

# E-survey on venous leg ulcer among Dutch dermatologists

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## Keywords

E-survey, treatment, venous leg ulcer

## Summary

**Aim:** To get insight into the frequency of venous leg ulceration in the Dutch dermatologic practice, and into how this profession treats this disease.

### Design:

**Material and Methods:** An e-survey was conducted. To all Dutch dermatologists and residents dermatology an email was sent with an online link to a questionnaire on venous leg ulcers.

**Results:** The overall response was 30%. 83.5% of the doctors usually treat their patients according to the guideline. The dermatologic practice consists on average of 73 patients (range 0-500; SD 93) with leg ulceration, and yearly 54 new leg ulcer patients (range 0-300; SD 50) are seen. 65% of the patients are women, 80% is more than 45 years of age and 55% is older than 65. Of all ulcers, 77% has a venous aetiology, of which 59% has a primary cause. Mean time to heal is 74 days (range 4-200; SD 39). Per year, dermatologists admit on average 7 patients

(range 0-50; SD 11) because of leg ulceration. Eventually, 47% of the admitted patients are treated by skin transplantation.

**Conclusions:** This questionnaire gives a good insight in the epidemiology, and the diagnostic and therapeutic regimen for patients with venous leg ulcers in Dutch dermatologic practice.

## Schlüsselwörter

e-Umfrage, Therapie, Ulcus cruris

## Zusammenfassung

**Ziel:** Ziel der Untersuchung war, einen Einblick in die Häufigkeit und Behandlung venöser Ulzera in der niederländischen dermatologischen Praxis zu verschaffen.

**Material und Methoden:** Entwurf des Internetfragebogens. Alle niederländischen Dermatologen und Assistenzärzte im Fachbereich Dermatologie bekamen im Oktober 2008 eine E-Mail zugeschickt. Diese Email war verknüpft mit einem Online-Fragebogen über den venösen Ulcus cruris.

**Ergebnisse:** 30% aller Fragebogen wurden beantwortet. Die Dermatologen, die den Fragebogen ausgefüllt haben waren alle mit der niederländischen Leitlinie für Ulcus cruris vertraut. 83,5% der Ärzte behandeln in der Regel ihre Patienten nach dieser Leitlinie. Eine durchschnittliche dermatologische Praxis behandelt im Schnitt 73 Patienten (0-500, SD: 93) mit Beinulzerationen und jährlich werden 54 neue Patienten mit einem Ulcus cruris (0-300; SD 50) gesehen. 65% der Patienten sind Frauen, 80% sind älter als 45 Jahre und 55% älter als 65 Jahre. Dreiviertel aller Beinulzerationen haben eine venöse Ätiologie, von denen die venöse Ätiologie in 59% die primäre Ursache ist. Eine zusätzliche ausgebreitete Untersuchung wurde bei fast jedem Patienten durchgeführt. Die Behandlung erfolgte in allen Fällen mit ambulanter Kompressionstherapie. Die durchschnittliche Zeit zur vollständigen Heilung betrug 74 Tage (Bereich 4-200; SD 39). Im Jahresdurchschnitt werden 7 Patienten (SD 11 0-50) stationär behandelt; 59% dieser Patienten sind bettlägerig, die Hälfte wird mit Vacuum Assisted Closure (VAC®-Therapie) behandelt. Letztendlich wurden 47% der stationären Patienten mit einer Hauttransplantation behandelt.

**Schlussfolgerung:** Der verwendete Internetfragebogen schafft einen Einblick in die Epidemiologie, Diagnose und die therapeutischen Optionen zur Behandlung von Patienten mit einem Ulcus cruris im niederländischen dermatologischen Alltag.

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## Elektronische Umfrage bei niederländischen Dermatologen zu Ulcus cruris

*Phlebologie* 2013; 42: 270-274  
DOI: 10.12687/phleb2144-6-2013

Received: May 22, 2013

Accepted: July 19, 2013

Chronic venous disease, i.e. varicose veins, post-thrombotic syndrome and chronic venous insufficiency belong to the most prevalent diseases in the Western world. Venous leg ulcers (VLU) have a lifetime prevalence of one to two percent and the prevalence of active VLU ranges from

0.045%–0.7% depending on the age category investigated (1–4). Several German studies have demonstrated that this prevalence is 4 to 5% in people over 80 years of age (5, 6). VLU occur 2 to 3 times more frequent in women and had a relation with belonging to lower socio-economic class

(7). Chronic VLU under 60 years of age is unusual and half of VLU are caused by superficial venous insufficiency (8).

