

Podiatry and its place in onco-podiatric care Additional podiatric care

In the Netherlands, foot care has been available to oncology patients since 2013 by specially trained Medical Pedicures (OVV). In the Netherlands Medical Pedicures play an essential role in the foot screening of person who suffer from diabetes or arthritis. These OVV have now established themselves in the overall care package provided for oncology patients. These OVV providers, who also hold a level 4 MBO (senior secondary vocational education) certificate, have now been included in the digital reference guide issued by the Comprehensive Cancer Centres of the Netherlands (IKNL). A cancer patient's oncology team can search for appropriate care in this digital reference guide. Six podiatrists had already followed OVV course, but there was found to be much broader interest from the podiatrist for a specialized course onco-podiatric care. Podiatrist in the Netherlands are registered care givers who concentrate on the feet and are more specialized in bio mechanical intervention. The main question is whether the podiatrist can provide additional care, supplementary to the specialist care already provided by the OVV. In November 2016 a special pilot training started for licenced podiatrist to answer the question above. The full range of trained podiatrists will also be included in the digital reference guide. At the upcoming OVV symposium, we will demonstrate to all certified OVV how we can incorporate this additional care into the Onco-Podiatric Care Providers care module.

By: Mischa P.M. Nagel

Podiatrists' letter of motivation

Part of the registration procedure for the podiatrist to participate in in the pilot course is to write a concise letter of motivation stating why someone wishes to participate in the course. There are a number of reasons behind this. This will ensure that a candidate reflects on his/her motives behind participating in the course and the tutor can use the letter of motivation as a benchmark at the end of the course. We have copied passages from a number of letters of motivation which make for very interesting reading.

Key phrases

Improving knowledge, forming part of the oncology team, the ability to provide patients with improved care, foot problems resulting from cancer are more prevalent, there are higher risk feet than just diabetic feet, I obtain the majority of information from the patients themselves.

Quotes from letters of motivation

"In our course, onco-podiatry has barely been touched on. Podiatric care mainly focussed on nail pathology and diabetic patients. Before I enter the professional field, I want to be as well prepared as I possibly can be. That is why I would like to follow the Onco-Podiatric Care Provider for Podiatrists course. I hope that, as a result of this, I will become more aware of the illness, treatments and potential problems that may arise. An oncology patient has an entire team caring for them. By sharing information and feeding back findings, the best possible care can be offered. But as a health care professional, you can also improve your own knowledge, which I personally find extremely important. If I were offered the opportunity to join a team in the professional field, I would most definitely grasp that opportunity!

Currently I am very busy treating and screening patients with diabetes. But the field of the high-risk foot is much larger, which is why I am interested in the onco-podiatric care provider for podiatrists course. I don't actually come across many patients with cancer and/or who are undergoing treatment for cancer, but I have noticed that I have too little knowledge to be able to help people in this area. I am fully aware that there are many people suffering from cancer and that treatment given for cancer can cause numerous problems with the feet. I hope that, during the onco-podiatric care providers

course for podiatrists I will gain a greater understanding of various oncological treatments and the impact of these on the feet.”

“Within this practice, I have to deal with all sorts of patients, varying from children, athletes to elderly people, or patients with diabetes mellitus. However, I notice that I don't have a lot of knowledge about oncology. I see patients in the practice who receive chemotherapy, or who have received chemotherapy and it is clear that this changes the skin, but also that this often causes neuropathy. I would like to learn more about this, so that I am better positioned to help and advise that group of patients and that is why I am interested in this course. I also think that this is a field of competence which will become increasingly more common in podiatry practice and that this course therefore really does have added value for my daily activities in the practice.”

“During my work, I have increasingly noticed that, when asked, patients tell me about their medical history and that increasingly ‘cancer’ is being mentioned. Many of them tell me that, after undergoing treatment, usually chemotherapy, they have suffered from loss of function in their feet. I heard a similar story from an acquaintance, a few years ago she also told me that she no longer had feeling in her feet and that her feet retained a lot of fluid as a result of the cancer and the cancer treatment. The first thing that came to mind was ‘I have to do something about that!’. I noticed that I didn't have much knowledge about this illness and that unfortunately this wasn't covered, or was barely covered during the podiatry training. I'm therefore curious about the exact effects of cancer and the treatment of this on the human body and, of course, on the lower extremities. What can we do about this as podiatrists? As an onco-podiatric care provider, what can I do for cancer patients that non-onco-podiatric care providers can't do?”

“Cancer is an illness that we are encountering more and more at our practice and people are gradually becoming a little more familiar with the side effects of the chemotherapy on specific skin and nails, but these are still inadequately covered from a professional point of view. Most of the information I have received to date has been from the patients themselves. I would actually like to receive biomedical information about how these abnormalities can arise.”

“During the final years of the course, for my Bachelor's degree I conducted a literature study about the side effects of cancer treatments: the impact of targeted therapy on the skin and nails. This was a follow-up study on the previous year about the effects of chemotherapy. After reading this study about chemotherapy, this aroused my interest in the side effects of cancer treatment. During the training, we are taught a lot about the problems that diabetes mellitus can cause in relation to the feet. In cancer patients, these problems are often under-acknowledged or simply not identified. As a podiatrist, I would like to be able to do more for these people. Not only identifying the problem, but also providing appropriate treatment.”

Conclusion from the letters of motivation

From these letters of motivation written by experienced podiatrists and podiatrists who are just starting out, a number of important conclusions can be drawn. In the podiatry training, no or little attention seems to be paid to foot problems resulting from cancer treatments. This has to change. Podiatrists want to provide effective and safe care and to expand the package of care they can offer. The opportunity to do this with oncology has emerged, more in the form of a question: Could podiatrists provide additional care, in addition to the package of care provided by today's onco-podiatry care providers? Based on that question, we asked the participating podiatrists to write an examination case study about oncology patients with, for example, gait deviations that can be traced back to the oncological treatment they received and the possible corrective measures for these deviations. No research has been performed into this anywhere in the world.

