10-MINUTE SCREENING TEST

Easy to use

Non-invasive test, with direct visual result.
Validated for self-examination

Extensive Scientific Publications

Included in Toronto consensus panel
on diabetic neuropathy and DDG guideline.
More than 50 clinical study publications.

Valid Diagnosis

Reproducible and accurate method for
measuring the moisture of the skin of the feet

neuropad®

Prevention is better than cure

Diagnostic test for sudomotor dysfunction and early detection for the diabetic foot syndrome.

Includes references to published studies

TRIGOcare International GmbH / 51674 Wiehl / Germany

TRIGOcare®

neuropad® - IS A SIMPLE, NON-INVASIVE INDICATOR TEST THAT HAS BEEN DEVELOPED FOR THE ASSESSMENT OF SWEATING AND, HENCE, AUTONOMIC INNERVATION OF THE DIABETIC FOOT.

DIABETIC NEUROPATHY (distal symmetric polyneuropathy)

C Nerve-fibre testing
without myelin layer

Autonomic neuropathy

↓

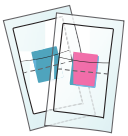
Sudomotor dysfunction
Loss of sweating
Dry skin

↓

Calluses
Fissures
Cracked skin

↓

Diagnostic tool:
neuropad®



A Nerve-fibre testing
with myelin layer

Sensory neuropathy

↓

Loss of protective sensation

↓

Decreased pain sensation
Insensate foot

↓

Diagnostic tools:
Monofilament 10 g
Tuning fork 128 Hz

Motor neuropathy

↓

Reduced muscle strength
Reduced tendon reflexes

↓

Foot deformities

Today **neuropad®** test is the only simple and low cost medical device which documents sudomotor dysfunction and detects sweat glands innervation. **neuropad®** test validated with more than 50 clinical study publications.

THE PATHWAY TO FOOT ULCERATION:

A combination of risk factors that ultimately results in the pathway to skin breakdown. Autonomic neuropathy leading to dry skin and callus build up at such sites, and can also be regarded as a component cause.[R6]

Arteries of the foot (red)

Peripheral vascular disease

Peripheral vascular desease leads to ischaemia

A-NERVE-FIBRES
Large nerve fibres (yellow)

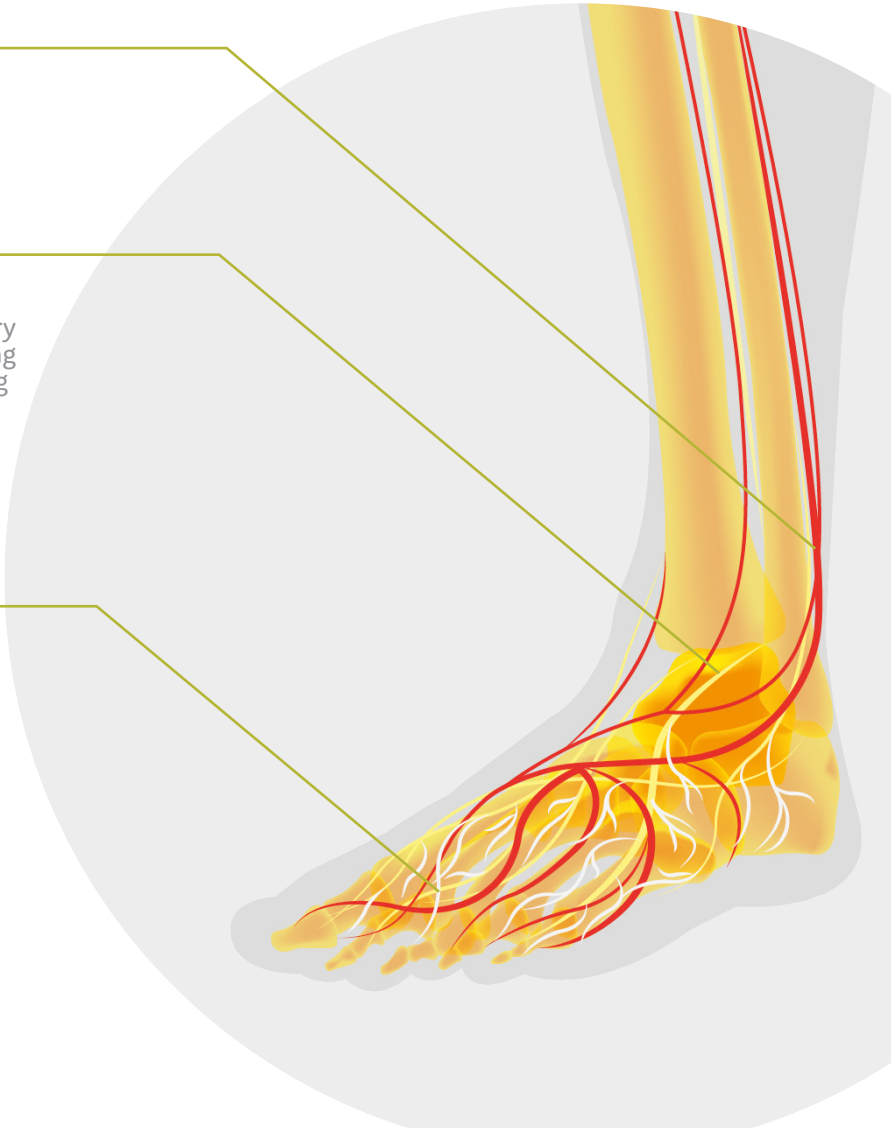
Insensate feet

Large nerve fibres neuropathy affects sensory and motor components leading to walking abnormalities and insensate feet. An increasing body of data shows that small fibre damage may precede large fibre damage in diabetic neuropathy.[G2]

C-NERVE-FIBRES
Small nerve fibres (white)

Dry cracked skin

Small nerve fibres regulate several key functions such as sweating. Peripheral sympathetic autonomic neuropathy leads to sudomotor dysfunction and dry cracked skin.

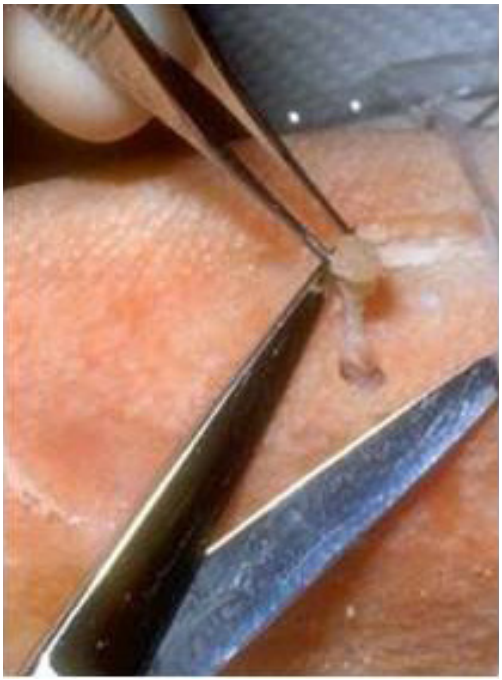


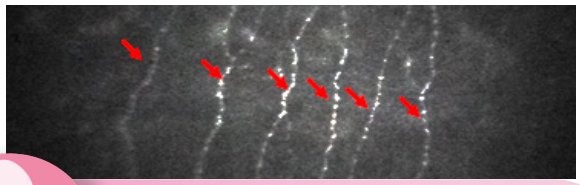
DIABETIC FOOT SYNDROME AND SMALL FIBRE NEUROPATHY

Small fibres constitute 70-90% of peripheral nerve fibres and regulate several key functions such a tissue blood flow, temperature and pain perception as well as sweating, all of which are highly relevant to the clinical presentation and adverse outcomes associated with foot ulcerations in patients with diabetes[G2]. **neuropad®** response indicates both functional and structural denervation in the feet of diabetic patients. This has considerable clinical relevance in screening for diabetic neuropathy.[15]

The most common early symptoms are induced by the involvement of small fibers
ADA Standards of Medical Care in Diabetes 2020

