiotherapy, have reduced acute and late toxicities but, because of improved early detection and survival rates, we are seeing a wide range of chronic morbidities in long-term cancer survivors.

Late effects of radiation occur months to years after the end of treatment and are a major concern not only for paediatric cancer patients but also for adults treated for cancer. While there is data on the late radiation morbidity for children treated for cancer, there is limited data on late effects in adults treated for cancer.

### Late Effects of Radiotherapy

Swift developments in planning and new techniques continue to make radiotherapy one of the most successful cancer therapies. Associated late effects however can cause major problems to patients ranging from pain and fatigue to second malignancies.

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**Table 1. Classification of late effects**

<table>
<thead>
<tr>
<th>Late effect</th>
<th>Examples</th>
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<tbody>
<tr>
<td>System-specific</td>
<td>Damage, failure or premature aging of organs, immunosuppression or compromised immune systems and endocrine damage</td>
</tr>
<tr>
<td>Second cancers</td>
<td>Increased risk of certain cancers associated with the primary cancer and a second cancer associated with cytotoxic or radiological cancer therapies</td>
</tr>
<tr>
<td>Functional changes</td>
<td>Lymphoedema, incontinence, pain syndromes, neuropathies and fatigue</td>
</tr>
<tr>
<td>Cosmetic changes</td>
<td>Amputations, ostomies, skin and hair changes</td>
</tr>
<tr>
<td>Associated co-morbidities</td>
<td>Osteoporosis, arthritis, scleroderma and cardiotoxic effects</td>
</tr>
</tbody>
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Kay Leonard
LATE EFFECTS OF CANCER TREATMENT
Many patients treated for cancer now have multi-modal therapy and this combination of therapies is often associated with late effects. Generally, chemotherapy results in acute toxicities that can persist, whereas radiotherapy leads to consequences that are not immediately apparent.4 Examples of late effects of treatment are shown in Table 1. Radiotherapy is a localised treatment affecting tissues mainly within the confines of the radiation field. Late effects of radiotherapy are specific to the area treated and manifest in two ways as late effects on normal tissues (LENT) and development of radiation-induced second malignancies.1

ASSESSMENT
Late effects from radiotherapy evolve over time and are graded according to severity.5 The ability to quantify and score late effects is a challenge, but there are assessment tools to assist us, such as the RTOG/EORTC’s (Radiation Therapy Oncology Group/European Organisation for Research and Treatment of Cancer) late morbidity system and the National Cancer Institute’s (NCI) Common Terminology Criteria for Adverse Events (CTCAE).6

The CTCAE is a grading system developed by consensus that incorporates acute morbidities and LENT. The system is designed to provide an assessment of complications from all cancer modalities and

<table>
<thead>
<tr>
<th>Table 2. Five grades describe the severity for each adverse event</th>
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<tbody>
<tr>
<td>Grade 1</td>
</tr>
<tr>
<td>Grade 2</td>
</tr>
<tr>
<td>Grade 3</td>
</tr>
<tr>
<td>Grade 4</td>
</tr>
<tr>
<td>Grade 5</td>
</tr>
</tbody>
</table>

See NCI’s CTCAE version 4.02

Late effects of radiation occur after treatment is completed and are a major concern not only for children but also for adults treated for cancer

includes subjective, objective, management and analytical (SOMA) criteria for each organ or tissue.1 The CTCAE (version 4.02) uses five grades (1-5) to describe the severity for each adverse event (see Table 2). The scale includes an additional set of scores to evaluate the patient’s view of quality of life after treatment. Instrumental Activities of Daily Living (ADLs) refer to preparing meals, shopping for groceries or clothes, using the telephone, managing money, etc. Self-care ADLs refer to bathing, dressing and undressing, feeding oneself, using the toilet and taking medications; they exclude the bedridden patient. Specific criteria for individual late effects are also available. Table 3 contains the National Cancer Institute’s Common Terminology Criteria for Adverse Events (CTCAE) version 4.02 for the assessment and grading of xerostomia (dry mouth), a common and debilitating side effect of radiotherapy to the head and neck.

Although toxicity grading scales are useful, they are unable to portray the day-to-day experience of patients living with late effects. The following interview illustrates the impact of radiotherapy on all aspects of life, long after treatment is over.

Table 3. Assessing and grading xerostomia
<table>
<thead>
<tr>
<th>Adverse event</th>
<th>Dry mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Disorder characterised by reduced salivary flow in the oral cavity</td>
</tr>
<tr>
<td>Grade 1</td>
<td>Symptomatic (e.g. dry or thick saliva) without significant dietary alteration: unstimulated saliva flow &gt; 0.2ml/min thick</td>
</tr>
<tr>
<td>Grade 2</td>
<td>Moderate symptoms: oral intake alterations (e.g. copious water, other lubricants, diet limited to purees and/or soft, moist foods); unstimulated saliva 0.1–0.2 ml/min</td>
</tr>
<tr>
<td>Grade 3</td>
<td>Inability to adequately eat and drink orally, tube feeding or TPN (total parenteral nutrition) indicated: unstimulated saliva &lt;0.1ml/min</td>
</tr>
<tr>
<td>Grade 4</td>
<td>No grade available</td>
</tr>
<tr>
<td>Grade 5</td>
<td>No grade available</td>
</tr>
</tbody>
</table>

See NCI’s CTCAE version 4.02

Details of the references cited in this article can be accessed at www.cancernurse.eu/communication/roni_newsletter.html
I am 56 years old, married with two grown up children. I teach computing to young adults at a business college. I was diagnosed with cancer in 2001. When I first went to my doctor, he thought that it might all be due to stress. I insisted something was wrong and he sent me to a specialist who found something in my neck. From there on, I had some biopsies done and they found a cancer on the base of my tongue. Since I was considered to be young and fit, they treated me with 33 fractions of radiotherapy.

During the treatment, I found it really difficult when things got slowly worse and worse every day. Also, you cling to the hope that, when the radiotherapy is all over, you will get better again. I was pretty well informed but I still didn’t grasp the whole thing. During the thick of the crisis a lot of the information got lost or clogged up, so you can’t actually use it. There is a lot said about patients’ rights to be informed, but all of this has a rather absurd side-effect – the health professionals are forced to integrate patients into a decision-making process that they can’t possibly cope with.

For instance, at the beginning I was informed that if I wasn’t eating sufficiently, a feeding tube might be a good idea. But it’s only after the doctor confronted me about my loss of weight, three weeks into my treatment, that I understood the fact that they were anxiously waiting for me to say it was ok, and they got desperate before I did. Had they waited for me to get desperate and started the process off, I think I would have died. Before the end of the whole process I lost about 40kg, about a third of my weight, during my treatment and within the first month after. I am an eternal optimist so whenever they asked me how much I had eaten, I probably told them what I ate on a good day or what I hoped to eat tomorrow.