A placement as a practical learning experience

During the Onco-Podiatric Care Provider for Podiatrists course, there are various practical learning experiences for the podiatrists. These are structured during the compulsory placements: one day at a hospital and a day at a walk-in centre for cancer patients. Podiatrists participate in these placements after three days of intensive theory. Below are a number of quoted (anonymous) passages that provide a greater understanding of how these placements are experienced by podiatrists. These passages also provide an understanding of how the placements have contributed to the knowledge, attitude and skills of the podiatrists.

Key phrases

I learned how to treat these people 'normally'. For my own practice I believe there are possibilities in terms of foot screening. The use of podiatric tools and advice about the skin and footwear. If you ask questions about cancer when performing the anamnesis, one patient may tell you in great detail about what has happened to him/her, whereas another patient gives a clear and (non-verbal) concise answer.

Quotes

"My day at the oncological day case unit was a very positive experience. I enjoyed being able to experience the atmosphere in this department. Especially because I now know what an oncology patient experiences. Unfortunately, I didn't meet a patient who suffered from problems with his/her feet as a result of cancer treatment. But I did talk about this with the oncology nurse; when they have patients with foot problems they mainly assess whether this is an impediment for the chemotherapy, or whether this will worsen after chemotherapy. Should this be the case, a discussion will first take place with the oncologist, after which the oncologist will decide what will happen with the treatment. The dose of chemotherapy is then often decreased. My recommendation in this respect is that if someone has problems with their feet, it will also be assessed whether the onco-podiatric care provider can make a positive contribution to this. I have been able to explain clearly to the oncology nurse what my work as a podiatrist involves and what the inclusion of the onco-podiatric care will potentially add to my work and, of course, what added value this has for an oncology patient."

"I have learned how to treat these people 'normally' how to calmly ask questions and especially how to show understanding. All the nurses were extremely sweet and calm; this was a lovely experience for me. On the day, I stood back and simply observed, so I unfortunately didn't communicate much with the patients and their families, only in the day case unit. I noticed that the patients found it really important that you don't ignore them and simply speak to them. All in all, I am happy that I attended this course and that I could experience a day in the Oncology department. I recommend this course wholeheartedly to my fellow podiatrists, because you gain an enormous amount of new knowledge that is extremely important in actual practice. I also found the placement day extremely informative and I was able to see the patients from the other side for once."

"During my placement, I unfortunately didn't see any foot problems. This means I was unable to put things into practice. I was able to learn a lot about communicating with patients. I can apply this in actual practice."

"For my own practice I believe there are possibilities in terms of foot screening, the use of podiatric tools and advice about skin and footwear. This is similar to the podiatric care for diabetic foot problems. Aspects relating to neuropathy, Limited Joint Mobility, skin and nails, the fit of footwear, foot and toe distance abnormalities, are determined for each patient individually. Plantar pressures can be measured using a plantar pressure measurement plate or with insole measurements. An individual foot care plan can then be prepared for patients. Described in this foot care plan are the

chiropractic care and the podiatric care. The chiropractic care can be outsourced to the onco-podiatric care provider responsible for chiropractic care.”

“In actual practice too, I have noticed that the non-verbal communication with cancer patients is very clear. If you ask questions about cancer in your anamnesis, one patient may tell you in great detail about what has happened to him/her, whereas another patient gives a clear and (non-verbal) concise answer. In this latter group of people, I have noticed that you have to ensure that there is no emotionally charged atmosphere during the remainder of the investigation. I then provide a brief explanation of why I need this information, I ask what I need to ask and then I move on as quickly as possible to a different subject, one that the patient is more comfortable with. If patients want to tell you, they want to tell you. However, you really can't force this and neither is that our job. If patients do want to tell you, I have noticed that they like it if you personally have some knowledge about cancer and the side effects of the treatment.”

“What struck me when shadowing the various health care professionals is that they all approach the patient in a different manner, which is personal to them. I think that this is also very important, to take with me into the future.”

“In the morning, I saw eight patients and five of them had foot complaints in the form of tingling, irritation and a numb feeling. Just one person had this in combination with visible skin disorders, in the form of calluses.”

“Patients who said they had problems with their hands and feet were asked to remove their socks and shoes, sometimes just from one foot, not both feet.”

Conclusion of the placement

The foregoing quotes are observations that also show that foot care provision in cancer patients is not evident and that there is still a long way to go for all oncological health care professionals to clearly include this as part of the multidisciplinary team treating the cancer patient. It can also be deduced that contact with a cancer patient requires empathy and an ability to assess the patient's needs and what information is required to provide safe and effective care.

Four selected case studies

As part of the Onco-Podiatric Care Provider for Podiatrists course, the podiatrists have to submit a number of case studies. These case studies are valuable because they contain material and indications of what care can be given by the podiatrist in addition to the care given by the onco-podiatric care provider. Below is a selection of case studies that have been submitted.

The case studies are anonymous in order to protect the privacy of the patient and the podiatrist providing treatment.

Case study 1

Patient's details

This female patient (60) has been under the care of the practice since 2015 for diabetic foot screening. Fifteen years ago, the patient was diagnosed with breast cancer, but four years ago the cancer spread resulting in metastases throughout the body. Her life expectancy at that time was just a couple of months but we are now 4 years later. Considering the circumstances, things are going reasonably well. Curative treatment is no longer possible and life-prolonging treatment has been chosen in the form of Capecitabine tablets. The patient has now been taking these tables for 1.5 years. Prior to this, she received other therapy, but the patient no longer knows what this was. After one course, the patient suffered from extremely severe symptoms, in the form of hand-foot syndrome affecting the hands and feet (photo 1), resulting in the patient becoming immobile and she

also suffered from a very severe general feeling of fatigue. The dose was reduced and the patient said that the symptoms then became bearable. However, she was still always tired and she had a very dry skin with cracks on the hands and feet. These cracks kept opening up, even though the patient applied urea cream to her entire body every day. She even applied to cream to her hands and feet twice a day.