Although the treatment goal of VLU is complete healing within a reasonable period of time, prognosis is poor. About 50% of adequately treated VLU heal within 3

months, but after 2 and 5 years 20 and 8% have not healed respectively (9, 10). After healing recurrence rates are high (11). The average yearly VLU recurrence rates are estimated between 6 to 15% and in the first year after healing these rates are even (30 to 75%). Moreover most VLU recur more than once (12).

The commonest cause of leg ulceration is venous insufficiency. Other causes such as arterial insufficiency, diabetes mellitus, vasculitis, malignancy and other, less frequent causes of ulceration may accompany venous insufficiency. In many patients venous insufficiency is caused by post-thrombotic syndrome. Estimates vary, but on average 1 out of 3 patients, who suffered from deep vein thrombosis, will develop post-thrombotic complications such as leg ulcer in the first 5 years (13). The prevalence of chronic venous insufficiency after a deep vein thrombosis decreases if medical elastic compression stockings are worn, which may contribute to diminished incidence of VLU (14).

Since 2001 the Guidelines Committee of the Dutch Society of Dermatology and Venereology has appointed a working group "Ulcus cruris venosum" and originated to the multidisciplinary guideline "Diagnosis and treatment of venous leg ulcer" published by the Quality Institute for Healthcare CBO in 2005 (15). This multidisciplinary guideline constitutes guidance for medical specialists dealing with the diagnosis and treatment of VLU in daily practice.

As guidelines are important instruments to improve the quality of healthcare as well as to improve cost-effectiveness it is important that the workers in the field implement the guidelines in their daily practice. Information is needed on how professionals treat their patients to survey this process from knowledge to written guidelines and subsequently implementing and acting according to the guideline for the benefit of the patients. As VLU are a social as well as a financial burden, guidelines help to improve the quality of care and as a consequence will lead to improvement of the patients' quality of life and a reduction of the costs.

Written surveys to Dutch dermatologists have been performed previously to

collect information on diagnosis and treatment of basal cell carcinoma and psoriasis (16, 17). E-surveys are quite new to the medical profession and to date have not been used for scientific purposes in the Dutch Dermatology Society. In other branches such as legal, trade and industry professionals are much more used to e-surveys by their fraternity to gather information (18).

We performed an e-survey to gain insight to VLU in the Dutch dermatological practice. This e-survey had multiple goals. First, recent epidemiological data are lacking with regard to VLU. Second, no data exist to which extent supplementary investigations are performed by Dutch dermatologists. How will these patients subsequently be treated? Finally, this e-survey was performed to investigate the feasibility and response of the medical profession to this kind of questionnaire.

## Methods

In October 2008 the Dutch Society of Dermatology and Venereology sent an email to all Dutch dermatologists and residents dermatology whose email addresses were provided. This email contained a request to collaborate to an e-survey on VLU as well as a link to the e-survey itself. After the first mailing two reminders were sent. The e-survey consisted of eighteen questions with regard to diagnostics, treatment and aftercare of VLU. The questions were predominantly multiple-choice questions with two open questions on the treatment of VLU (► table 1). The e-survey finished with two background questions (► table 2).

## Results

One hundred and thirty-four of 452 (30%) dermatologists and residents in dermatology whose email addresses were registered at the office of the Dutch Society of Dermatology and Venereology responded. Of the respondents 17% was resident and 83% dermatologist. Several respondents did not respond to all questions. As demonstrated in ► table 3, most respondents (87%) replied within 2 weeks after the first email.

All 92 respondents are familiar with the Dutch guideline Venous Leg Ulcer, 61% (n=56) has read this guideline and 35% (n=32) has read it superficially. Treatment of VLU takes place according to this guideline: always in 8.8% (n=8), usually in 83.5% (n=76) and sometimes in 7.7% (n=7).

On average 54 (range 0–300) new leg ulcer patients are attended to the Dutch dermatologists each year. The average Dutch dermatologic practice counts 73 (range 0–500) patients with a leg ulcer. Leg ulceration is more prevalent in women as compared to men (65 versus 35%). Eighty percent of the patients are over 45 years of age and 55% is older than 65 years of age. 77% of the leg ulcer has a venous aetiology (range 15–100%). The cause of venous insufficiency is primary (primary varicose veins) in 59% (range 5–100%) and secondary (post-traumatic, post-thrombotic) in 41% (range 10–95%).