European Federation of the Neuroloical Societies and Peripheral Nerve Society revised guidelines on the use of skin biopsy concluded that IENFD density is a reliable and efficient technique to confirm the clinical diagnosis of SFN with level A. *(IENFD: Skin biopsies: intraepidermal nerve fibres density SFN: Small Fiber Neuropathy)*





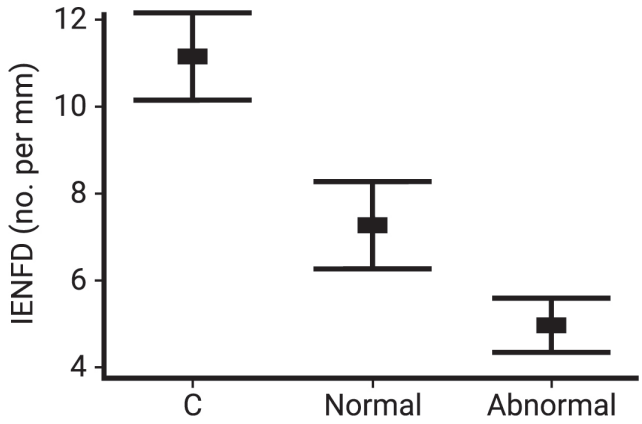
Corneal confocal microscopy image of a control subject with normal corneal nerve density.

Image from a diabetic patient with servere neuropathy and marked loss of corneal nerve fibres.

Sudomotor innervation: A novel stereologic technique in skin biopsies showed a correlation between sweat gland nerve fibre density, neuropathic symptoms, neurological deficits and sweat production.[G2]

neuropad® TEST RESPONSE STRONGLY CORRELATED TO OTHER TEST FOR SMALL FIBRE NEUROPATHY

neuropad® test vs Intraepidermal Nerve Fibre Density (IENFD)
All dieabetic patients with abnormal **neuropad®** test had structural denervation of the feet[15].



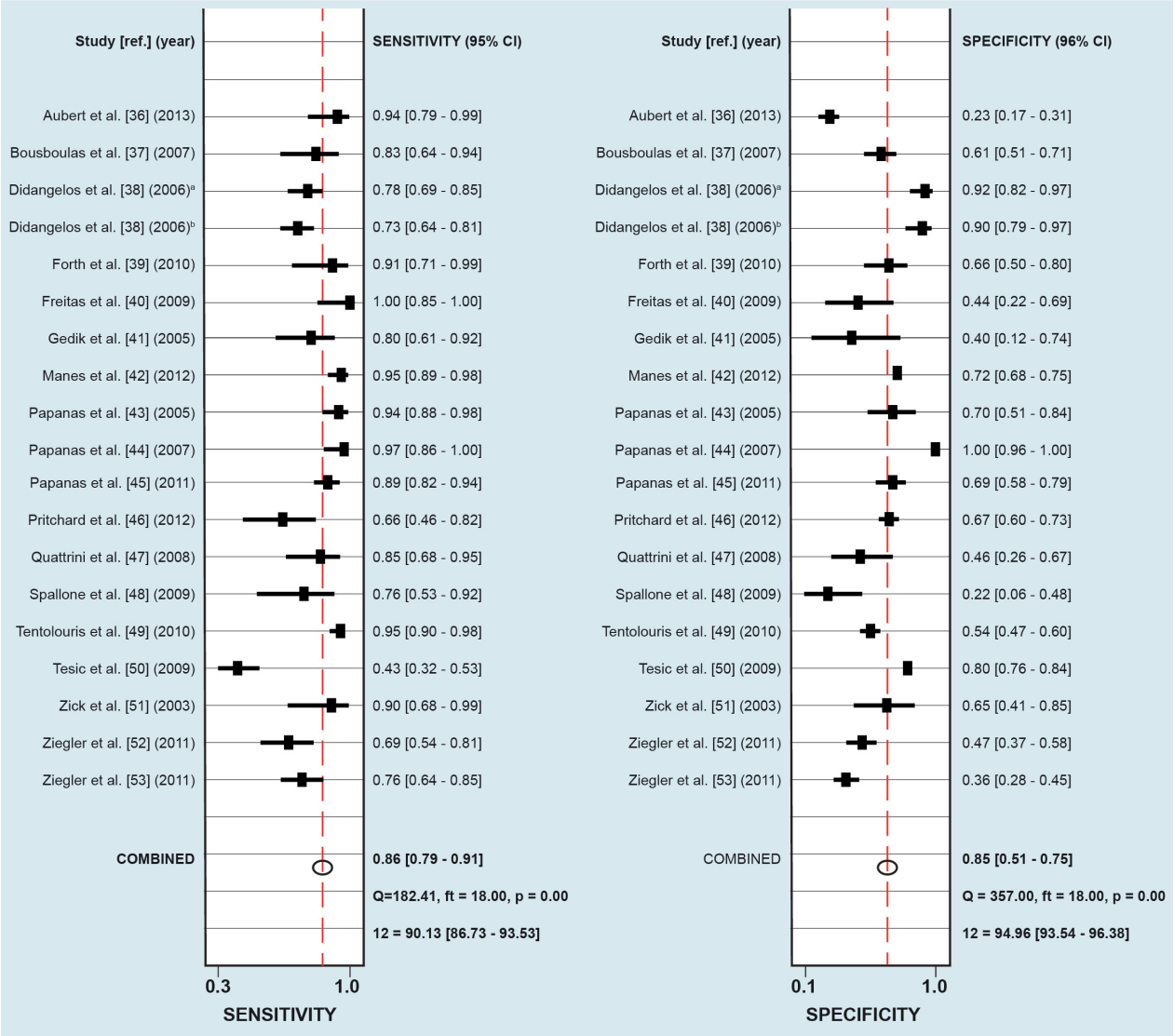
A comparative study of **neuropad®** test versus skin biopsies from the dorsum of the foot showed that all diabetic patients with abnormal **neuropad®** test had significantly lower IENFDs compared to diabetic patients with a normal **neuropad®** response and healthy subjects[15].

		β	p
CNFD	**C**orneal **n**erve **f**iber **d**ensity	- 0,422	<0,0001
CNFL	**C**orneal **n**erve **f**iber **l**ength	- 0,386	0,002
CNBD	**C**orneal **n**erve **b**ranch **d**ensity	- 0,296	0,004
CNBL	**C**orneal **n**erve **b**ranch **l**ength	- 0,278	0,009
CSA	**C**ross **s**ectional **a**rea of sweat gland duct1	- 0,266	0,008
DN	Stage of **d**iabetic **n**europathy	- 0,541	<0,0001

neuropad® period of complete colour change (CCC).

SENSITIVITY AND SPECIFICITY OF neuropad® FOR THE DIAGNOSIS OF DIABETIC NEUROPATHY: A DIAGNOSTIC TEST ACCURACY SYSTEMATIC REVIEW AND META-ANALYSIS[35].

Eighteen studies with 3.470 participants met the inclusion criteria. Average sensitivity was 86% (95% CI 79 to 91) and specificity was 65% (95% CI 51 to 76). Likelihood ratios (LRs) were LR+ = 2.44 and LR- = 0.22. Subgroup analyses per reference standard utilized provided similar estimates.