In November 2016, the patient attended for her six-monthly diabetic foot check and said that her feet had worsened since her last visit. She now also had problems with her left forefoot. She didn't want to complain about this too much because, on the other hand, she was very happy that she is still here, considering her life expectancy of four years ago. The skin on the feet was very thin, red and flaky, with cracks. There were also several blisters which were not in "logical" places. These were only on the plantar side of the feet. This looked like a hand-foot syndrome to me. I therefore consulted the patient's oncologist to ask for approval to make pressure-distribution soles. In addition, she appeared to be suffering from overloading of the third metatarsal head, as a result of atrophic fat pad. Her feet were very painful when pressure was placed on them, as a result of which the patient now barely walked. The patient could actually still walk, but because of the pain, walked as little as possible.

Anamnesis

Functional examination	No abnormalities
Palpation	Sub-capital pressure CM 3, painful on the left. Atrophic plantar fat pad left to right.
Examination	Pes Planus on both sides. Mediotarsal valgus and calcaneal valgus on both sides.
Pressure points	No abnormalities
Hyperkeratosis	No abnormalities
Skin	Very dry flaky skin, on both sides. Red discolouration plantar side, blisters present around the left arch, right calcaneus macerated.
Nails	Onychomycosis nails left foot.
Toe stance	Hammer toe, digit 2 on the left and 5 on the right.
Sensitivity	Monofilament 10 grams was felt properly today. During past screening, this was not felt. Tuning fork 128 Hz was felt properly on both sides.
Vascular examination	Pulses could be felt fine on both sides. Doppler Flow: ADP left biphasic, right triphasic. ATP triphasic both sides. Ankle-brachial index left: 1.13, ankle-brachial index right: 1.14.
Gait analysis	Overpronation MTG (middle temporal gyrus) and STG (superior temporal gyrus) left > right. Very unstable gait on both sides. Hyperpression CM 2-3 left.
Shoes	The longest foot that was measured has a length of 28 cm; this corresponds with shoe size 42. This size is worn, the width is doubtful.

Conclusion

Hand-foot syndrome resulting from treatment with Capecitabine has affected the hands and feet. There was a clearly defined line of redness, swelling, flaking and cracks on the hands and feet, both on the plantar side, with various blisters on the feet. This is obviously painful as there was no neuropathy, resulting in the patient experiencing severe pain when walking. In addition, as a result of

hyperpression in the CM 2-3 on the left, in combination with an atrophic fat pad, overloading of CM 3 in the left foot had occurred.

Therapy

Podiatric pressure-distribution soles were made for the actual length and width of the foot. The aim was to improve the distribution of pressure on the plantar side of the feet, to enable the patient to experience less pain when walking. The soles fit into her current footwear. The soles were covered with Plastazote foam, to create an even better fit with the pressure and heat of the foot.

Follow-up

After 8 weeks, the patient returned for a check-up. The patient said that the soles fitted nicely and that she was able to walk further. She still experienced pain, but the patient noticed that she could persevere for longer. Her feet don't feel tired as quickly.

Case study 2

Patient's details

The female patient (65) came from DTP (Direct Accessibility Podotherapy). I asked her about cancer in her past medical history and the patient said that she had suffered from breast cancer. For good measure, I then asked for a referral letter from her General Practitioner and received this letter.

The patient had problems with her right heel to the rear and partially underneath; she said that nothing was obvious. During the period that she underwent chemotherapy, she purchased new shoes. These were half a size larger, so the patient thought that the symptoms had been caused by the shoes. There have been no injuries to her heel.

The symptoms continued for four months. The symptoms improved very slowly, but went on for too long.

In the mornings she suffered from start-up pain and during the day she also suffered pain after sitting down or resting. At home, the patient wore slippers without a back.

The patient has a past medical history of breast cancer. Because both breasts were amputated, the patient has changed her posture. The patient said that she has pain in her lower back, more on the right, with pain radiating to her buttocks. Sometimes, after walking for a protracted period of time, this pain radiates towards the side of the pelvis. This has been going on for some time. Even before the chemotherapy, the patient was already attending sessions with a chiropractor. However, she no longer attends these sessions.

Medication: Blood pressure tablets and hormone treatment. The hormone therapy also causes muscle and joint problems.

Anamnesis

Examination whilst standing	<p>Calcaneal stance: left 5 valgus, right 3 valgus. Calcaneal unipedal stance: left 1 valgus, right: 4 varus. Slight mediotarsal valgus right>left (photo 2), slight genu valgum both sides. No difference in leg length, however slight pelvic rotation: right tilted forwards, also increased muscle tension palpable in the right buttocks and hamstring. This responds well to correction with a Cci (podopostural element) of 2 mm cork under the right foot. Intensified thoracic kyphosis.</p>
Palpation	<p>Plantar fascia right>left. Tibialis posterior muscle right>left. Tibialis anterior muscle sensitive on both sides. Peroneus longus muscle both sides.</p>

	Pain on palpation rear/lateral of the calcaneus (spot where a Haglund's exostosis usually forms)
Functional examination	Slight forefoot inversion both sides, otherwise no abnormalities.
Gait analysis	Heel contact in inversion, overpronation in the STG and MTG (right>left), twist.
Shoe	Size 41 base sole pattern fits in the shoe. Nice and sturdy, size is good.

Conclusion

As a result of an aberrant stance, which caused an unstable gait with overpronation and twist in combination with excessive shoe pressure, pain occurred to the rear of the calcaneus (the site where a Haglund's exostosis usually forms) and overloading of the plantar fascia right>left. Further, due to the aberrant static and dynamic stance in combination with the chemotherapy and hormonal therapy, several muscles in the feet and lower legs have become painful.

Rotation of the pelvis (pelvic torsion) resulted in increased muscle tension in the right buttocks/hamstring, which caused the symptoms here. The pelvis responded well to correction of the feet.

<Photo 2>

<Caption photo 2>Photo 2. Slight mediotarsal valgus right>left.