I had been told about the side-effects – bleeding wounds in the throat, vomiting, pain, etc – but I didn’t talk much about it because everybody knows it’s going to happen. Also, when I wasn’t feeling very much in pain, I was trying not to focus on those things.

The feeding tube went in about three weeks into treatment and it improved the situation almost immediately. For one thing I actually got the medication I needed – the pain killers as well as the fluid and calories. I became more relaxed as I didn’t have this fighting feeling all the time.

If I had been able to contribute to the decision properly I think I would have suggested the tube a week or two before and I think it might have saved me some of the long-term effects. I eventually started eating again about four to five months after the end of the treatment. My mother had made some very soft food for me at Christmas. It was the first time I chewed something and I couldn’t do it without chewing my tongue or the side of my cheek as well – it was pretty pathetic. But it was a real milestone – it was symbolic.

One of the most important things was getting back to work. Coming back after a year, the pupils had all changed so they didn’t know me and they just treated me like anybody else. That was really important, it still is – being an active part of something again instead of being like a glass sculpture in the corner, marked “fragile”. I was very fortunate too because my employers really supported me.

There were some difficult times though. I had been living with my partner for many years, and the whole thing put our relationship under strain. I think she felt she could best support me by nursing me, but if there was something I did not need at the time it was being nursed. I didn’t want to be helped to the toilet, because when I couldn’t do anything else, at least I could go to the toilet on my own. I didn’t understand how important it was for her to contribute. I just wanted to take the worry away from her because she was the one who was having the worst time, not me. Within a year of me getting well again, we were drifting away from each other and parted not much later – I am not saying it was the reason,
but it was something our relationship couldn’t carry. My daughters went through quite a hard time too, they were pretty afraid.

When I turned fifty and my colleagues had arranged a small party for me, I made a speech and I said “I have a small thing I would like from you. Please stop treating me like something special, please start teasing me and calling me names like you used to – I am out of my quarantine now, please don’t ask every time you see me ‘How are you now?’ I have had all the attention I need, please don’t do it anymore”. There was a lot of laughter, and it was quite a big turning point for me.

From the day you are told you are free of disease, that’s when you feel you have no support. You feel left to your own devices and this is when you feel quite isolated. After my treatment I went around having lost weight, with sunken eyes, broken teeth, and you have no idea how easily people stigmatise you from the way your face looks. The disgust in their eyes was immediately visible – they must see me as just another street bum, an alcoholic. I am not a very sensitive person but it really shocked me.

The dietitian helped me along the way. Every time you eat it’s an unpleasant physical experience so you become like an anorexic. You get very good at making up excuses for forgetting to eat. Somehow when you forget to eat, you are less hungry and it becomes a vicious circle – you really have to say to yourself “this won’t do”. That’s where my dietitian was really important – I thought “I have to do this because I can’t go back and tell her I didn’t even try”. So you have a sort of extra marker in your life, some standards you try to keep up because someone is expecting it from you – and more than a good professional, she has to be a very good person too so that you don’t want to disappoint her.

Even now, I can’t eat toast, or boiled potatoes. Spicy food and spirits are out of the question – it’s like drinking petrol and sets your throat on fire, unable to taste for a long time. I can only eat small pieces of bread, a small bit at a time, making sure I have something to drink so it doesn’t get stuck. Eating socially is difficult too. It’s OK in a family context, but in other situations you have to tell people you have a problem, and even then, other people will only eat and talk if they see you eating and talking. You have to get on with it, if you don’t, you become socially isolated.

The combination of eating and teeth problems is the most difficult. The surface of my teeth is very corroded and full of caries, the teeth break really easily and I lose teeth every now and then from the back. I have very little saliva and despite special treatment with fluoride and special toothpaste, it’s going to be a long-term problem. But it is kept at bay as best as possible by my dentist. You can’t just have any dentist; but you need someone with experience of irradiated teeth. Recently he became concerned about the pain and pressure I felt in my jaw, which he thought may be due to osteoradionecrosis. He undertook a small operation and his suspicion turned out to be correct. He removed two teeth and a bridge, and cut away part of the lower jaw, and now it seems to be under control. I just hope it doesn’t recur.

Second most important is the fatigue. I can work, I have no problems with quality of life but I can’t keep up with people of the same age and I quickly run out of steam. I can’t stay up late and I have to go home and sleep after working for three to four hours. I have to plan in a different way – if I am away, I have to find a space to rest. Even people who know me well keep forgetting that, as I do myself. It’s not so much a tragedy but it is a limitation.

I was used to doing quite a lot of sport, but now I can’t run or cycle long distances, my mouth gets too dry. It’s not so much the physical aspects, it’s the social aspects that are important. Pain passes, pain goes away, but not being able to participate in what you want to, that feels pretty tough.

My message to nurses is “Keep doing exactly what you are doing. Please be patient with us when we can’t remember what you have told us four times already – and keep seeing us as the very different individuals we are. Oh, and please forgive us for not having the strength to come back later and tell you what wonderful support you’ve been giving!”
Across Europe, there are wide differences in how radiotherapy nurses are trained, as well as in their responsibilities. A quick trip around Europe, touching down in Scotland, Belgium, France, Italy and Turkey, brings to light the different roles across Europe.

Whether nurses are involved in supporting patients through treatment, advising them about the treatment process, managing side-effects, or administering the treatment itself, they play an essential role in improving the experience of patients undergoing radiotherapy.

One of the key areas is the treatment of side-effects and supportive care, an area where nurses in the future will need to assert themselves and continue to develop research and their knowledge of evidence-based care and treatment of side-effects in patients.

Across Europe, there are substantial differences in the educational requirements, tasks, functions, skills and working environments of radiotherapy nurses. One of the most fundamental differences is that, in Denmark, Belgium and Sweden, the radiotherapy nurses administer the radiotherapy treatment in close collaboration with radiographers, physicists and radiologists. In most other European countries, only specially trained Radiation Therapists (RTT) have direct responsibility for the final administration of a prescribed course of radiation therapy. The RTT is an integral member of the multidisciplinary team involved in the total process. The role of the cancer nurse in the team in these countries is in supportive care.
Marie Paule Gardes is a nurse at the Institute for Cancer Research and Treatment, Candiolo, Turin, Italy, where she has been working for seven years. She is also president of the AllRO Italian nurses' association of radiooncology. She explains that the nurses in Italy are not involved in administering radiotherapy treatment, which is done by radiographer technicians. The role and responsibilities of radiotherapy nurses lie mainly with the prevention and management of side-effects, supportive care and rehabilitation of the patient.