SUDOMOTOR DYSFUNCTION DIAGNOSIS WITH neuropad® TEST PROVIDES AN EARLIER DIAGNOSIS OF DIABETIC NEUROPATHY.[23,G2]

The invariably lower specificity than sensitivity is due to the fact that **neuropad®** is abnormal in about one third of patients with clinical examination negative for neuropathy. It has been proposed that this result may be ascribed to earlier diagnosis of neuropathy by means of **neuropad®** before conventional clinical signs become positive.[R4]

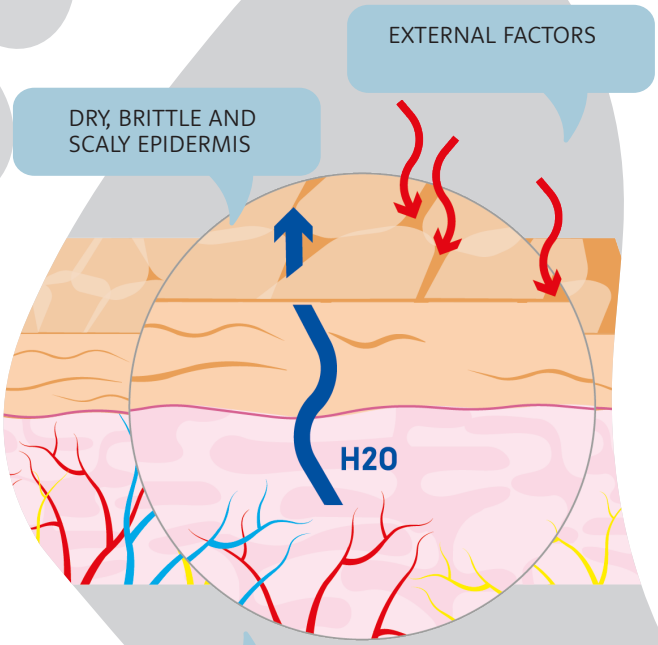
PROSPECTIVE STUDY

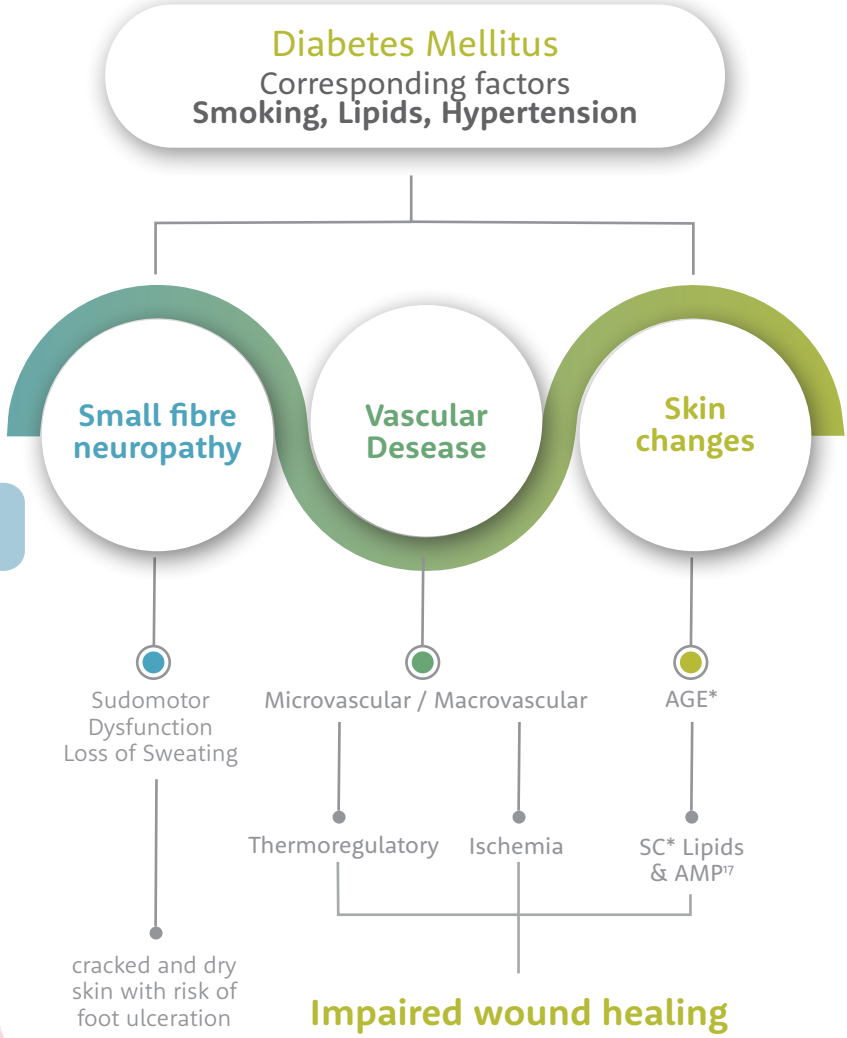
Patient Group	with neuropathy 2nd examination after 5 years	without neuropathy 2nd examination after 5 years	NDS 1st examination	NDS 2nd examination	p value
with normal neuropad® 1st examination (n=70)	2 (2.86%)	68	2.97 +/- 0.72	4.23 +/- 0.99	p < 0.001
with abnormal neuropad® 1st examination (n=39)	10 (25.64%)	29	3.39 +/- 0.91	4.63 +/- 1.33	p < 0.001

neuropad® test positive result in diabetic patients without clinical neuropathy is a remarkable indicator for the development of clinical neuropathy in the future.[23,G2] This appears to reflect early small fibre involvement which is missed using NDS as a measure of neuropathy.[G2]

**Sensitivity and specificity studies: The adhesive indicator test has reasonable sensitivity and could be used for triage of diabetic neuropathy to rule out foot at risk* [35].

CONSEQUENCES OF SMALL FIBRE NEUROPATHY TO INCREASING THE RISK FOR DEVELOPING FOOT ULCERATION WITH DP. [G2,58,R6,18]

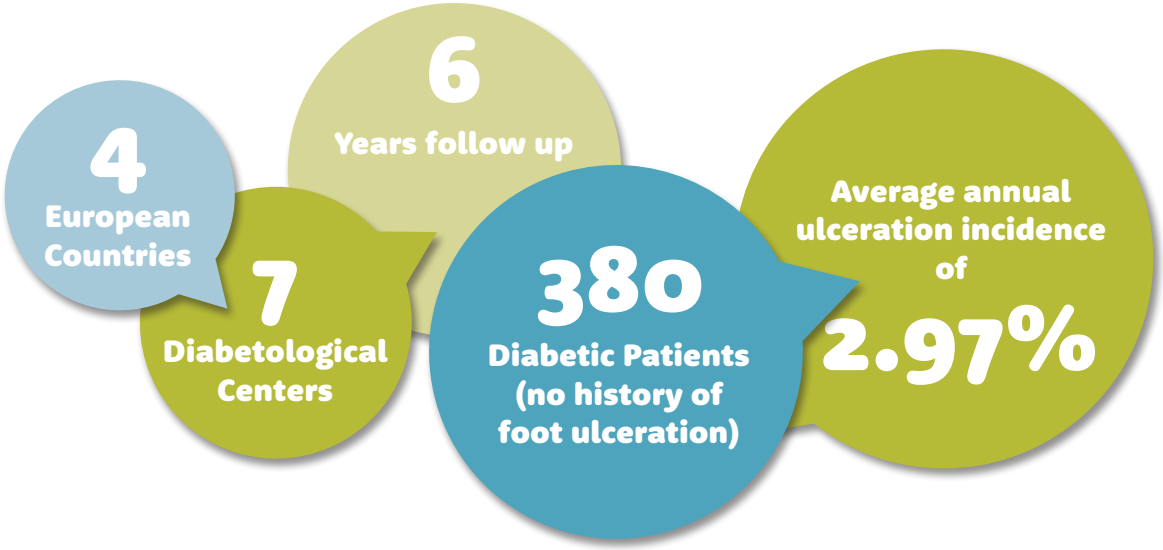




*AGE Advance Glycosylated End Products
*SC Stratum Corneum

DRYNESS OF FOOT SKIN ASSESSED BY THE VISUAL INDICATOR TEST AND RISK OF DIABETIC FOOT ULCERATION: A PROSPECTIVE OBSERVATIONAL STUDY[58]

ABOUT THE PROSPECTIVE STUDY



Dryness of foot skin assessed by **neuropad®** test is an independent predictor of risk of foot ulceration in individuals with DM. In addition, it was confirmed that other neurological modalities such as high NDS and high VPT are also associated with increased risk of foot ulceration. Multivariate Cox-regression analysis after controlling for the effect of age, gender, and diabetes duration demonstrated that the risk of foot ulceration increased significantly with abnormal **neuropad®** test result **3.3** (1.460 - 7.545, p = 0.004)

Autonomic Neuropathy (Sudomotor Dysfunciton sweating disorder / Anhidrosis)
C-Nerve Fibre Neuropathy leads to an increased risk of foot ulceration in patients with Diabetes.[R22,18,58]

EARLY DETECTION OF DIABETIC NEUROPATHY AND DIAGNOSIS OF SUDOMOTOR DYSFUNCTION

neuropad® tests the function of the sweat glands with the help of easy to read colour change

Sweat gland function is OK
Regular routine feet inspections every 12 months

Proper foot care to keep the skin barrier intact.

pink test result
damage to the C-nerve fibres cannot be detected.