Therapy

The patient has podiatric soles (CAD/CAM soles with RCTB 5 mm both sides., HAI-CV 14 mm both sides, ASC 3 mm LPT both sides, Cci 2 cork on the right) and has been given advice regarding footwear. The footwear-related advice related to the sturdiness, suitability for soles, size and reduction of pressure of the shoe on the heel by, for the time-being, wearing footwear at home with an open heel. The patient was also given stretching exercises for the muscles, which she was instructed to perform in line with a policy.

The aim of the therapy was to reduce this by half in approximately six weeks. In addition, the pressure of the shoes in the painful area on the heel should be reduced. The pain should also improve by reducing the hypertraction on the plantar fascia and other leg muscles by correcting the deviating static and dynamic stance. Finally, the position of the pelvis should improve through use of a podopostural element in the sole.

Follow-up

After six weeks, the patient returned for a check-up. She said that she barely had to get used to the soles and that she was immediately able to walk in the soles and that she could immediately use them for entire days. To use them, she did remove the extra support sole from her sandals, as in combination the sole was too high. The patient said that, without the soles, she immediately had problems with her legs again. The soles were also found to be good for her posture. The patient is very happy with the soles, not only are they helpful for the foot-related problems, but her legs, back and buttocks are also no longer painful.

The right heel was not yet totally problem-free. The patient estimated an improvement of 60%. However, it was difficult to walk in open shoes, because of the cold weather.

Unfortunately, the patient is also suffering from tennis elbow and she is still on hormonal therapy. She is also receiving oxygen tank therapy (hyperbaric oxygen therapy).

The soles fit nicely beneath her feet, follow the line of the arch nicely, unipodal stance is stable on the soles and when doing a single-leg-squat on the soles, the knee goes nicely forward towards digit 2.

In addition to the follow-up appointment, the patient receives complementary therapy and advice. All right shoes have to be planned out properly for the painful area. In addition, she must still take

things easy in terms of placing a load on the feet and she must continue doing the stretching exercises. The heel complaints have already improved, it is anticipated that these will continue to improve. It was agreed with the patient to return should the symptoms persist after 6-8 weeks. If there is further improvement, she will be followed up in one year.

Case study 3

Patient's details

A female patient (52) was visited at home because of problems with her feet, probably as a result of cancer treatment. The patient had not been referred by the General Practitioner. In late November 2013, the patient visited her General Practitioner because she felt a nodule in her right breast, after having lost 10 kg in weight. Her General Practitioner referred her to hospital where X-rays and an ultrasound were immediately performed. The results showed breast cancer. From then onwards, the patient couldn't remember a lot because everything suddenly happened so quickly. In 2013, the patient underwent six sessions of chemotherapy (TAC, taxotere, adriamycin and cyclophosphamide). She then underwent a mastectomy and her lymph nodes were removed from her right armpit because the cancer had now spread here. Further investigations revealed that the cancer had not spread any further. The patient then underwent 16 sessions of radiotherapy. After all of this, the patient was prescribed hormonal therapy. She stopped this for one month due to the many side effects. The patient had problems with her joints, was very irritable and would even have ended up in a wheelchair if she had continued with this therapy. The patient then decided that she would prefer a good quality of life as opposed to living for longer and always sitting in a wheelchair.

After her treatment, the patient suffered from severe hyperkeratosis under the ball of her right foot (photo 3) and her skin became very dry. The hyperkeratosis was also worse on the right than the left, but now the growth was excessive. She also had mycosis on two nails, both on her right foot (hallux and digit V; photo 4). Prior to treatment, she was not affected by this.

Immediately after the chemotherapy, she suffered from neuropathy in the forefoot and toes of both feet. The neuropathy has now reduced in severity, but is still present. At the time, she was told that if she had not recovered after six months, she would always suffer from this.

The patient rubbed Velco cream into her feet every day. She mainly had problems with walking, which is why she attended for medical chiropody every two weeks because the hardened skin grew so quickly. She said that she had grown accustomed to the neuropathy, because she was told that she had to learn to live with it. Despite the fact that she still notices the neuropathy, this isn't her main complaint.

She finds it difficult to walk on heels, but she does want to wear these occasionally. When she takes her dog for a walk, she wears Lowa boots. Previously, she simply wore her everyday footwear, but this is no longer possible because of the pain in her right forefoot caused by the hyperkeratosis. There were otherwise no abnormalities. In the past, the patient always suffered from back-related problems and apparently a limb length discrepancy but this causes absolutely no more symptoms now.

The patient gave a score of 3 to her symptoms during her work and everyday activities. It did not negatively affect her mood. She also gave a score of 3 to her ability to walk, because this had worsened after treatment for cancer. The symptoms did not affect her enjoyment of life.

Photo 3. Hyperkeratosis of both feet (left); close-up of the right foot (right).

Photo 4. Mycosis of the nails, hallux and digit V right.

Anamnesis

As the patient completed her treatment some time ago, no longer takes medication and now attends hospital once a year for follow-up, I had no contact beforehand with her oncology nurse.

Examination	Very dry skin, redness and cracks Many calluses were visible right > left Calcaneal valgus right > left Mediotarsal valgus right > left
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	Metatarsus transversum right > left
Stabilometry	Weight = 46% on the left foot – 54% on the right foot 42% on the forefoot – 58% on the heel Probably to reduce the pressure on the forefront due to right-sided pressure discomfort. No increased pressure when standing (<200Kpa).
Palpation	Painful intermetatarsal right > left Painful plantar fascia both sides Painful apex MTP-5 right > left
Functional examination	No abnormalities.
Gait analysis	Overpronation when walking right > left (photo 5) No increased pressure when walking (<200Kpa) Otherwise, no abnormalities
Examination of the shoe	Sturdy sneakers by PIEDI NUDI and Lowa boots for walking. No remarks; shoes are sturdy and offer sufficient comfort and support and are correctly sized in both length and width (39H, Lowas size 40).
Walking on toes	Slightly sensitive, right.
Monofilament	Impalpable apex hallux both sides, MTP-1 and MTP-5, palpable on both sides.
Tuning fork	Reduced feeling MTP-1 and MTP-5 both sides, lateral/medial malleolus and tuberosity tibiae both sides, were palpable.