Marie Paule sees the nurse as a key link in the chain of care, and an essential part of the multidisciplinary team. There are many other clinicians involved with the patient, for example dietitians, psychologists and pain service staff, etc. The nurse’s role is to advise the patient and promote their best interests.

There is currently no nationally recognised qualification for radiotherapy nurses in Italy says Marie Paule but the Association is striving to achieve this.

Continuing education is left to everyone to acquire themselves. This is important, because every year nurses have the duty to acquire an obligatory updating with a formal examination, and if this is not sufficient they find it difficult to continue in their work. “The biggest challenges I’m facing working in radiotherapy, is the ability to see a patient who can finish his/her treatment without or with only minimal side-effects.” she says.

“I feel very satisfied working in radiotherapy. When I started in this job there was no nursing assistance and I had to build it up in all its sectors (including brachytherapy). It has been very difficult because, as I said, our training does not give us any knowledge of radiotherapy and its side-effects. I began to study radiotherapy, its treatments and its side-effects so that I understood more.” Marie Paule took the initiative to survey the needs of patients for each type of treatment and she drew up guidelines to prevent problems. “The best results we had were in oral and breast cancer. Before this we had many patients with oral cancer with SNG or PEG for mucositis (light or severe). Now there’s only a very few of them with problems.”
Françoise Charnay-Sonnek is from the Department of Cancer Surgery, Centre Paul Strauss, Strasbourg, France. She is also an EONS Board member.

Françoise says “Providing information to patients prior to any treatment is very important, in reducing anxiety and promoting self-confidence. For a number of years, nurses have provided ‘counseling’ to patients at the time of diagnosis, and this is now being extended to other important time points during the cancer journey, including the start of radiotherapy.” Many cancer centres in France, she says, have set up this type of counseling in their radiation oncology department.

“The service in Strasbourg has been running since November 2009. Three radiotherapy assistants were trained to provide counseling to patients with breast and head-and-neck cancers. “By June 2010, the service will also be available to patients with gynaecological cancers” says Françoise. “The counseling takes place the same day as the dosimetry CT scan, after the medical appointment. The radiotherapy assistants use a slide presentation with simple comprehensible text illustrated by photographs to explain what will happen during the different stages of the radiotherapy”. The points of information covered include:

- Providing information about radiotherapy and its side-effects,
- Monitoring the condition of patients’ skin, and referring on to other clinicians, as necessary, including social workers, dietitians, psychologists, sexologists, relaxation therapists and medical staff.
- They are also often involved in radiation protection committees, and in research, depending on their experience and qualifications. To work as a nurse in radiotherapy in Belgium, says Katleen, you need a diploma in nursing or medical imaging technology. Additionally, nurses must undertake a diploma in radioprotection. In some areas, RTTs are directly involved with the teaching of new RTTs. All newly qualified RTTs are given a mentor for around two years.

Katleen sees the biggest challenges working in radiotherapy as:
- Patient satisfaction
- Patient safety
- Radioprotection
- Keeping up to date in such a rapidly evolving field.

The greatest reward, she says, is the gratitude of the patients, and participating in the total picture of a RT treatment.

Both are involved in planning patients on the simulator, under the supervision of a radiotherapist. Some have responsibilities in preparing immobilisation devices, customised shielding, electron cutouts and bolus material. RTTs carry out daily control checks on the simulator and assist with 2D, 3D, 4D, IMRT, total body irradiation (TBI) and electron plans, ensuring that treatment prescription sheets are correct and radiation doses are verified. They treat patients each day, performing all quality assurance checks, and ensuring treatment plans are followed accurately. RTTs are also involved with preparing patients for brachytherapy, assisting with the brachytherapy procedure and simulating the patient.

In addition to these roles, RTTs perform a very important function in relation to patient education, providing information about radiotherapy and its side-effects, monitoring the condition of patients’ skin, and referring on to other clinicians, as necessary, including social workers, dietitians, psychologists, sexologists, relaxation therapists and medical staff.
DOSIMETRY CT SCAN:
Point tattoos are made by the radiotherapy assistant during the dosimetry scan in order to ensure the same position is maintained every day of the treatment. It is important for the patient to know that the tattoos will fade over time and can be removed by a skin specialist after the treatment, if desired.

DELINEATION:
The radiation oncologist marks out the area to be irradiated and the healthy organs that need to be shielded.

DOSIMETRY:
The physicist determines the dose prescribed by the radiation oncologist which will be fractionated over several sessions. The dosimetry is then once again verified and validated by the physicist and the physician.

TREATMENT:
The position the patient will have during the dosimetry scan will be the same during the treatment and it is essential that they remain still. The first session lasts about 30 minutes and the following ones about 15 minutes. The machine can be loud, so music is used to make this time as comfortable as possible. Control images are made every day before delivering treatment to verify the correct position of the patient. It is important to inform the patient that the treatment is painless.

During the second treatment session, a dosimetry in vivo is performed in order to be sure that the delivered dose is the right one.

FOLLOW UP:
The radiotherapy assistant informs the patient about the support available from dietitians, psychologists, social workers, pain specialists and others. Advice is also given about side-effects, in particular caring for their irradiated skin and managing fatigue.

Elysabeth Rieger, Head nurse of the Radiotherapy department, says that patients’ feedback about the pre-treatment counseling service has been encouraging. “Patients say they are satisfied with the information received and that they feel less anxious as a result of being able to understand more about their treatment.”
"Little has been published regarding the specific role of nurses in radiation oncology," Fatima explains. “Traditionally, nursing in radiation oncology has been overshadowed by the technical aspects of the therapy and highly trained professionals who remain part of the treatment today, including physicians, physicists, dosimetrists, and therapists.” Her study identified five broad nursing responsibilities: patient care (the primary responsibility), education, administration, research, and consultation.3-7

The target population for this study consisted of nurses currently practising in the field of radiation oncology (both outpatient and inpatient). Based on the literature, a semi-structured questionnaire was developed to elicit information related to the role of the nurse. The instrument consisted of a six-page, self-administered questionnaire with both fixed-choice and open-ended questions regarding respondents’ demographic and professional characteristics, practice settings, employment characteristics and nursing tasks including patient care (36 items), patient and family education (32 items), administrative (17 items) and research responsibilities (4 items).

In February 2005, a questionnaire, cover letter, and return envelope were mailed to members. Forty-four centres were identified (17 private and 27 government institutions) and asked about whether they employed nurses. A total of 124 responses were eligible for evaluation from 17 centres that are all public institutions. Of those, 24 (19%) were members of the Oncology Nursing Association of Turkey (TONA).