In nearly every patient supplementary investigation takes place (► table 4). The care profile of Dutch health insurance companies is added in table 4 for comparison. Besides dermatology several specialties are involved in the treatment of leg ulceration: vascular surgery (82%), internal medicine (20%), rehabilitation medicine (18%), general surgery (5%), orthopaedic surgery (1%) and anaesthesiology (pain team) (1%). Sixteen percent of respondents have joint consultations for patients with leg ulceration.

Ambulatory compression therapy is standard care and the most important treatment modality in the outpatient treatment of VLU (19). All respondents answered that ambulatory compression therapy whether or not in combination with local wound care is used in the outpatient treatment of VLU. The mean time to healing of the outpatient treated VLU is 74 days (range 4–200).

On average the respondents admit 7 patients to the hospital because of VLU (range 0–50). Various answers were given to the open question on used treatment modalities in patients admitted to the hospital because of leg ulceration. Fifty-nine percent of the patients are treated with bed rest, whether or not in combination with VAC® therapy (47%). Creating a clean

Tab. 1 Questions of e-survey.

Investigative questions	Answers
1. How many patients do attend to you each year?	...
2. How many patients are treated in your practice at this time?	...
3. What is the age of the patients with a leg ulcer in your practice?	a. 0 – 18 years b. 19 – 34 years c. 35 – 45 years d. 56 – 65 years e. 66 – 75 years f. Over 75 years
4. Which percentage of the patients with a leg ulcer is male?	..%
5. Which percentage of leg ulcers in your practice has a venous etiology?	..%
6. Which percentage of venous leg ulcers is primary (primary varicose veins) and which percentage is secondary (post-traumatic, post-thrombotic)?	..%
7. In which part of patients with a leg ulcer supplementary investigation is performed?	..%
8. What does supplementary investigation consist of (multiple answers possible)?	See table 4
9. What is the average time to healing of venous leg ulceration?	.. weeks
10. Who are responsible for the treatment of venous leg ulceration?	a. General nurse b. Home care c. Patients themselves d. Wound nurse e. Treating doctor f. Other
11. Are you familiar with the CBO guideline Venous Leg Ulcer?	a. Yes, I know and have read the guideline b. Yes, I know the guideline and have read it superficially c. Yes, I have heard of it d. No
12. Do you treat patients with a venous leg ulcer according to the CBO guideline Venous Leg Ulcer?	a. Yes, always b. Yes, usually c. Sometimes d. No
13. What is standard care for venous leg ulceration in your practice?	...
14. Which medical specialties are involved in the treatment of leg ulcer in your practice?	a. Dermatology b. Vascular surgery c. General surgery d. Internal medicine e. Rehabilitation medicine f. Other specialties, that are ...
15. Do you have joint consultations with other specialties?	a. Yes b. No c. No answer
16. How many patients are admitted to the hospital for treatment of leg ulceration?	...
17. Which percentage of patients receives medical elastic compression stockings for aftercare of venous leg ulceration?	..%
18. Which treatment modality do you use for in-hospital treatment of venous leg ulceration?	...

wound bed is the main goal of local wound care, which is reached by for example compresses with sodium chloride 0.9% or sodium hypochlorite (eusol). Occasionally the wound is cleaned by surgical debride-

ment or seldom maggot therapy. Finally 47% of the patients receive skin transplantation during their hospital stay, mainly consisting of punch grafts (Reverdin) or, less frequently, split-thickness skin grafts.

## Discussion

We performed an e-survey to obtain information on the prevalence and treatment of leg ulceration in the Dutch dermatological

practice and to compare these results with the existing Dutch guideline. This is the first e-survey gathering information on this subject in the Netherlands for scientific use. All respondents are familiar with the Dutch guideline "Venous Leg Ulcer" and most dermatologists treat patients with VLU according to this guideline.

It is surprising that all respondents are familiar with the guideline. This may be explained by the fact that before the actual introduction of the guideline all Dutch dermatologists and residents were invited to respond on the concept text and the guideline was discussed after its release on one of the meetings of the Dutch Society of Dermatology and Venereology. The wide range of number of ulcers in the different practices is remarkable. This may be explained by the fact that not all dermatologists are focussed on venous diseases.

In a country with a high density of dermatological practices and good access to dermatological care for nearly all inhabitants, the general practitioner refers the patient – which is mandatory in the Dutch healthcare system – and refers to an appropriate clinic for leg ulcer care. VLU is more prevalent in women and its prevalence is age-related which corresponds to the existing literature (1, 9).

The mean time to healing varies in the existing literature. However with adequate ambulatory compression therapy a time to healing of 3 months is realistic in 50% of VLU patients (20). This corresponds to the results of our e-survey (2.5 months). From this we may conclude that the great majority follows the guideline the Dutch dermatologists confirm the expectations of good clinical leg ulcer care.