Conclusion

As a result of a calcaneovalgus and mediotarsal valgus right > left, instability has occurred during foot settlement. By way of compensation, the flexors of the digits have tensed slightly right > left to obtain more stability. This can lead to overloading of the metatarsal head right > left. In addition, there was an abductory twist caused by the absence of a close packed position. In turn, this caused hyperpression and hyperfriction around the metatarsal head, resulting in hyperkeratosis. The foregoing was caused by the disbalance in position between left and right (46% - 54%). All of these symptoms were already present prior to the cancer treatment, but the chemotherapy (TAC) probably exacerbated this.

<Photo 5>

<Caption photo 5>Photo 5. Print when walking in Footwork. The black line indicates where, at the time of settlement, the majority of pressure is placed, in other words how the foot settles. This line should start on the outside of the heels, across the outside of the foot, just below MTP-5, making a curve to MTP-2 and then rolls to the tip of the hallux. As can be seen above, the right foot is not as correct as the left foot and it is clear where the majority of the pressure is placed (MTP 2-3 right).</Caption photo 5>

Therapy

Podiatric soles were made, to optimise both static and dynamic stance (photo 6). These soles should also improve walking comfort and reduce the growth of hyperkeratosis. The patient was also given shoe-related advice. It was explained to the patient that it is important that the shoes are of the correct size, both in terms of length and width. To ensure this, the patient could use the size of her soles

Because the patient attends medical chiropody every two weeks, to have her hyperkeratosis removed and for her mycosis nails to be filed, I have not produced an action plan for this. The patient should continue to apply Velco cream every day, to allow her dry skin to recover and to make her cracks less painful.

It was agreed with the patient that she would attend follow-up every six weeks after the first

appointment.

<Photo 6; in the file images there are two separate photos. These can be edited to form 1 photo. They are called 'Photo 6 (left)' and 'Photo 6 (right)'.>

<Caption photo 6>Photo 6. Outlined podiatric soles.

Case study 4

Patient's details

A female patient (67) has type 1 diabetes and psoriasis. In addition, in late 2015, she was diagnosed with ovarian cancer. The primary treatment for the ovarian cancer comprised chemotherapy and surgery.

Prior to the surgery, the patient underwent six chemotherapy sessions. During the surgery, the uterus, the uterine tubes, the ovaries and also fat tissue and lymph nodes were removed. Because the tumour was already growing into the intestinal tissue, a section of the intestine was also removed and a stoma was created.

After the surgery, she underwent three sessions of chemotherapy. During the chemotherapy, the patient suffered from annoying tingling in her fingertips which occurred increasingly faster and more often, very dry skin and crumbling toe nails. For the dry skin, the patient was given Cetomacrogol/vaseline 50% cream. The symptoms of the annoying tingling reduced after it was decided to allow the chemotherapy fluid to enter the body more slowly. Thought was also given to ice gloves and socks, but it did not get that far. The final chemotherapy took place in September 2016.

Because it was found that the tumour was hormone-sensitive, after the chemotherapy had ended, hormonal treatment was also started. This consisted of oral ingestion of the drug Tamoxifen 40 mg. The patient visited our practice for her annual diabetes check. The week before that she had been told that the tumour had returned. She had high tumour marker values, but no pain. A cure was no longer possible, so the palliative process had commenced. The patient was very upset by this situation.

Anamnesis

During the examination, the position of the feet was examined, the motility of the various foot joints, the gait, the footwear, the skin and nails aspect, sensitivity and the vascularisation.

Foot type	Pes cavus, reduced plantar support surface area, otherwise no deviations in terms of position. Limited Joint Mobility in the uppermost tarsal joint both sides. The other joints are sufficiently mobile.
Gait	Unstable. Immediately after the heel-strike a fast unstable pronation/supination movement occurs. The heel lift is too fast.
Footwear	The patient wears appropriate footwear.
Skin	Dry skin, with a scab on the shinbone right > left. Very slight callus formation around CM 2 on both sides, CM 5 right and apex D3 right. No peak pressures.
Nails	Hyperconvexity of the nails of D1 on both sides. Unclearly defined edges of the nail ends D1 both sides (photo 7).
Vascularisation	No signs of peripheral arterial vascular disease .
Sensory impairments	Sleeping toes and a feeling of walking on cotton wool, no pain. Feeling of instability, particularly when walking with bare feet.

	Signs of loss of the surface protective sensitivity. Deep sensitivity appears to be fine.
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<Photo 7>

<Caption photo 7>Photo 7. Hyperconvexity of the nails of D1 on both sides. Unclearly defined edges of the nail ends D1 both sides.

Therapy

For a six-month period, the patient had suffered no episodes of psoriasis, however, after the last chemo treatment (three months ago) that did occur again. The patient visited the dermatologist about the skin lesions. However, she refused to use hormone creams, but does now use Cetomacrogol cream.

The patient was grouped into care profile 2 because of the combination of sensory impairments and the demonstrable increased risk of skin defects or infection as a result of the chemotherapy.

However, it was not easy to distinguish the cause of the neuropathy. This can be either diabetic neuropathy or the hand-foot syndrome. In diabetic neuropathy, the neuropathy is mainly only in the forefoot area. However, in terms of her grouping in the care profile, the cause of neuropathy is irrelevant.

Care profile 2 means that the patient will attend an appointment with the podiatrist once a year for a specific foot examination and will visit the medical chiroprapist seven times a year for professional foot care.

The treatment for the instability in terms of foot settlement could consist of boosting motility in the uppermost tarsal joint through exercise. Improvement of the dorsal flexion in the uppermost tarsal joint will benefit the stability in the heel.

Case study 5

Patient's details

A female patient (51) was diagnosed in 2012 with non-metastasised breast cancer. The tumour, which was lateral in the right breast, was removed surgically by means of breast-retaining surgery. The axillary lymph nodes were also removed. The patient then underwent 22 sessions of radiotherapy and was treated with chemotherapy. During the chemotherapy, the patient developed severe neuropathy. During the treatment, the patient never informed anyone that she had these symptoms.