Mean age was 36 years (21-55); 56% had an associate degree in nursing, 78% were staff nurses, 68% worked at an inpatient clinic, and 61% had spent more than five years in radiation oncology. The majority of respondents (60%) worked 40 hours per week, whereas 27% worked 45 hours. The majority did not receive specific education. Although 68% of respondents (n=84) stated that they had procedures/guidelines, most did not specify; 27% have guidelines on skin care. Most of them were involved in patients and family teaching (87%), but only 21% of them had specific provision for education and 30% of them used written educational materials (Table 1).

The most frequently cited patient care activities were administering medications and supporting patients and families during procedures. Less cited activities were obtaining medical history and performing physical assessment.

Patient teaching activities included mostly explaining radiation procedures and nutrition, and least frequently sexual counseling. Only 10% of respondents were involved in nursing research related to this area.

Radiation oncology nursing is a sub-specialty in evolution. This survey is the first detailed description of the nurses’ role in radiation oncology in Turkey. Further research should be focused on the importance of the role of educators in radiation oncology and should provide support for an exploration of how patient education and support influence patient outcomes in radiation oncology.

This study was presented at the EONS-6 Congress, Geneva. Details of the references cited in this article can be accessed at www.cancernurse.eu/communication/eons_newsletter.html

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Receiving specific education and sources (n=173)</strong></td>
</tr>
<tr>
<td>In-service education</td>
</tr>
<tr>
<td>Conferences (oncology nursing; radiation oncology; breast cancer)</td>
</tr>
<tr>
<td>Courses (chemotherapy; radiotherapy; gynecologic oncology; sexuality)</td>
</tr>
<tr>
<td>Not received</td>
</tr>
<tr>
<td><strong>Availability of guidelines/procedures for nursing practice (n=84)</strong></td>
</tr>
<tr>
<td>Skin care</td>
</tr>
<tr>
<td>Mouth care</td>
</tr>
<tr>
<td>Administration of drug and blood products</td>
</tr>
<tr>
<td>Other (chemotherapy, CVC care, patient and family education)</td>
</tr>
<tr>
<td><strong>Involvement in patient and family teaching</strong></td>
</tr>
<tr>
<td><strong>Provisions for education</strong></td>
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<td><strong>Availability of written educational materials</strong></td>
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</table>

*Some items may have multiple answers.
The European Journal of Oncology Nursing is ranked 30th out of 62 journals in the ‘Nursing’ subject category with a 2008 Impact Factor of 0.976!

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Developments in Radiotherapy
Questions and Answers

Alastair Munro, Harry Bartelink, Lena Sharp and Mary Wells

Radiotherapy technologies and techniques are developing at a brisk pace. These Qs and As present an overview of the main innovations and their implications for the management and care of patients.
How do new technologies in radiotherapy contribute to improving cure and control?

New technologies aim to deliver a higher radiation dose to the tumour, whilst at the same time decreasing the dose to critical organs and tissues, thereby improving the therapeutic ratio. This can be defined as the ratio between the dose required to produce unacceptable toxicity and that required for therapeutic effect.¹

What are some of the problems with introducing new technologies in radiotherapy?

Introducing new technologies into radiotherapy is, in many senses, simply too easy. There are plenty of manufacturers trying to market new equipment, but this does not mean that it will be used effectively. Specialist staff need time to commission and calibrate the equipment and clinical staff need to become familiar with the new equipment, whilst maintaining the delivery of the current service.

Some of the new technologies (IMRT, IGRT, particle therapy, IORT) have not yet been subjected to rigorous evaluation. They are marketed on the basis of what they promise clinically, and there is some emerging evidence that the theoretical advantages have been translated into clinical improvements. The task of fully evaluating them will, however, take at least the next decade.

What is the difference between IMRT and IGRT?

IMRT (intensity modulated radiotherapy) allows the specific area of the cancer to be targeted, using 3- or 4-dimensional conformal radiotherapy. According to what can be seen on a CT scan, high doses of radiation can be delivered to a very precise area, without causing damage to critical organs like the spinal cord or the salivary glands, etc. This means that patients experience fewer long-term side-effects such as dry mouth resulting from salivary gland damage. IMRT therefore allows the patient to be given a higher and more effective dose whilst sparing normal tissues.

One of the problems is the movement of the organs during radiotherapy. Another new technique, called image guided radiotherapy (IGRT), enables a CT scan to be taken while the patient is being treated, allowing the radiotherapy treatment to be altered according to the patient’s position. It is very useful in patients with lung cancer (where breathing patterns can slightly alter the position of the cancer during treatment), and those with prostate cancer (where the position of the prostate can change slightly between treatments as a result of bladder filling or air within the rectum).

What is IORT?

IORT stands for intraoperative radiotherapy. The idea of delivering radiotherapy to a tumour, or tumour bed, under direct vision at the time of open surgery has always been an attractive concept. The treatment can be precisely directed to the target without the need for elaborate techniques involving imaging, delineation of target volume, simulation and verification. What you see is exactly what you get. Vulnerable normal tissues can be physically excluded from the area that is treated. The advantage from the patient’s point of view is convenience. A single treatment, given during an operation that they would be having in any event, can replace a pro-

Some of the new technologies have not yet been subjected to rigorous evaluation... The task of fully evaluating them will, however, take at least the next decade.
tracted course of treatment as an outpatient. Until recently, the problem has been with the practicalities. Either an anaesthetised patient with an open wound has to be moved to a radiotherapy department for treatment on a linear accelerator, or a specially shielded operating theatre has to be built with a linear accelerator within it. However there are many new approaches that now make intraoperative radiotherapy feasible. These include high-dose-rate interstitial afterloading, portable linear accelerators with electron beam treatment facilities and limited shielding requirement – the PRS device (proton radiosurgery), a fully portable device about the size of an electric drill that produces 50 kV X-rays.

Clinical trials of IORT are underway for a variety of tumours. The most widespread use at present is as an alternative to postoperative breast radiotherapy in women treated with lumpectomy for early breast cancer.

**What are the advantages of proton therapy?**
Proton therapy is particularly useful for tumours at specific sites, for example tumours of the base of the skull, and its advantages are purely physical. The particles stop abruptly at a certain depth within the body, which can be directed by an appropriate choice of beam energy. Biologically, protons have much the same effect, for any given dose, as X-rays. Protons are particularly suitable for treating tumours which lie at depth but immediately above a sensitive normal tissue, such as the brainstem or spinal cord.

The absolute number of patients who might benefit from proton therapy is relatively small. This is because of the rarity of the tumours for which protons offer specific advantage. In Europe, about one proton therapy facility is probably required per 5 million population. This implies that proton therapy should be located at specialised referral centres, and is not necessary for every radiotherapy department.