According to the respondents on average 7 VLU patients are yearly admitted to the hospital. It would have been interesting to know the reasons for hospital admission. Our own experience is that the patients admitted are most frequently those with a non-healing VLU (21). However other reasons for hospital admission were mentioned by some of the respondents and consisted mainly of wound infection requiring intravenous antibiotics, pain management, analysis of the leg ulcer before treatment and facilitating consultation by other physicians because of comorbidity.

**Tab. 2** Background questions of the e-survey.

Background questions	Answers
1. What does apply to you?	a. I am a resident dermatology b. I have been a dermatologist less than 5 years c. I have been a dermatologist between 5 and 15 years d. I have been a dermatologist for over 15 years e. No answer
2. What is the last recertification you have followed?	a. Benelux Society b. European Academy of Dermatology and Venereology c. Dutch Society of Dermatology and Venereology d. Workshop AZM at Vaeshartelt e. Workshop EVLT at Erasmus MC, Rotterdam f. Cabourg, France 2007 g. None of the above
3. These were all of our questions. If you appreciate receiving a summary of the results you may state this below.	a. Yes, I would like to receive a summary of the results b. No, I do not appreciate receiving the results

**Tab. 3** Response to e-survey per week (n=134).

week		
	41	47.7 %
	42	39.2 %
	43	7.7 %
	45	3.8 %
	46	0.8 %
	49	0.8 %

During hospital admission 47% of the patients are treated by VAC<sup>®</sup> therapy. VAC<sup>®</sup> therapy speeds up wound preparation before grafting compared to conventional wound care techniques (22). Moreover wound healing is presumably progressed by this therapy. The treatment modality consisting of VAC<sup>®</sup> therapy to prepare the

wound for consecutive grafting in combination with VAC<sup>®</sup> therapy for graft adherence seems to be popular among the Dutch dermatologists. This may be explained by the fact that this therapeutic option is part of the Dutch guideline (15).

Before the existence of the guideline a Dutch study has demonstrated that expert centres perform better with regard to compression therapy than ordinary centres (23). It seems that the guideline has contributed to improvement of the quality of care for VLU patients because the average healing time is conform what may be expected according to the guideline.

Besides leg ulceration itself we were interested in how the dermatologic profession would respond to an e-survey, because a comparable questionnaire has never been

**Tab. 4**

Percentages of patients where supplementary investigation was done in diagnosing VLU compared to the care profile of Dutch insurers.

Supplementary investigation	E-survey (%)	Care profile Dutch insurers (%)
Duplex ultrasound	95	100
Ankle brachial pressure index	85	50
Laboratoy investigation	68	-
Microbiologic investigation	68	35
Biopsy	59	5
Arterial doppler	51	-
Others: lymphoscintigraphy, allergy testing	3	



distributed before among Dutch dermatologists. A response of almost 30% seems low, especially compared to written questionnaires (46% for psoriasis (17), 76% for basal cell carcinoma (16)), but corresponds to comparable e-surveys to for instance the business and legal profession (18). Comparable data for the medical profession however are lacking. The risk of a low response is the possibility of selection bias by the non-respondents (24). Selection bias does not seem to apply for our e-survey since the results correspond to the international literature (24). Besides a sample of 30% is very reliable. The proportion of dermatologists and residents represent a characteristic part of the target group has taken part in the e-survey.

Previous research has demonstrated that response to e-surveys is lower than response to written questionnaires (25). Another study showed that if people have the possibility to choose between a written questionnaire and an e-survey only one in four prefer a paper questionnaire over a digital (26). Finally, a large Dutch study in which 8 large European countries participated demonstrated low responses in the Netherlands and United Kingdom (27).

In conclusion, although the response to our e-survey was lower than the response to a written questionnaire the response is valuable and comparable to similar surveys. This current e-survey gives a good insight in the epidemiology, diagnosis and treatment of VLU in the Dutch dermatological practice. It is more easy to organise and less expensive than a conventional paper questionnaire. This is an important conclusion since it paves the way for researchers and even policymakers to regularly approach a specific profession to obtain insight in their activities. Policy and guidelines may get aligned with their use in daily practice and will contribute to better implementation of guidelines which as we have proven for VLU improves the quality of care to the desired high level of care according to the guideline.

## Conflicts of interest

The authors declare no conflict of interest.

## Acknowledgement

This e-survey could not have been performed without the cooperation of the Dutch dermatologists and residents dermatology.

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