DIAGNOSTIC:

Sudomotor dysfuntion
(included in Autonomic Neuropathy)

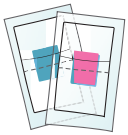
Late complications
as foot ulcerations/amputations

blue test result
detection of damage to the C-nerve fibres

How to use neuropad®:

Step 1

Both feet should be examined. For this purpose, two test patches are included in the package.



Step 2

Place the plaster on the skin between metatarsal I and II. Always apply to both feet.

Step 3

After 10 minutes remove the plaster **without** touching the reaction field.

AN INNOVATIVE UNIQUE STANDARDIZED DIAGNOSTIC TOOL TO COMPLETE DIABETIC FOOT EXAMINATION. THE ONLY SIMPLE, VALIDATED AND REPRODUCIBLE TEST FOR DOCUMENTATION OF SUDOMOTOR DYSFUNCTION.

Benefits of neuropad® test:

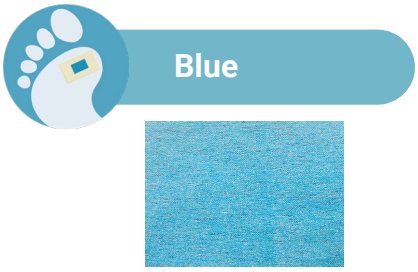
1. High sensitivity[24,G2,G3] for screening of DSPN
2. Detects small fibre impairment[15,26,G2]
3. Test for sudomotor dysfunction
4. Non-invasive, direct result
5. Objective visual test with high reproducibility[3]
6. Validated for self-examination[11]
7. Easy to use[11], simple economic
8. Increases patient´s compliance
9. Excellent acceptance from patients with diabetes mellitus[11]
10. No cooperation required by the patients

Simple visual indicator test which uses a colour change to define the integrity of skin sympathetic cholinergic innervation.[G2]

neuropad® test results:

Normal findings
Sweat gland function is ok

Abnomal
Sudomotor dysfunction
Foot at risk of ulceration



Abnormal
Sudomotor dysfunction
Foot at risk of ulceration

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
1	**"Measurement of perspiration in the diabetic foot"** Zick R., Schäper T., Deeters U St. Bonifatius Hospital Lingen, Academic Hospital of the Medical University Hanover, Germany	„Der Klinikarzt"	Klinikarzt 2003; 32: 288-290
2	**"Evaluation of the new indicator plaster (neuropad®) in the diagnosis of peripheral neuropathy among Type 2 diabetic patients"** N. Papanas[1], K. Papatheodorou[1], D. Christakidis[2], Papazoglou[1], G. Giassakis[3], H. Piperidou[3], Ch. Monastiriotis[1], E. Maltezos[1]. [1]Second Department of Internal Medicine, Democritus University of Thrace, Greece [2]Diabetic Department, General Hospital of Alexandroupolis, Greece [3]Department of Neurology, Democritus University of Thrace, Alexandroupolis, Greece	Experimental & Clinical Endocrinology Journal	Experimental & Clinical Endocrinology Journal 04/2005: 113: 1-4
3	**„Reproducibility of the new indicator test for sudomotor function (neuropad®) in patients with type 2 diabetes mellitus"** N. Papanas[1], K. Papatheodorou[1], D. Papazoglou[1], D. Christakidis[2], Ch. Monastiriotis[1], E. Maltezos[1]. 1Second Department of Internal Medicine, Democritus University of Thrace, Greece [2]Diabetic Department, University Hospital of Alexandroupolis, Greece	Experimental & Clinical Endocrinology Journal	Experimental & Clinical Endocrinology Journal 10/2005: 113 577-581
4	**„Usefulness of a new indicator test for the diagnosis of peripheral and autonomic neuropathy in patients with diabetes mellitus"** S. Liatis, K. Marinou, N. Tentolouris, S. Pagoni and N. Katsilambros First Department of Internal Medicine, Athens University Medical School and Diabetes Centre, Laiko General Hospital, Athens, Greece	Diabetic Medicine	Diabetic Medicine Volume 24, Issue 12 , Pages1375 - 1380, 2007
5	**„The new indicator test (neuropad®): A valuable diagnostic tool for small fibre impairment in Type 2 diabetic patients"** N. Papanas[1], K. Papatheodorou[1], D. Papazoglou[1], D. Christakidis[3], Ch. Monastiriotis[1], E. Maltezos[1]. [1]Second Department of Internal Medicine, Democritus University of Thrace, 3Diabetic Department, University Hospital of Alexandroupolis, Greece	The Diabetes Educator	The Diabetes Educator.2007; 33: 257-266
6	**„Sensitivity and specificity of the new indicator test (neuropad®) for the diagnosis of peripheral neuropathy in type 2 diabetes patients:** A comparison with clinical examination and nerve conduction study" N. Papanas[1], G. Giassakis[3], K. Papatheodorou[1], D. Papazoglou[1], C. Monastiriotis[1], D. Christakidis[3], H. Piperidou[2], E. Maltezos[1]. [1]Second Department of Internal Medicine, Democritus University of Thrace, [2]Department of Neurology, Democritus University of Thrace, [3]Diabetic Department, University Hospital of Alexandroupolis, Greece	Journal of Diabetes and its complications	"Journal of Diabetes and its complications" 21 (2007) p. 353-358

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
7	**"Use of the new indicator test (neuropad®) for the assessment of the staged severity of neuropathy in type 2 diabetic patients"** N. Papanas[1], G. Giassakis[2], K. Papatheodorou[1], D. Papazoglou[1], C. Monastiriotis, D. Christadkidis[3], H. Piperidou[2], E. Maltezos[1] [1]Second Department of Internal Medicine, Democritus University of Thrace, [2]Department of Neurology, Democritus University of Thrace, [3]Diabetic Department, University Hospital of Alexandroupolis, Greece	Experimental & Clinical Endocrinology	"Experimental & Clinical Endocrinology and Diabetes", 01/2007; 115(1), 58-61
8	**"Erectile dysfunction in diabetic men is linked more to microangiopathic complications and neu-ropathy than to macroangiopathic disturbances"** Zdravko A. Kamenov, Vladimir G. Christov, Tsanka M. Yankova Clinic of Endocrinology, Alexandrovska University Hospital, Medical University, Sofia, Bulgaria	The journal of men's health & gender	The journal of men's health & gender, 4 (1), p.64-73, Mar 2007
9	**„Sweat function evaluation for early diagnosis of diabetic peripheral neuropathy"** Shen J, Cao Y, Han YJ, Luo XR, Xie CH, Li JM, Xue YM. Department of Endocrinology, Nanfang Hospital, Southern Medical University, Guangzhou 510515, China	Nan Fang Yi Ke Da Xue Xue Bao.	Nan Fang Yi Ke Da Xue Xue Bao. 2007 Aug; 27(8):1210-2
10	**„Neuropad® Indicator Test for Diagnosis of Sudomotor Dysfunction in Type 2 Diabetes"** Habib Bilen[1], Aysegul Atmaca[2], Gungor Akcay[1]. [1]Department of Internal Medicine, Division of Endocrinology and Metabolism, Ataturk University School of Medicine, Erzurum, [2]Division of Endocrinology and Metabolism Ondokuz Mayis University School of Medicine Samsun, Turkey	Advances in Therapy	Advances in Therapy 2007 Sep-Oct; 24(5):1020-7.
11	**"Evaluation of the Self-administered Indicator Plaster Neuropad for the Diagnosis of Neuropathy in Diabetes"** Nicholas Tentolouris, Vasilis Achtsidis, Kyriaki Marinou, Nicholas Katsilambros. 1st Department of Propaedeutic Medicine, Athens University Medical School, Laiko General Hospital, Athens, Greece	Diabetes Care	Diabetes Care. 2008 Feb; 31(2):236-7.
12	**„Examination of tactile disorders in diabetic patients and cooperation with a neurologist"** Jirkovská A, Boucek P. Centrum diabetologie Institutu klinické a experimentální mediciny Prague, Czech Republic	Vnitr Lek.	Vnitr Lek. 2007 May;53(5):489-94.
13	**„Fungal foot infections in patients with diabetes mellitus - results of two independent investigations"** Eckhard M.[1], Lengler A.[1], Liersch J.[1], Bretzel R. G.[1], Mayser P.[2] [1]Third Medical Department, Diabetes-Center [2]Center of Dermatology and Andrology, Justus Liebig University, Giessen, Germany	Mycoses	Mycoses, Volume 50, Supplement 2, September 2007 , pp. 14-19(6)