**Figure 1. Main side-effects of radiotherapy by site**

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**When radiotherapy is combined with chemotherapy or targeted therapies, can you give a lower dose of radiotherapy?**
No. The effect of radiotherapy is more certain than the effect of the chemotherapy or targeted therapy. So adding drug treatments to radiotherapy still means that the patient receives the same dose.

**Are the side-effects of radiotherapy the same as they have always been?**
Yes and no. Because we are using much more combined modality therapy, patients often experience a greater range of side-effects, different patterns of toxicity and more severe acute side-effects overall. Also, because many of the treatment combinations are new, we have not had enough time to understand the long-term effects of these treatments.

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**All AREAS**

- Fatigue
- Skin reactions

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**What other trends and techniques are important?**
Over the years, there have been a number of developments in fractionation (frequency of dose administration). Probably one of the most important is CHART (continuous hyperfractionated accelerated radiotherapy), whereby the overall radiation dose is delivered over a shorter number of days because patients are treated three times a day, seven days a week. The rationale for hyperfractionation (radiotherapy given several times a day) is that smaller doses per fraction can be administered, which, in theory, reduces the late effects of treatment. The rationale for acceleration (radiotherapy administered over a shorter period of time overall) is that tumour cells are unable to proliferate during the radiotherapy course. Randomised trials of CHART have shown statistically significant improvements in the survival of patients with lung cancer, but CHART requires considerable resources to implement and is not widely available.

Combining radiotherapy with chemotherapy and/or targeted therapies is another important development, which has been shown to improve local control and survival in a number of cancers.

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**What can nurses do to improve side-effects?**

It is very important that nurses improve their knowledge of radiotherapy side-effects. Seeing a patient with severe toxicity sometimes makes nurses think treatment ought to be stopped. However, in most cases, this is inadvisable as it will reduce the effectiveness of the treatment. Supportive care and symptom management, which enables the patient to continue his/her treatment, should be the main goal. The problem is that not enough evidence is available to guide the management of radiotherapy side-effects.

The side-effects of radiotherapy tend to affect the area being treated (Figure 1). Supportive care measures including nursing and pharmacological interventions, information/education and psychological care are addressed in the book by Faithfull and Wells.²

**Should we be encouraging patients undergoing treatment for cancer to stop smoking?**

We used to take a negative approach to this question, thinking that if people are going to die anyway, and if smoking is one of the few enjoyments left to them, why should we deny them their few last pleasures? However, treatment nowadays is more likely to be successful and patients are living longer with, and beyond, cancer. We have evidence that continued smoking makes the side-effects of treatment worse and, at the same time, makes treatment less likely to be successful. Continuing to smoke will therefore have a double adverse effect on the therapeutic ratio.

The diagnosis of cancer provides an important opportunity for intervention in terms of public health. If we can encourage and support patients so that they are able to stop smoking, we could extend this to their families and friends and they, too, might stop smoking. This is the concept of using the diagnosis of cancer as a “teachable moment”.

Research studies have shown that nurse-led smoking cessation interventions can be effective in a range of patient groups.³ Interventions are based on the ‘5 A’s approach’ – Ask, Advise, Assess, Assist, Arrange follow-up – and on motivational interviewing. Even simply asking patients if they smoke and encouraging them to think about giving up is an important start.

**How can nurses improve their knowledge of radiotherapy side-effects?**

EONS has recently launched an on-line module for nurses (http://www.eonslearning.com). This four-week course will include video presentations, lecture notes, weblinks, activities and discussion boards, facilitated by four EONS members who have expertise in radiotherapy care – Sara Faithfull, Birgitte Grube, Lena Sharp and Mary Wells. The course will cover why people develop side-effects to radiotherapy, patient experiences, management of side-effects and changing practice. The on-line module is being piloted for a small number of nurses working in radiotherapy across Europe, but EONS hopes to roll it out so that it becomes more widely available. A sample page can be seen in Figure 2.
In 2006 the Department of Radiation Oncology at Aarhus Hospital, Denmark established a Learning Centre for Radiotherapy. The Centre was ready for use in 2007, but in order to overcome the difficulties in training enough staff, radiation therapists/nurses in particular (see box on opposite page), it was necessary to develop new training methods. Taking advantage of the Danish Ministry of Health’s plans to expand in the radiation therapy field, the department secured funds from the Ministry of Health to sign up to a two-year cooperation agreement with the Department of Computer Science at the University of Hull, England, UK.

In this project, the department was the first in the world using a 3D computer-animated simulator (3D acc) for training in radiotherapy. The 3D acc is used for both theoretical and clinical training. Because it is so new, there was no educational knowledge or experience to draw on when the project began, and now three years later, evaluation is still needed.

**THE LEARNING CENTRE**
Planning and delivering radiation therapy is a complex process involving physicians, physicists, radiographers and radiation therapists / nurses (RTTs). The starting point is that specialists must be able to understand spatial relationships in the patient’s anatomy. In the same way that pilots learn flying using a simulator, it was thought that it must be possible to train planning and treatment of radiation therapy in a simulator, too. In fact the data indicates that radiation nurses can get as much out of learning through simulation, as pilots can.

The aims were to:
- establish a Learning Centre with virtual learning tools, to be used by all staff working with radiation therapy;
- train an additional group of nurses to be radiation therapists;
- Explore the possibilities and limitations of virtual training in the 3D accelerator with the results to be fed back to the University of Hull for developing the technology.

The Learning Centre consisted of a 3D acc, an IT-laboratory with full scale computer matching the clinical facilities, a classroom and a study room with library.

To achieve the best learning environment it was agreed that:
- educational material had to be clinical, actual and with anonymous patient data;
- exercises, training and learning could take place at the participants’ pace (Figure 1);
- mistakes would be allowed but without risk to patients;
- it would be possible to repeat practice;
- there would be time for questions and reflection without ethical and time considerations for patients;
- IT-programs in the Learning Centre had to correspond exactly to those used in the clinic, so they would be up to date and relevant.

State-of-the-art new training methods are being used to help practitioners involved in the delivery of radiotherapy, including nurses, strengthen their knowledge of treatment planning using computer-controlled technology and virtual reality learning environment. A 3D computer-animated simulator was used in a groundbreaking training programme in a joint initiative by Aarhus University Hospital and Hull University, England.

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**Figure 1. Skill training with the pendant. Students are discussing the positioning of the patient.**

Annette Boejen

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**In 2006 the Department of Radiation Oncology at Aarhus Hospital, Denmark established a Learning Centre for Radiotherapy.**

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**From apprenticeship to virtual reality training**

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**Figure 1**

Skill training with the pendant. Students are discussing the positioning of the patient.
TRAINING
The course for the project group consisted of 12 weeks of theory, 13 weeks with clinical virtual reality learning and 20 weeks with clinical learning/training.