Two years after the treatment, the patient presented to the podiatrist. As a result of the symptoms, there was serious impediment of the everyday activities. The soles of the feet were extremely painful and the patient found it very difficult to walk. At the time, there was no blister formation or excessive calluses. However, there was red discolouration of the skin on the soles of the feet and the skin was extremely brittle. There was also serious oedema formation in her arm, due to the surgical removal of these glands. Once the chemotherapy had ended the patient had a very tight feeling around the ankle and a stabbing pain. The soles of the feet remained painful. The patient said that she had also started to walk differently, resulting in problems with her joints around the knees and hips.

In addition, the patient's ankles felt very rigid/stiff and there was persistent pain around the heels. At the time of the consultation, the start-up pain she suffers around the heels had been present for approximately six weeks. Previously, the symptoms were mainly present after she had been standing for a long period of time or if she was exerting a lot of pressure on her heels. It was very difficult to remain standing still. The patient already did stretching exercises for the pain. The feet and the legs felt very tired. The patient participated in sport three times a week (spinning and fitness).

Anamnesis

Static stance	Neutral stance
Dynamic stance	Early heel lift, initial contact: inverted heel contact, pronation movement during the mid-stance phase, pronation for too long and late supination during the propulsion phase, slight abductory twist visible during propulsion.
Pressure measurements	Increased pressure can be seen on both sides around the forefoot (photo 8).
Skin	The skin of the left foot is much drier than the skin of the right foot. In addition, on the right more calluses can be seen around CM1, CM3 and CM5. Several cracks can be seen on the apex of the hallux.
Nails	Fungal nails on the left foot (D1-D3 and D5) are more crumbly than the fungal nails on the right foot.

Conclusion

The symptoms potentially initially occurred as a result of an antalgic gait. Because of the painful soles of the feet caused by the chemotherapy (burning feeling, overpressure, swelling) changes have occurred in the gait. The symptoms relating to the joints and overuse have probably resulted from this.

As a result of a pes cavus with a mediotarsal valgus and a dorsal flexion limitation in the uppermost tarsal joint (muscular), a pronation and an early heel lift whilst walking has occurred. This is in combination with excessive loading. This resulted in hypertraction on the plantar fascia, which led to overload symptoms around the source and insertion.

<Photo 8; this photo is included as two separate photos in the file images, under the names 'Photo 8 (left)' and 'Photo 8 (right)'.>

<Caption photo 8>Photo 8. Both sides, increased pressure evident around the forefoot area.

Therapy

Podiatric soles were made in order to reduce the traction on the plantar aponeurosis. MIC 3mm on both sides, the current soles provide insufficient support around the MTG. New soles were also made to optimise the static and dynamic stance. Advice was also provided regarding hydration of the skin (mainly for the left foot). Shoe, cooling and massage advice has been given and the patient was given stretching exercises for the calf muscles. After six weeks, the patient will return for follow-up.

Follow-up appointment after 6 weeks

After six weeks, the patient said that the soles were nice to walk on and that there were fewer symptoms. She said there had been an improvement of approximately 60%. The patient mainly experienced start-up symptoms and at the end of the day there were still symptoms involving the heel. The patient will potentially continue with shockwave therapy to improve the remaining symptoms.

The soles were found to be adequately supported and correct around STG and MTG. Annual follow-up was recommended.

Follow-up after two years

Two years after the initial consultation, the patient thinks that the soles need to be replaced and she would like her feet to be checked. The patient said that she cannot do without the soles. Since wearing the soles, the symptoms are not as evident. The neuropathy is also much less evident than approximately two years ago. The patient now receives acupuncture treatment every six weeks for the neuropathy in the soles of her feet. This always gives slight improvement. The patient said that she no longer experiences joint-related problems and she is once again able to walk 'normally'. She

personally thinks that this was due to a combination of the soles and the acupuncture. The patient now says that there has been an improvement of approximately 80 percent.

Final result

The patient said that, after six weeks, the symptoms were approximately 60 percent less evident. After two years, the patient said there was an improvement of approximately 80 percent.

Case study 6

Patient's details

This female patient (64) is known with carcinoma of the liver since January 2016. In June 2016, she underwent surgery and surgeons were able to partially remove the carcinoma. The patient received chemotherapy in the form of tablets. This was half a dose, because the whole dose resulted in too many side effects. The palliative treatment phase has commenced.

Since the start of the chemo treatment, the patient said she had numerous symptoms from the hand-foot syndrome. Because of this, she had a lot of a pain in her feet, mainly plantar and lateral MTP 5 in the left foot. The patient attended at her own initiative, because she would like her walking to improve with less pain in the feet. Her blood tests were fine.

Anamnesis

Also present during the anamnesis was the person who makes the orthopaedic footwear. We examined the patient's feet together, in order to be able to come up with a good solution for her.

Skin	Excessive callus formation and corns.
Examination	Pes transversus both sides. Mediotarsal valgus left > right. Wide forefoot, narrow heel. Exostosis lateral MTP 5 left > right. Hammer position digit 2 left > right.
Hyperkeratosis	Lateral MTP 5 left > right. Medial hallux both sides. With clavus PIP digit 2 left. Left: Plantar CM 3 with clavus, CM 5, apex digit 4. Right: plantar CM 2/3 with clavus, CM 5, apex digit 4.
Palpation	Very painful feet when touched as a result of the chemotherapy.
Functional examination	Mobility in the feet is adequate on both sides.
Gait analysis	Laboured gait. Unstable, uncertain. Overpronation in the MTG when walking, both sides.
Shoes	During the examination, the patient wore slip-on shoes, with a hole in the left shoe which she made herself next to MTP 5.

Therapy

A decision was made to measure her feet for a full orthopaedic shoe. This was because of the severely dropped arch and wide forefoot. The shoe had sufficient space in the forefoot to take the pressure off the exostosis lateral MTP 5. A semi-orthopaedic shoe wasn't an option as the patient has a narrow heel which would result in the shoe "shuffling" .