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
14	**„A comparison of the new indicator test for sudomotor function (neuropad®) with the vibration perception threshold and the clinical examination in the diagnosis of peripheral neuropathy in subjects with type 2 diabetes“.** Papanas N, Papatheodorou K, Papazoglou D, Monastiriotis C, Christakidis D, Maltezos E. Second Department of Internal Medicine, Democritus University of Thrace, University Hospital of Alexandroupolis, Dragana, Alexandroupolis, Greece	Experimental & Clinical Endocrinology and Diabetes	Exp Clin Endocrinol Diabetes. 2008 Feb;116(2):135-8.
15	**„The neuropad® test: a visual indicator test for human diabetic neuropathy“** C. Quattrini[1,4], M. Jeziorska[2], M. Tavakoli[1,4], P. Begum[3], A. J. M. Boulton[1,4] and R. A. Malik[1,4]. 1Division of Cardiovascular Medicine, Core Technology Facility, University of Manchester, 46 Grafton Street, Manchester, [2]Division of Regenerative Medicine, University of Manchester, Manchester, [3]Department of Gastrointestinal Sciences, Clinical Sciences Building, Salford Royal Hospitals, Salford, 4Manchester Diabetes Centre, Manchester Royal Infirmary, Manchester, UK	Diabetologia	Diabetologia Volume 51, Number 6 / June, 2008
16	**„Neuropad as a diagnostic tool for diabetic autonomic and sensorimotor neuropathy“** Spallone V, Morganti R, Siampli M, Fedele T, D'Amato C, Cacciotti L, Maiello MR. Endocrinology, Department of Internal Medicine, Tor Vergata University, Rome, Italy	Diabetic Medicine	Diabet Med. 2009 Jul;26(7):686-92
17	**„Use of Nanotechnology-Designed Footsock in the Management of Preulcerative Conditions in the Diabetic Foot: Results of a Single, Blind Randomized Study“** Alberto Piaggesi, Banchellini Elisa, Macchiarini Silvia, Dini Valentina, Rizzo Loredana, Tedeschi Anna, Scatena Alessia, Goretti Chiara, Campi Fabrizio, Romanelli Marco MD. Department of Endocrinology and Metabolism, Azienda Ospedaliera Universitaria Pisana, Via Paradisa, Pisa 2–56124, Italy	The International Journal of Lower Extremity Wounds	The International Journal of Lower Extremity Wounds Volume 7 Number 2 June 2008 82-87
18	**„Moisture status of the skin of the feet assessed by the visual test neuropad correlates with foot ulceration in diabetes“** Tentolouris N, Voulgari C, Liatis S, Kokkinos A, Eleftheriadou I, Makrilakis K, Marinou K, Katsilambros N. 1st Department of Propaedeutic Medicine, Athens University Medical School, Laiko General Hospital, Athens, Greece	Diabetes Care	Diabetes Care. 2010 May;33(5):1112-4.
19	**„Diagnosis of diabetic neuropathy using simple somatic and a new autonomic (neuropad) tests in the clinical practice.“** Kamenov ZA, Petrova JJ, Christov VG. Clinic of Neurology, Alexandrovska University Hospital, Medical University - Sofia, Bulgaria	Experimental & Clinical Endocrinology	Exp Clin Endocrinol Diabetes. 2010 Apr;118(4):226-33.

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
20	**„The Neuropad test in the screening of peripheral neuropathy in diabetic patients“** Freitas C, Carvalho A, Melo-Rocha G, Amaral C, Pinto S, Guimarães R, Neto H, Suascun J, Muras J, Gonçalves I, Martins J, Dores J, Carvalho R, Borges F. Serviços de Endocrinologia, Hospital de Santo António, Porto	Acta Medical Portuguesa	Acta Med Port. 2009 Nov-Dec;22(6):729-34.
21	**„Increased serum levels of uric acid are associated with sudomotor dysfunction in subjects with type 2 diabetes mellitus.“** Papanas N, Demetriou M, Katsiki N, Papatheodorou K, Papazoglou D, Gioka T, Kotsiou S, Maltezos E, Mikhailidis DP.	Exp Diabetes Res	Exp Diabetes Res. 2011;2011:346051
22	**„Association between foot temperature and sudomotor dysfunction in type 2 diabetes.“** Papanas N, Papatheodorou K, Papazoglou D, Kotsiou S, Maltezos E. Second Department of Internal Medicine, Democritus University of Thrace, University Hospital of Alexandroupolis, Dragana, Alexandroupolis, Greece	Journal of Diabetes Science and Technology	Journal of Diabetes Science and Technology
23	**„A Prospective Study on the use of the Indicator Test neuropad® for the Early Diagnosis of Peripheral Neuropathy in type 2 Diabetes“** Papanas N, Papatheodorou K, Papazoglou D, Kotsiou S, Maltezos E. Outpatient Clinic of Obesity, Diabetes and Metabolism in the Second Department of Internal Medicine, Democritus University of Thrace, Greece	Experimental & Clinical Endocrinology and Diabetes	Exp Clin Endocrinol Diabetes. 2011 Feb; 119(2):122-5.
24	**„Accuracy of the neuropad® test for the diagnosis of distal symmetric polyneuropathy in type 2 diabetes.“** Papanas N, Paschos P, Papazoglou D, Papatheodorou K, Paletas K, Maltezos E, Tsapas A.Outpatient Clinic of Obesity, Diabetes and Metabolism in the Second Department of Internal Medicine, Democritus University of Thrace, Alexandroupolis, Greece	Diabetes Care	Diabetes Care. 2011 Jun;34(6):1378-82.
25	**„Neuropad: evaluation of three cut-off points of sudomotor dysfunction for early detection of polyneuropathy in recently diagnosed diabetes.“** Ziegler D, Papanas N, Roden M; for the GDC Study Group. Institute for Clinical Diabetology, German Diabetes Center at the Heinrich Heine University, Leibniz Center for Diabetes Research; Department of Metabolic Diseases, University Hospital, Düsseldorf, Germany	Diabetic Medicine	Diabet Med. 2011 Jun 9. doi: 10.1111/j.1464-5491.2011.03345.x. [Epub ahead of print]