In the 3D acc: it was possible to train with “transparent patients”, flip and rotate them in all directions and see the beam directions. The consequences of the treatment planning for both tumour and the organs at risk could be visualised and discussed. (Figure 2)

The IT-laboratory was established in collaboration with the accelerator firm Varian. Participants can be trained in IT-tools and get exercises with treatment planning and Image Guided Radiation Therapy.

The course covers a scientific approach on how radiation therapy is carried out with computer-controlled technology combined with communication, care and observation of patients receiving radiotherapy. In this way, there can be specific identification of and intervention with radiation-related side-effects. To strengthen participants’ knowledge and understanding of these areas the students work with real anonymous patient cases. The cases consist of copies of the patients’ medical chart, a treatment plan and treatment cards. Treatment data are transmitted electronically to the IT lab and 3D accelerator. Participants work with pathology, prognosis, protocol treatment, side-effects and management of these treatments. Ex booking of patients’ treatment time and planning can be taught in the IT laboratory. Subsequently, the consequences of treatment planning can be examined by the 3D accelerator. The students work in groups and teach each other through review and clinical example.

Curative treatment often requires daily treatments for 30-40 days, and patients need care and information. The interpersonal relationships and observation of patients for example, pains, weight loss and communication cannot be well taught in a virtual reality learning environment. This part of the work area must be learned in the clinical environment.

A formal evaluation with the project group elicited very positive feedback:
● “In the 3D accelerator, I have especially learned how fields are formed”
● “It’s possible to practise again and again”

“What next?”
The project succeeded in doubling the training capacity. The virtual reality learning environment can now be considered as a new supplementary educational component positioned between theory and clinical training.

“Does training with a 3D virtual environment give greater competence?”
● “Seeing doses in the organ at risk and the effect of wrong positioning in 3D is very instructive”
● “Amazing to find out what is happening inside the patient”
● “I was able to think in 3D, I thought, but now I am much better!”

The immediate feedback from the tutors in the clinic was that the participants in the project group were able to think about dose planning in a three-dimensional perspective. All participants passed the examinations and the examiners assessed the participants as “at least at the same level as before.” Further investigation and documentation are however necessary.

Perspectives
The collaboration with the University of Hull on the further development of 3D accelerator is continuing. The system has subsequently been installed in other clinics, both nationally and internationally, especially in England. The interesting point to debate is “Does training with a 3D virtual reality environment give greater competence?” This work must be further developed and reviewed in the future. Working with the technology as a part of patient education will also be included.

Education for the radiation therapist must qualify the student to perform radiation therapy and care for patients. The course takes place over one year (equivalent to 60 ECTS points) and is based on a 3½ year health professional Bachelor Degree. After finishing the training course the students are accredited by the Danish Ministry of Health and are allowed to treat patients using the accelerators. They are considered contact nurses for the patients. The course includes 12 weeks of theoretical learning and 33 weeks of clinical learning.

Details of the references cited in this article can be accessed at www.cancernurse.eu/communication/eons_newsletter.html
Cancer patients have been treated with internal irradiation or brachytherapy since early in the past century. Radium treatment, initiated by Marie Curie, paved the way for the afterloading technique in the 1980s that used high/low dose brachytherapy for the treatment of gynaecological cancers. During the 1990s, the implantation technique and pulse-dose-rate (PDR)-brachytherapy allowed radical radiation treatment of a series of other cancers, including anal and oesophageal cancers. Brachytherapy is often administered in addition to external radiation/chemotherapy, and applies a high level of radiation directly to the tumour site while protecting the surrounding tissue. It’s aim is to optimise irradiation and to minimise side-effects.

But while diagnosis, response and survival rates, as well as the side-effects of radiation therapy, are well described in the literature little attention has been paid to the reactions and behaviors of cancer patients during stressful irradiation and the nurse’s role. Cancer nurses lack guidelines on best clinical nursing practice in relation to brachytherapy.

Nursing care of cancer patients undergoing brachytherapy is a balancing act between technical, intensive and psychological support tasks. Throughout what is only one component of a more complex treatment process, the nurse should be able to assess where the task lies, and whether it is providing comfort and security, advice or guidance. Before offering implantation, a doctor and a nurse evaluate whether the patient is physically and psychologically able to cope with the treatment.

A research project entitled “Brachytherapy’s influence on cancer patients” aimed at investigating the nurse’s role was carried out in the ward and in the out-patient clinic of the Finsen Center at Copenhagen University Hospital, Rigshospitalet in Denmark.

Most European cancer centres today routinely offer brachytherapy (a radioactive implant) to supplement external radiation and chemotherapy. In an effort to improve the help and support provided by nurses, a Danish group recently conducted a study looking at how patients experienced this treatment.
THE STUDY

The study aimed at understanding the PDR-brachytherapy process and the patient’s experience so as to improve nursing care and prevent psychosocial problems for patients when they receive this type of irradiation. The study, designed to be prospective, descriptive and explorative, involved 40 cancer patients (19 with anal cancer and 21 with gynecological cancers), with a median age of 56 years, and combined questionnaires, interviews and observation.

The patient’s experience with brachytherapy is described in the box below:

FINDINGS

The questionnaires

Patients were surveyed on admission, during treatment and at discharge, and at three- and six-months following treatment. The nurses involved with their care completed two questionnaires, evaluating their own work, one focusing on side-effects and the other on information. A high proportion, 85% of the patients, evaluated their own work, one focusing on side-effects and the other on information. A high proportion, 85% of the patients, proved knowledgeable about PDR-brachytherapy and its side-effects. The results show that 74% were immobilised while 60% were confined to their beds while under treatment. No significant correlation was shown between frequency and degree of side-effects, diagnosis and length of stay.

The interview

Ten patients participated in the interview process six to eight months following internal irradiation. Semi-structured interviews highlighted the patients’ views on their nursing care and provided suggestions for improvements. Agreement between treatment expectations and actual experiences varied from patient to patient, and common concerns emerged regarding having needles implanted internally, and the long hours of treatment requiring bed confinement. One man with anal cancer said “I thought that it [brachytherapy] would be horrifying when it wasn’t at all”. A woman with cervical cancer stated: “I experienced a lot of pain … and was really afraid; really, really afraid”.