In addition to the orthopaedic shoe, arch supports were measured. The intention was that there would be better pressure distribution across the foot, to take the pressure off the pressure points

and the corns. The soles were soft for additional comfort. Every six weeks, the patient's blood values were checked at hospital. When these were fine, the patient would return to the practice for further foot care.

Follow-up

During the initial telephone consultation, the patient said that her mobility has improved significantly. She was less affected by the hand-foot syndrome, by the callouses being treated and correction of the pressure. The patient was very happy with the result that had been achieved in such a short period of time.

<Liz: you have already produced the text below to go on the website (<https://www.demedischevoet.nl/evaluatie-podotherapeuten>); but some changes have been made!>

<Title>Evaluation of the Onco-Podiatric Care Provider for Podiatrists course</titel>
<Ondertitel>First course evaluation</ondertitel>

In December, twelve podiatrists started the Onco-Podiatric Care Provider course, which had been adapted to their level of knowledge. The course lasted for two days less than the Onco-Podiatric Care Provider course for (Medical) Chiropodists and Podiatrists. The placements were also organised differently. The participants of this first Onco-Podiatric Care Provider course for Podiatrists, evaluated the course carefully. From this evaluation, it is immediately clear how we, as training provider, can adapt aspects of the course to the requirements of the podiatrist, to enable them to provide more effective additional care in their practices in addition to the regular Onco-Podiatric Care Provider.

<kader>

General assessment</tk>

90% of the participants were satisfied with the location.

100% rated the communication about logistical matters as good, such as changes to lesson times, etc.

78% of the participants thought that the lesson times had been chosen well.

88% are of the opinion that the communication channels available to the participants are adequate.

</kader>

General impression of the course</tk>

The evaluation of the Onco-Podiatric Care Provider course for Podiatrists took place using an online form. The participants responded to a number of questions. There was also room for explanations and other remarks.

Was the objective of the course clear to you beforehand?</tk2>

78% said that the objective was completely clear. 22% of the participants did not find it clear.

Two comments were included with the answers:

“The knowledge and informative objective was clear, the practical objective - what else I could do with this training - wasn't clear to me.”

“The course is called the onco-podiatric care provider course, but is partially also for chiropodists and I wonder what podiatrists could actually do”

Explanation Mischa Nagel: In oncology, there has been very little research into the care processes of the oncology foot. People who receive long-term treatment for cancer may, for example, suffer from

osteoporosis and other complaints, also resulting in problems with the posture as a result of an altered position of the feet. Absolutely no research has been done into this. The study assignment of the podiatrists is therefore also to focus on patients of this type. The hand-foot syndrome is very common, which is a leakage of chemo into the skin. That can be accompanied by severe inflammation and painful blisters. The affected areas must not be subjected to any pressure, otherwise the patient loses his/her mobility. It is in these types of situations that podiatrists can make good use of his/her expertise.

Some good news is that, at the Memorial Sloan Kettering, a very interesting presentation was recently given by a "Certified Prosthetist Orthotist". She is the first person who has made considerable efforts regarding the possibilities of biomechanical intervention in foot complaints as a result of cancer treatments. She recently gave a presentation at an international conference for oncologists and we have invited her to come and share her experiences at the Onco-Podiatric Care Provider symposium on the 10th of June 2017. That is the day on which all participants of the Onco-Podiatric Care Provider course must return and can only be attended by participants of this course, or by trainees.

In terms of difficulty, did this training match your level of knowledge?</tk2>
100% of the participants agreed with this.

Has this encouraged you to use what you have learned in actual practice?</tk2>
100% of the participants felt encouraged to apply the information they have learned in actual practice.

Mischa Nagel</tk>

During the section "Cancer and the treatments thereof" (Mischa Nagel), did you gain new knowledge?</tk2>
100% of the participants said that they gained new knowledge.

Does the tutor Mischa Nagel have adequate teaching skills?</tk2>
100% of the participants believe that Mischa Nagel has adequate teaching skills.

Siebe Wittebrood</tk>

During the "A patient's story" (Siebe Wittebrood) section, did you gain new knowledge?</tk2>
100% of the participants believe that they gained a lot of new knowledge from Siebe Wittebrood.

Does the speaker Siebe Wittebrood have adequate teaching skills?</tk2>
100% of the participants believe that Siebe Wittebrood has adequate teaching skills.

David Kopsky

During the "Neuropathy/Pain management" (David Kopsky) section, did you gain new knowledge?</tk2>
100% of the participants believe that they gained new knowledge from David Kopsky.

Does the tutor David Kopsky have adequate teaching skills?</tk2>
100% of the participants believe that David Kopsky has adequate teaching skills.

Miranda Swart</tk>

During the "Oedema in cancer" (Miranda Swart) section, did you gain new knowledge?</tk2>
68% of the participants believe that they gained new knowledge from Miranda Swart.

Does the tutor Miranda Swart have adequate teaching skills?</tk2>

65% of the participants believe that Miranda Swart has adequate teaching skills

*editor's note: it is only fair to inform the reader that this is the first presentation that Miranda Swart has given on behalf of the Medische Voet.

Johan Toonstra</tk>

During the "Side effects of the treatments and screening and prevention" (Johan Toonstra) section, did you gain new knowledge?</tk2>

100% of the participants believe that they gained new knowledge from the presentations given by Johan Toonstra.

Does the tutor Johan Toonstra have adequate teaching skills?</tk2>

100% of the participants believe that Johan Toonstra has adequate teaching skills.

Joanneke Bleichrodt</tk>

During the "Sharing of experience" (Joanneke Bleichrodt) section, did you gain new knowledge?

100% of the participants believe that they gained new knowledge from the presentation given by Joanneke Bleichrodt.

Does the tutor Joanneke Bleichrodt have adequate teaching skills?</tk2>

100% of the participants believe that Joanneke Bleichrodt has adequate teaching skills.