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
26	**„Corneal sensitivity is related to established measures of diabetic peripheral neuropathy“** Nicola Pritchard BAppSc(Optom) FAAO[1], Katie Edwards PhD[1], Dimitrios Vagenas PhD[1], Anthony W Russell MBBS PhD[2,3], Rayaz A Malik MD PhD4, Nathan Efron PhD DSc[1]. 1Institute of Health and Biomedical Innovation, Queensland University of Technology, [2]Department of Diabetes and Endocrinology, Princess Alexandra Hospital, [3]School of Medicine, University of Queensland, Australia 4Division of Cardiovascular Medicine, University of Manchester and Central Manchester	Clinical and Experimental Optometry	Clinical and Experimental Optometry Volume 95, Issue 3, pages 355–361, May 2012
27	**„A Simple and Rapid Quantitative Sweat Test Based on Cobalt Chloride Color Change“** Moser J.[1], Kriehuber E[2], Trautinger F.[1] [1]Karl Landsteiner Institute for Dermatological Research, St. Poelten, [2]Novartis Institutes for Biomedical Research, Vienna, Austria	Skin Pharmacology and Physiology	Skin Pharmacology and Physioliogy Vol. 25, No. 3, 2012
28	**„Useful Application of the Neuropad Test for Assessment of Diabetic Polyneuropathy“** Keiji Yoshioka[1], Hiroshi Okada[2]. [1] Yoshioka Diabetes Clinic, Japan [2] Department of Diabetes and Endocrinology, Matsushita Memorial Hospital, Japan	Internal Medicine	Internal Medicine Vol. 51 (2012) No. 23 p. 3241-3245
29	**„The diagnostic value of water immersion skin wrinkling and Neuropads in small fiber neuropathy“** Mirjam Datema[1], J. Gert van Dijk[1], Elske Hoitsma[2]. [1]Department of Neurology and Clinical Neurophysiology, Leiden University Medical Center, The Netherlands	Clinical Neurophysiology	Clinical Neurophysiology Volume 123, Issue 10, October 2012, Pages 2074–2079
30	**„Evaluation of the neuropad® sudomotor function test as a screening tool for polyneuropathy in the elderly population with diabetes and pre-diabetes: the KORA F4 survey“** D. Ziegler[1,2], N. Papanas[1], W. Rathmann[3], M. Heier4, M.Scheer[3], C. Meisinger4, KORA Study Group. [1] Institute for Clinical Diabetology, German Diabetes Center at the Heinrich Heine University, Leibniz Center for Diabetes Research, Düsseldorf [2]Department of Metabolic Diseases, University Hospital, Düsseldorf, [3] Institute of Biometrics and Epidemiology, German Diabetes Center at the Heinrich Heine University, Leibniz Center for Diabetes Research, Düsseldorf, 4 Institute of Epidemiology II, Helmholtz Zentrum München – German Research Center for Environmental Health, Neuherberg, Germany	Diabetes/ Metabolism Research and Reviews	Diabetes/Metabolism Research and Reviews Volume 28, Issue 8, pages 692–697, November 2012
31	**„Influence of peripheral arterial occlusive disease on the neuropad® test performance in patients with diabetes“** C. E. Aubert[1], J. Le Doeuff[2], J. Lajou[3], O. Barthelemy[4], A. Hartemann[1,5], O. Bourron[1,5]. [1]Diabetes and Metabolic Diseases Department, AP-HP, Pitié-Salpêtrière Hospital, Paris, [2]Vascular Surgery Department, AP-HP, Pitié-Salpêtrière Hospital, Paris, [3]Private Angiology Practice, Paris, [4]Cardiology Department, AP-HP, Pitié-Salpêtrière Hospital, Paris, 5University Pierre and Marie Curie, Paris, France	Diabetic Medicine	Diabetic Medicine Volume 30, Issue 5, pages e178–e184, May 2013

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
32	**„Relationship of Limited Joint Mobility and Foot Deformities with Neurological Examination in Patients with Diabetes“** Sanz-Corbalán[1], J. L. Lázaro-Martínez[1], E. García-Morales[1], J. Aragón-Sánchez[2], D. Carabantes-Alarcón[1], Y. García-Álvarez[1]. 1Diabetic Foot Unit, Complutense University Clinic, Madrid, Spain 2Diabetic Foot Unit, La Paloma Hospital, Las Palmas de Gran Canaria, Spain	Experimental & Clinical Endocrinology and Diabetes	Exp Clin Endocrinol Diabetes 2013; 121(04): 239-243
33	**“Hypohidrosis induced by topiramate in an adult patient”** Karachristianou S, Papamichalis E, Sarantopoulos A, Boura P, Georgiadis G.	Epileptic Disord.	Epileptic Disord. 2013 Jun;15(2):203-6. doi: 10.1684/epd.2013.0568.
34	**“Differences in skin microcirculation on the upper and lower extremities in patients with diabetes mellitus: relationship of diabetic neuropathy and skin microcirculation”** Tomešová J, Gruberova J, Lacigova S, Cechurova D, Jankovec Z, Rusavy Z.	Diabetes Technol Ther.	Diabetes Technol Ther. 2013 Nov;15(11): 968-75. doi: 10.1089/dia.2013.0083. 2013 Aug 21
35	**“A simple plaster for screening for diabetic neuropathy: a diagnostic test accuracy systematic review and meta-analysis”** Tsapas A, Liakos A, Paschos P, Karagiannis T, Bekiari E, Tentolouris N, Boura P.	Metabolism.	Metabolism. 2014 Apr;63(4):584-92. doi: 10.1016/j.metbol. 2013.11.019. Dec 7. Review
36	**“The indicator test neuropad® in the assessment of small and overall nerve fibre dysfunction in patients with type 2 diabetes: a large multicentre study”** Manes C, Papanas N, Exiara T, Katsiki N, Papantoniou S, Kirlaki E, Tsotoulidis S, Kefalogiannis N, Maltezos E.	Diabetic Medicine	Exp Clin Endocrinol Diabetes. 2014 Mar;122(3):195-9. doi: 10.1055/s-0034-1367061. 2014 Mar 18
37	**“neuropad® test for sudomotor function to predict the risk of diabetic foot ulceration”** Qin Y, Cao Y, Gao F, Luo X, Li J, Fu X, Xue Y.	Nan Fang Yi Ke Da Xue Xue Bao	2014 Apr;34(4):560-2. Chinese.
38	**“The diagnostic accuracy of neuropad® for assessing large and small fibre diabetic neuropathy”** Ponirakis G, Petropoulos IN, Fadavi H, Alam U, Asghar O, Marshall A, Tavakoli M, Malik RA.	Diabetic Medicine	Diabet Med. 2014 Jun 26. doi: 10.1 111/dme.12536
39	**“Correlation between sudomotor function, sweat gland duct size and corneal nerve fiber pathology in patients with type 2 diabetes mellitus”** Fukashi Ishibashi*, Rie Kojima, Asami Kawasaki, Emi Yamanaka, Aiko Kosaka, Harumi Uetake Ishibashi Clinic, Hiroshima, Japan	Journal of Diabetes Investigation	Diabet es Invest Vol. 5 No. 5 September2014

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
40	**"Automated Quantification of neuropad® Improves Its Diagnostic Ability in Patients with Diabetic Neuropathy"** Georgios Ponirakis,[1,2] Hassan Fadavi,[2] Ioannis N. Petropoulos,[1,2] Shazli Azmi,[2] Maryam Ferdousi,[2] Mohammad A. Dabbah,[2,3] Ahmad Kheyami,[2] Uazman Alam,[2] Omar Asghar,[2] Andrew Marshall,[2] Mitra Tavakoli,2 Ahmed Al-Ahmar,[2] Saad Javed,[2]Maria Jeziorska,[2] and Rayaz A. Malik[1,2]. [1]Research Division, Weill Cornell Medical College in Qatar, Qatar Foundation, P.O. Box 24144, Education City, Doha, Qatar. [2]Institute of Human Development, Centre for Endocrinology & Diabetes, Faculty of Medical and Human Sciences, University of Manchester and NIHR/Wellcome Trust Clinical Research Facility, Manchester M13 9NT, UK. [3]Roke Manor Research Ltd, Old Salisbury Lane, Romsey, Hampshire SO51 0ZN, UK	Journal of Diabetes Research	Volume 2015, Article ID 847854, 7 pages http://dx.doi.org/10.1155/2015/847854
41	**"neuropad® for the detection of cardiovascular autonomic neuropathy in patients with type 2 diabetes"** Mendivil CO, Kattah W, Orduz A, Tique C, Cárdenas JL, Patiño JE Endocrinology Section, Department of Internal Medicine, Fundación Santafé de Bogotá, Colombia. School of Medicine, Universidad de los Andes, Bogotá, Colombia	Journal Diabetes Complications	2016 Jan-Feb;30(1):93-8
42	**"Quantitative sensory testing in type 1 diabetic patients with mild to severe diabetic neuropathy"** Ahmed T. Alahmar. MSc College of Medicine, University of Babylon, Iraq	Journal of Research in Medical and Dental Science	Vol. 4 / Issue 2 / April-June 2016
43	**"Screening tests for distal symmetrical polyneuropathy in Latin American patients with type 2 diabetes mellitus"** Nicolás Gómez-Banoy, Virginia Cuevas, Fernando Soler, Maria Fernanda Pineda, Ismena Mockus, Laboratorio de Lípidos y Diabetes, Facultad de Medicina, Universidad Nacional de Colombia, Bogotá, Colombia	Archives of Endocrinology and Metabolism	vol.61 no.5 São Paulo Sept./Oct. 2017
44	**„Early detection of neuropathy in leprosy: a comparison of five tests for field settings"** [1]Inge Wagenaar, Erik Post[2], Wim Brandsma[3], Dan Ziegler[4,5], Moshiur Rahman6, Khorshed Alam6 and Jan Hendrik Richardus[1]. [1]Department of Public Health, Erasmus MC, Rotterdam, The Netherlands [2]KIT Health, Royal Tropical Institute, Amsterdam, The Netherlands [3]Independent leprosy consultant, Amsterdam, The Netherlands 4Institute for Clinical Diabetology, German Diabetes Center at Heinrich Heine University, Leibniz Center for Diabetes Research, Düsseldorf, Germany 5Department of Endocrinology and Diabetology, Medical Faculty, Heinrich Heine University, Düsseldorf, Germany 6Rural Health Program, The Leprosy Mission International-Bangladesh, Nilphamari, Bangladesh	Infectious Diseases of Poverty	(2017) 6:115 DOI 10.1186/s40249-017-0330-2