Observation

The study combined pure observation with participant observation, and the main focus areas were time and communication. A total of 172 hours were video-recorded involving six patients and 21 nurses, including complete internal irradiation of five patients, of which 42 hours were studied for time and communication. The latter comprised seven categories, including somatic, technical, social, existential and psychological communication as well as small talk and silent presence. The nurses remained with the patients 27% of the total time available for performing tasks between treatment intervals. The majority of the nurses’ communication with the patients concerned physical care (e.g. treatment, side-effects, nursing tasks). Despite the stress, the patients did not express any expectations of receiving psychological support. The video-recordings showed individual patterns of behaviour and coping.

THE WAY FORWARD

The potential of brachytherapy is internationally recognised and, although this study was a major step, further evidence-based studies are needed.

Communication between a nurse and a patient centers on psychological support, involving relaying information, communicating with patients, observing symptoms and side-effects, and leading rehabilitation courses. It is further suggested that:

- a brachytherapy team follows the patient throughout the treatment to enhance the patient’s sense of security;
- international / national brachytherapy courses are given to develop quality treatment and care of the patient;
- an international brachytherapy network be set up to identify where and how brachytherapy is administered in European countries and influence quality and competence development of nursing in brachytherapy. This network can create a forum for evaluation including experts from nursing practice, management, education and research in brachytherapy.

One patient’s experience

During summer 2009, Sara was diagnosed with cervical cancer. She was a social worker and single mother to her 14-year old son. Two weeks following termination of external irradiation, Sara was admitted for implantation. In addition to fatigue, she experienced diarrhea, and soreness in the genital area. She felt nervous during the many hours of PDR-brachytherapy, when the observation and nursing care can only be performed during pauses in the treatment and she is partially isolated and immobilised, positioned on her side. Sixteen needles were implanted internally and she was to undergo 42 hours of treatment, during which there were 34-minute pauses after each hour. While being treated, Sara watched television, spoke on the phone and had several visits from her son and sister. The brachytherapy went well but Sara experienced physical discomfort. She was thirsty, often requested ice-water and required massage to her legs and lumbar region due to leg swelling. On removing the needles, Sara experienced profuse bleeding at the injection sites and to avoid further bleeding, she was bedridden for another 24 hours.

Details of the references cited in this article can be accessed at www.cancernurse.eu/communication/eons_newsletter.html
Caring For the Skin During Radiotherapy

Despite new techniques, skin is always at risk of radiation damage and patient education at all stages is essential. Health care professionals must be provided with up-to-date information and European radiation nurses are best placed to help with risk assessment and patient education.

Table 1. Risk factors for radiation skin reactions

- Treatment factors, e.g. dose/fractionation, volume, technique, bolus, chemotherapy, targeted therapies, radiosensitisers.
- Physical factors, e.g. nutritional status, smoking, treatment site, skin type and integrity, haemoglobin.
- Genetic factors, e.g. reduced cellular DNA repair capability (ataxia telangiectasia, hereditary nevoid basal cell syndrome).
- Co-morbidity, e.g. connective tissue diseases, infectious diseases.

Probably one of the most common topics discussed by nurses working in radiotherapy is how best to care for the skin during radiotherapy treatment. Numerous surveys have shown that practice varies considerably from hospital to hospital, and that radiation skin care is not always evidence-based. Given that up to 90% of patients undergoing radical radiotherapy will experience some sort of skin reaction, and increasing numbers will be treated with concomitant chemotherapy and/or targeted therapies, which exacerbate skin toxicity, it is vital that oncology nurses are well informed about the optimal management of the skin during and after radiotherapy.

Although modern mega-voltage radiotherapy machines have a ‘skin-sparing’ effect, the skin is still at risk of radiation damage. New techniques such as intensity modulated radiotherapy (IMRT) appear to be associated with less severe skin reactions, but such techniques are not employed universally across Europe. The most severe skin reactions are likely to occur in patients having radiotherapy to the breast, head-and-neck or perineal area, where skin folds rub together. Many other factors can affect the severity of skin reactions as summarised in Table 1.

RADIATION SKIN REACTIONS

The first stage of a radiation skin reaction is erythema, affecting 80-90% of patients and usually visible around 7-10 days after the start of radiotherapy. Epidermal basal cell loss occurs after a dose of 20-25Gy, and the inflammatory response, capillary dilatation and oedema cause the skin to appear red, inflamed and sometimes shiny in appearance. Patients complain of their skin feeling hot, itchy and uncomfortable. This erythematous stage often precedes drying and flaking of the skin, known as dry desquamation. The cumulative effect of further doses of radiotherapy can then cause the skin to break down, leading to moist desquamation. The severity of the skin reaction depends on the ability of the epidermal cells to repair and repopulate. Skin reactions tend to worsen as treatment goes on, often reaching a peak during the first week after finishing radiotherapy. Patients need to be informed that this will happen, and health care professionals working in the community must be provided with up-to-date information about the condition of patients’ skin and the most appropriate plan of care once treatment is over.

Unfortunately, moist desquamation reactions provide an ideal route for infection and they can also be very painful. However, there is a great deal that oncology nurses can do to prevent further deterioration of the skin. Patient education at all stages of the radiotherapy process is essential, as patients often become confused about what to do and what not to do with their skin, and may be given conflicting advice from different health professionals. To make matters worse, numerous ‘natural’ remedies are now available via the internet or in shops, and there is little evidence to support their usefulness.

Several guidelines have been produced recently to guide best practice, and many are available electronically (Care of Radiation Skin Reactions booklet, http://www.bccancer.bc.ca/HPI/Nursing/References/SupportiveCare/Radiation/default.htm; Skin Care of Patients Receiving Radiotherapy, http://www.nhshealthquality.org/nhsqis/files/20373_NHSQISBestPractice.pdf).

There is now sufficient research evidence...
to show that washing the skin with unperfumed soap during treatment is quite safe, and indeed is more likely to reduce infection. The majority of European cancer centres allow patients to wash during treatment, but old traditions can persist, and nurses need to challenge outdated practices where they exist. Although all patients should be advised to wash, it is important that they treat their skin gently. Avoiding friction and keeping the skin clean and dry is important. A simple moisturising agent may enhance comfort. However, despite a number of randomised trials, there is no clear evidence to support the use of any particular topical or oral agent to prevent radiation skin reactions. Current research studies appear to be focusing on the potential of corticosteroid cream (mometasone furoate) or Calendula cream to reduce the severity of erythema. Practical advice for patients remains extremely important (see Table 2).