Mecheline van der Linden</tk>

During the "The patient and the health care professional" (Mecheline van der Linden) section, did you gain new knowledge?</tk2>

90% of the participants believe that they gained new knowledge and skills from the presentations by Mecheline van der Linden.

Does the tutor Mecheline van der Linden have adequate teaching skills?</tk2>

100% of the participants believe that Mecheline van der Linden has adequate teaching skills.

General impressions of the participants</tk>

1. "Super, as you can see! I am extremely happy about this."
2. "Well organised."
3. "Good speakers/tutors. The location was quite far away. A lot of information to process in a short period of time. More time between the course days to process the lessons would be great. I had expected to receive more guidelines about the actual treatment of calluses, etc., in cancer patients. I have found a guideline on the intranet, but I understand that the advice given to podiatrists is to draw up a treatment plan in consultation with the oncologist and to apply your own skills. Lunch was very well organised. The temperature in the training room was good. These were long course days, as it involved a lot of sitting and listening. Speakers did their absolute best to make the course iterative and that did help. The coffee/toilet breaks were very welcome, to stretch the legs for a minute or two."

4. "It is a really fun and informative course which really makes you think and then encourages you to apply all of this knowledge in practice. In my opinion, this is a subject that every podiatrist should learn the basics of. It is all about when you can and can't treat patients.
5. "I have learned a lot in three intensive days. In the podiatry course, very little attention is paid to cancer and the impact of the treatments on the feet. I am really happy that I did this course and have gained a huge amount of knowledge. I am very curious about my placement days and to apply the knowledge in actual practice."
6. "I learned a lot and this is usable knowledge. Even if I don't manage to use it, I have become a better podiatrist. I take cancer into consideration, which stage, which chemo, etc. and I didn't do that in the past."
7. "Good. I gained lots of new knowledge relating to this increasingly common disease/disorder. I really didn't know enough, apart from the fact that cancer is often treated with chemo, that it has side effects and can sometimes go very wrong because of, for example, pneumonia. But I didn't really know 'the whys and wherefores' of this. You don't really gain in-depth knowledge about it because cancer is actually usually also associated with death. The knowledge gained has certainly provided some clarification!"
8. "Very interesting course. Course days until 18:00 hours were sometimes a little too long, especially if difficult lessons were given on that day. I would certainly recommend the course! I learned an awful lot!"
9. "Great course. I learned a lot. The group size was nice. I would imagine that, in the future, both the skin aspect and nail-related problems in cancer, plus the sensory impairments in the foot and the impact thereof (particularly on foot stability and gait) will be researched much more intensively. It is good that refresher training is organised."

Progress of Onco-Podiatric Care Provider course

In total, after completing the aforementioned course, 17 podiatrists were fully trained. We will work with them on extending the care opportunities in respect of stance, position of the feet and severe cancer-related wounds. These fall outside the competence of the Onco-Podiatric Care Providers. All podiatrists will also be listed in the Dutch Association of Podiatrists (NVvP) in the digital reference guide of the Comprehensive Cancer Centres of the Netherlands (IKNL) and they will be visible to anyone looking for a Onco-Podiatric Care Provider.

Our initiative is starting to make great strides, meaning we have to make some changes to the organisation. I would like to provide you some insight into how this will be done.

In an international context, a 'Foundation for Oncology Footcare' has been established. You will soon be able to view the website for this foundation. To ensure international credibility, and to make sure that the research that you would like carried out is performed on an academic level and recognised in the medical world, a Foundation has to have a "Scientific board" and/or a scientific advisory board. Five authorities in the world have become affiliated with this. In table 1 is a list of these members.

La Couture, Mario MD Dermato-Oncologist	Memorial Sloan Kettering Cancer Center NY US (Accepted)
Beele, Hilde MD Dermatologist	University of Gent Belgium (Accepted)
Tagoe, Mark	University of London and Ulster UK (Accepted)

Podiatrist	
Haneke, Eckhart MD Dermatologist	University of Freiburg and various others (Accepted)
Sibaud, Vincent MD Oncologist	University of Toulouse France (Accepted)

<Caption table>Table 1. Members of the 'Scientific Board' of the Foundation for Oncology Footcare.</Onderschrift tabel>

In early January, a review article was submitted and accepted for a PubMed indexed scientific journal, the Journal of the American Podiatric Medical Association (JAPMA), by Prof. Lacouture, David Kopsky, Fiona Damstra, Mecheline van der Linden Azael Freitas and Raphael Lilker, et al, plus the undersigned. This article provides insight into foot problems as a result of cancer treatment. A subject about which, to date, very little has been published.

The Foundation for Oncology Footcare has now been nominated for a research programme. On Monday the 30th of January, a decision was taken about that. In addition, in May 2017, training for Podiatry students will commence in New York. The Foundation is led by the undersigned.

It is clear that, with the steps defined above, podiatric care will be researched and assessed with a lot of knowledge and skills, with the focus on safe and effective care for the feet of cancer patients and that the care that is given may contribute to a better quality of life.

The additional role of the podiatrist

Until 2013, there was no specialised care for cancer patients anywhere in the world. We, in the Netherlands, laid the foundation for that. Initial guidelines were produced, but these have to be broadened further still. Insights from podiatry will add a lot of value to this. Our initiatives also laid the foundation for more research into these problems. The foregoing case studies show that the podiatrist does have an additional function in terms of the care given by the regular onco-podiatric care provider. A collaboration will certainly benefit cancer patients who require podiatric care.

In the oncology sector, every day we make significant strides in unravelling cancer and healing people who suffer from this illness. The emphasis on "Quality of Life" plays an essential role in this. The expansion of specialised care is a necessity to be able to realise this emphasis. Effective and safe care is a prerequisite to be able to work with cancer patients and that in turn is only possible with the right knowledge, attitude and skills. By expanding to podiatry, we have now added a second podiatric care element.

For the Onco-Podiatric Care Provider for Podiatrists course, an official post-HBO (higher vocational education level) status is required.