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
45	**"Advantages of early diagnosis of diabetic neuropathy in the prevention of diabetic foot ulcers"** Irene Sanz-Corbalán, José Luis Lázaro-Martínez, Esther García-Morales, Raúl Molines-Barroso, Francisco Álvaro-Afonso, Yolanda García-Álvarez Diabetic Foot Unit, Universidad Complutense de Madrid, Madrid, Spain	Diabetes Research and Clinical Practice	Available online 27 December 2017 146 (2018) 148–154149
46	**"Validation of neuropad® in the Assessment of Peripheral Diabetic Neuropathy in Patients with Diabetes Mellitus Versus the Michigan Neuropathy Screening Instrument, 10 g Monofilament Application and Biothesiometer Measurement"** Zografou, Ioanna[1], Iliadis, Fotios[2], Sambanis, Christos[1], Didangelos, Triantafyllos[2]. [1]Diabetes Center, 2nd Propedeutic Department of Internal Medicine, Aristotle University of Thessaloniki, Hippocration Hospital, Greece. [2]Diabetes Center, 1st Propedeutic Department of Internal Medicine, Aristotle University of Thessaloniki, ‚ΑΗΕΡΑ'' Hospital,	Current Vascular Pharmacology	2019, 17, 1-6
47	**"Sensitivity and specificity of the neuropad® for distal sensory peripheral neuropathy (DSPN) in subjects with HIV-Infection: A case controlled observational study"** Katie L. Laurin, Paul D. Blanchard[1]. Research Centre, University College of Osteopathy, 275 Borough High Street, London, SE1, UK	International Journal of Osteopathic Medicine	31 (2019) 1–62
48	**"Assessment of autonomic innervation of the foot in familial amyloid polyneuropathy"** Zouari HG[1,2,3], Ng Wing Tin S[4,5], Wahab A[1,2], Damy T. [6,7,8], Lefaucheur J.-P[1,2,8]. [1]EA 4391, Faculté de Médecine, Université Paris Est Créteil, Créteil, France. [2]Service de Physiologie, Explorations Fonctionnelles, Unité de Neurophysiologie Clinique, Hôpital Henri Mondor, Assistance Publique - Hôpitaux de Paris, Créteil, France. [3]Service d'Explorations Fonctionnelles, CHU Habib Bourguiba, Sfax, Tunisie. 4Service de Physiologie, Explorations Fonctionnelles et Médecine du Sport, Hôpital Avicenne, Assistance Publique - Hôpitaux de Paris, Bobigny, France. 5EA 2363, UFR SMBH, Université Paris 13, Bobigny, France. 6Service de Cardiologie, Unité d'Insuffisance, Hôpital Henri Mondor, Assistance Publique - Hôpitaux de Paris, Créteil, France. 7GRC Institut de Recherche sur l'Amylose, Faculté de Médecine, Université Paris Est Créteil, Créteil, France. 8Réseau Amylose Henri-Mondor, Hôpital Henri Mondor, Créteil, France.	European Journal of Neurology	2019 Jan;26(1):94-e10. doi: 10.1111/ene.13774. Epub 2018 Sep 12.
49	**"Assessment of sudomotor dysfunction using neuropad® and Sudoscan in diabetic polyneuropathy"** GJ Bönhof1, A Strom2, N Papanas3, RA Malik4, J Szendrödi2, K Müssig2, M Roden2, D Ziegler2. 1Deutsches Diabetes-Zentrum (DDZ), Leibniz-Zentrum für Diabetes-Forschung an der Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany 2Deutsches Diabetes-Zentrum, Leibniz-Zentrum für Diabetes-Forschung an der Heinrich-Heine-Universität Düsseldorf, Institut für Klinische Diabetologie, Düsseldorf, Germany 3Diabetes Center, Diabetic Foot Clinic, Democritus University of Thrace, Second Department of Internal Medicine, Alexandroupolis, Greece 4Weill Cornell Medicine-Qatar, Education City, Doha, Qatar	Diabetologie und Stoffwechsel	2019; 14(S 01): 550-551

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
50	**"An atypical and bilateral presentation of Charcot foot disease"** Loupa CV[1], Meimeti E. [1], Kokas A. [2], Voyatzoglou ED. [1], Donou A.[1] [1]Demetrios Voyatzoglou Diabetic Foot Clinic, Amalia Fleming Hospital Unit, 14, 25th of March st., Melissia, GR-15127, Athens, Greece. [2]Radiology Department, Amalia Fleming Hospital Unit, Athens, Greece.	BMC Endocrine Disorders	2019 Sep 5;19(1):96. doi: 10.1186/s12902-019-0422-z.
51	**„Hypertension contributes to neuropathy in patients with type 1 diabetes"** Georgios Ponirakis[1], Ioannis N. Petropoulos[1], Uazman Alam[2], [3], Maryam Ferdousi[2], Omar Asghar[2], Andrew Marshall[2], Shazli Azmi[2], Maria Jeziorska[2], Ziyad R. Mahfoud1, Andrew J.M. Boulton4, Nathan Efron5, Hitoshi Nukada6, and Rayaz A. Malik[1,2,7] [1] Weill Cornell Medicine-Qatar, Qatar Foundation, Education City, Doha, Qatar. [2] Institute of Cardiovascular Science, University of Manchester, Manchester, UK. [3] Eye and Vision Sciences, Institute of Ageing and Chronic Disease, University of Liverpool, UK. 4 Centre for Endocrinology and Diabetes, Institute of Human Development, Faculty of Medical and Human Sciences, University of Manchester and NIHR/Wellcome Trust Clinical Research Facility, Manchester, UK. 5 Institute of Health and Biomedical Innovation, Queensland University of Technology, Queensland, Australia. 6 Nukada Institute for Medical and Biological Research, Chiba, Japan. 7 Faculty of Science and Engineering, Manchester Metropolitan University, Manchester, UK.	Infectious Diseases of Poverty	(2017) 6:115 DOI 10.1186/s40249-017-0330-2
52	**"Cost-effectiveness analysis of the Neuropad device as a screening tool for early diabetic peripheral neuropathy"** Rodríguez-Sánchez B1, Peña-Longobardo LM2, Sinclair AJ3 1 Faculty of Law and Social Sciences, University of Castilla-La Mancha, Calle San Pedro Mártir 7, 45002, Toledo, Spain. beatriz.rsanchez@uclm.es. 2 Faculty of Law and Social Sciences, University of Castilla-La Mancha, Calle San Pedro Mártir 7, 45002, Toledo, Spain. 3 Foundation for Diabetes Research in Older People, Diabetes Frail Ltd, University of Aston, Birmingham, UK.	Eur J Health Econ.	2020 Apr;21(3):335-349. doi: 10.1007/s10198-019-01134-2. Epub 2019 Nov 12.
53	**"Prueba diagnóstica de disfunción sudomotora en la detección precoz de la neuropatía diabética Sudomotor dysfunction diagnostic test fore arly detection of diabetic neuropathy"** N Lorenzini, C Díaz, T Quintana	Rev Med Chile	2020; 148: 54-59
54	**"Earlier Development of Diabetic Neuropathy in Men Than in Women With Type 2 Diabetes Mellitus"** Zdravko Asenov Kamenov, MD, PhD, DMedSc[1]; Rumyana Atanasova Parapunova, MD[1]; and Rumyana Taneva Georgieva, MS[2] [1]Clinic of Endocrinology, Medical University Sofia, Bulgaria; and [2]Sofia University, Sofia, Bulgaria	GENDER MEDICINE	VOL. 7, NO. 6, 2010