**ASSESSMENT TOOLS**

Assessing the skin regularly during radiotherapy treatment is a cornerstone of good nursing care. There are several assessment tools available that give consistent information about the condition of a patient’s skin throughout treatment. Clinical inspection of the skin is important and should be carried out daily, as skin breakdown can occur rapidly and needs to be picked up as soon as possible. Observation of the skin should be accompanied by assessment of any discomfort, itching and/or other symptom or limitation imposed by the skin reaction, from the patient’s point of view. It is important to remember that the external skin reaction mimics the internal mucosal reaction within the radiation field, and that acute side-effects such as oral/pharyngeal mucositis (in patients with head and neck cancer) and cystitis and/or proctitis (in patients undergoing pelvic treatment) may also cause considerable discomfort, pain and loss of function – these problems need to be assessed and addressed systematically. Supporting the patient to achieve an optimal nutritional intake throughout treatment is, of course, essential to the process of tissue regeneration and wound healing.

Most radiotherapy departments use the Radiation Toxicity Oncology Group (RTOG) scale or the Common Terminology Criteria for Adverse Effects (CTCAE) Version 3 scale to assess the severity of skin reactions (see Table 3). Although these scales are useful, they do not reveal anything about the symptoms experienced by patients with skin reactions. Newer assessment tools include patient-reported outcomes such as pain, itching, burning, as well as toxicity measures rated by the health care professional. European radiotherapy nurses are in an ideal position to promote the use of these measures and to encourage a more systematic approach to routine skin assessment and recording.

**PRINCIPLES OF SKIN CARE**

If a skin reaction develops into moist desquamation, the most important objectives are to ensure comfort and avoid infection. There is much controversy in the literature as to the most suitable and effective dressing for moist desquamation reactions, although it is generally accepted that the principles of moist wound healing apply. There is consensus that adherent dressings or tape should be avoided as they may damage the skin. Simple non-adherent dressings can be effective, and recent evidence suggests that soft silicone dressings and moisture-vapour-permeable dressings, such as Mepilex Lite® offer both comfort and protection. Further randomised trials in this area are urgently required.

The care of radiation skin reactions is a core component of oncology nursing. Until there is more definitive evidence to support the management of this common and unpleasant side-effect of radiotherapy, full attention must be focussed on the patients who are most at risk of developing skin reactions, and a constant effort made to provide consistent and sensitive assessment, and educate patients about the principles of skin care. Cleanliness, comfort, prevention of infection and prevention of trauma remain of fundamental importance.

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Table 2: Skin care advice for patients undergoing radiotherapy

<table>
<thead>
<tr>
<th>Advice for Skin Care</th>
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<tbody>
<tr>
<td>Wash gently with warm water and mild soap every day.</td>
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<tr>
<td>Pat dry with a soft towel, do not rub.</td>
</tr>
<tr>
<td>Do not expose the irradiated skin to direct sunlight.</td>
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<tr>
<td>Wear soft, loose clothing over irradiated area to avoid friction.</td>
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<tr>
<td>Do not shave the area using a wet razor.</td>
</tr>
<tr>
<td>Do not apply perfumed creams or lotions to the area.</td>
</tr>
<tr>
<td>If you are having radiotherapy under your arm, recent evidence suggests that a mild deodorant can be used, but check with your radiotherapy department first.</td>
</tr>
<tr>
<td>If you smoke, seek assistance and support from the radiotherapy nurses, as smoking may exacerbate your skin reaction.</td>
</tr>
</tbody>
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Details of the references cited in this article can be accessed at www.cancer nurse.eu/communication/eons_newsletter.html

Table 3. CTCAE v3 scale – Radiation dermatitis

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Faint erythema or dry desquamation.</td>
</tr>
<tr>
<td>2</td>
<td>Fair erythema; patchy moist desquamation, mostly confined to skin folds and creases; moderate oedema.</td>
</tr>
<tr>
<td>3</td>
<td>Moist desquamation other than skin folds or creases; bleeding induced by minor trauma or abrasion.</td>
</tr>
<tr>
<td>4</td>
<td>Skin necrosis or ulceration of full thickness dermis; spontaneous bleeding from involved site.</td>
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</table>
Teamwork is widely recognised today as essential for high-quality cancer care, but does the communication within and between professional groups affect patient safety? Researchers have focussed on the cost of medical errors and how they can be prevented by communicating better.

Communicating Better to Prevent Errors and Improve Patient Safety

Just over a decade ago an American book, To Err is Human: Building a Safer Health System, opened a new and interesting debate about medical errors and adverse events. According to the author, more than 50% of the errors can be prevented with effective teamwork and better communication within and between professional groups in health care.

More recently the Swedish National Board of Health and Welfare have estimated the costs of medical errors and adverse events to be as high as 20% of the entire national health care budget.

Several interventions to minimise the risk of errors have been tested with positive results, but the vast majority of the studies undertaken involved multi-professional emergency/trauma teams or operating theatres. Despite many similarities between emergency/trauma care and modern advanced radiotherapy (RT) and oncology (seriously ill patients, multi-professional teams, highly technical tasks, errors that may cause devastating damage, stress etc.) not much has been done to systematically improve patient safety in oncology and RT settings, using these interventions.

Two years ago, in an effort to address this pressing issue, researchers led by Professor Carol Tishelman and clinical cancer nurses at Karolinska University Hospital, Department of Oncology and Karolinska Institute conducted a series of focus group discussions to explore how patients, nurses and other professions view professional communication at the department. They found that problems with communication had the potential to seriously affect patient safety. While the focus group discussions with patient representatives provided useful advice on how to improve patient care, most of the problems raised clearly concerned communication among the staff. More problems than expected were found with hierarchical issues. For
instance, there were examples of RT nurses not following the treatment protocols, to avoid disturbing physicians on lunch breaks. There were also physicians who felt things had been better in ‘the old days’ when the nurses had shorter education and were less qualified, which made them less likely to change jobs or advance in their careers.

Subsequently the research team applied and received funding for a project from the Swedish Cancer Society, as well as the hospital and the Institute, to develop and implement a course in communication and patient safety for all groups of staff – nurses in particular. The project, entitled “Communicate Better”, aims to improve communication within and between different professional groups at Karolinska University Hospital, and consequently develop a safer patient care environment. A train-the-trainer course was held for the project group, incorporating material from the focus group discussions based on transcripts and later developed for use in the course for the oncology staff.

Crew Resource Management (CRM) is a management concept used in aviation to improve teamwork. It has been developed to be used in other complex, high-risk contexts, such as advanced health care and involves a wide range of knowledge, skills and attitudes including communication, situation awareness, problem solving, decision making and team work. CRM was implemented at the two RT units and the project is being extended to the rest of the department comprising four oncology wards, three outpatient clinics and three chemotherapy units. So far, 120 nurses, 10 oncologists, 20 physicists, eight nurse assistants and seven medical engineers have taken part.

There were examples of nurses not following the treatment protocols to avoid disturbing physicians on lunch breaks.
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