PUBLISHED CLINICAL STUDIES neuropad®

	Titel published clinical study	Journal	Details
55	**"Diagnosing and managing diabetic somatic and autonomic neuropathy"** Shazli Azmi, Maryam Ferdousi, Alise Kalteniece, Hamad Al-Muhannadi, Abdulrahman Al-Mohamedi, Nebras H. Hadid, Salah Mahmoud, Harun A. Bhat, Hoda Y. A. Gad, Adnan Khan, Georgios Ponirakis, Ioannis N. Petropoulos, Uazman Alam, Rayaz A. Malik	Therapeutic Advances in Endocrinology and Metabolism	2019, Vol. 10: 1–10
56	**"Quantitative sensory testing in type 1 diabetic patients with painful and painless diabetic neuropathy"** Ahmed T. Alahmar 1,2 Greece	Disease and Molecular Medicine	Dis Mol Med 2016;4:24-30
57	**"Early Detection of Diabetic Peripheral Neuropathy: A Focus on Small Nerve Fibres"** Jamie Burgess, Bernhard Frank, Andrew Marshall, Rashaad S. Khalil 1, Georgios Ponirakis, Ioannis N. Petropoulos, Daniel J. Cuthbertson, Rayaz A. Malik and Uazman Alam	MDPI	Diagnostics 2021, 11, 165.
58	**"Dryness of Foot Skin Assessed by the Visual Indicator Test and Risk of Diabetic Foot Ulceration: A Prospective Observational Study"** Georgios S. Panagoulias, Ioanna Eleftheriadou, Nikolaos Papanas, Christos Manes, Zdravko Kamenov, Dragan Tesic, Stavros Bousboulas, Anastasios Tentolouris, Edward B. Jude and Nikolaos Tentolouris	Frontiers in Endocrinology	September 2020 Volume 11 | Article 625

REVIEWS

	Titel Review	Journal	Details
R1	**"Early detection of changes in the feet of diabetic patients with indicator test neuropad®"** O.Schnell[1], M.Müller[2], E.Standl[1]. 1Institut für Diabetesforschung, München/Neuherberg [2]Sciarc GmbH, Pullach	Diabetes, Metabolism, and the Heart	Diabetes, Metabolism, and the Heart Volume 17, No 3, pp 203-210
R2	**"neuropad®: early diagnostic test for diabetic peripheral neuropathy"** Rayaz Malik PhD, FRCP Professor of medicine, Manchester Royal Infirmary and University of Manchester	Prescriber	Prescriber 19 November 2008
R3	**"The neuropad® test is an effective screening tool for diabetic neuropathy"** Rayaz Malik PhD, FRCP Professor of medicine, Manchester Royal Infirmary and University of Manchester	Nature Clinical Practice Endocrinology & Metabolism	Nature Clinical Practice Endocrinology & Metabolism (2008) 4, 479
R4	**"New diagnostic tests for diabetic distal symmetric polyneuropathy."** Papanas N[1], Ziegler D[2]. [1]Outpatient Clinic of the Diabetic Foot in the Second Department of Internal Medicine at Democritus University of Thrace, Greece [2] Deutsches Diabetes-Zentrum, Leibniz-Zentrum für Diabetes-Forschung an der Heinrich-Heine-Universität Düsseldorf, Institut für Klinische Diabetologie, Düsseldorf, Germany	Journal of Diabetes and its complications	
R5	**"Screening for the High-risk Foot of Ulceration: Tests of Somatic and Autonomic Nerve Function."** Argiana V, Eleftheriadou I, Tentolouris N. 1st Department of Propaedeutic and Internal Medicine, Athens University Medical School, Athens, Greece.	Current Diabetes Report	Curr Diab Rep. 2011 Aug;11(4):294-301
R6	**"The Pathway to Foot Ulceration in Diabetes"** Andrew J.M. Boulton, MD, FRCP[1,2,3] 1European Association for the Study of Diabetes, Düsseldorf, Germany; [2]Manchester Royal Infirmary, University of Manchester, Manchester, UK; [3]University of Miami, Coral Gables, FL, USA	Medical Clinics of North America	The Diabetic Foot Volume 97, Issue 5, September 2013, Pages 775–790
R7	**"Sweat: A sample with limited present applications and promising future in metabolomics"** A. Mena-Bravo[1,2,3], M.D. Luque de Castro[1,2,3] [1]Department of Analytical Chemistry, Annex Marie Curie Building, Campus of Rabanales, University of Córdoba, Córdoba, Spain [2]University of Córdoba Agroalimentary Excellence Campus, ceiA[3], Spain [3]Maimónides Institute of Biomedical Research (IMIBIC), Reina Sofía University Hospital, University of Córdoba, E-14071 Córdoba, Spain	Journal of Pharmaceutical and Biomedical Analysis	90(2014) 139 - 147
R8	**"New vistas in the diagnosis of diabetic polyneuropathy"** Papanas N[1], Ziegler D[2]. [1]Outpatient Clinic of the Diabetic Foot in the Second Department of Internal Medicine at Democritus University of Thrace, Greece. [2] Deutsches Diabetes-Zentrum, Leibniz-Zentrum für Diabetes-Forschung an der Heinrich-Heine-Universität Düsseldorf, Institut für Klinische Diabetologie, Düsseldorf, Germany	Endocrine	Endocrine, 2014 May 17

	Titel Review	Journal	Details
R9	**"Diabetic Sensory and Motor Neuropathy"** Aaron I. Vinik, M.D., Ph.D. Strelitz Diabetes Center, Eastern Virginia Medical School, Norfolk, USA	New England Journal of Medicine	n engl j med 374;15 nejm.org April 14, 2016
R10	**"Assessment of the cardiovascular and gastrointestinal autonomic complications of diabetes"** Christina Brock, Anne Grave Pedersen, AsbjørnMohr Drewes, Adam D Farmer, MechSense, Department of Gastroenterologyand Hepatology, Aalborg University Hospital, DK-9000 Aalborg Christina Brock, Department of Pharmacotherapyand Development, University of Copenhagen, DK-2450 Copenhagen Christina Brock, Anne Grave Pedersen, Clinical Biochemistry, Aarhus University, DK-3780 Aarhus Niels Jessen, Department of Clinical Medicine, Aarhus University, DK-3780 Aarhus Adam D Farmer, Department of Gastroenterology, University Hospitals of North Midlands, Staffordshire WS73 JQ, United Kingdom Adam D Farmer, CentreforDigestive Diseases, WingateInstitute of Neurogastroenterology, BlizardInstitute, Barts and theLondon School of Medicine and Dentistry, Queen Mary University of London, London EN1 1NX, United Kingdomlands, Staffordshire WS73 JQ, United Kingdom Adam D Farmer, CentreforDigestive Diseases, WingateInstitute of Neurogastroenterology, BlizardInstitute, Barts and theLondon School of Medicine and Dentistry, Queen Mary University of London, London EN1 1NX, United Kingdom	World Journal of Diabetes ESPS Manuscript NO: 25002	2016 Aug 25; (16): 321-32
R11	**"Alternative Quantitative Tools in the Assessment of Diabetic Peripheral and Autonomic Neuropathy"** A.J. Vinik[1], C. Casellini[1], M.-L.Névoret[2] [1]Eastern Virginia Medical School, Strelitz Diabetes and NeuroendocrineCenter, Norfolk, VA, United States. [2]Impeto Medical Inc., San Diego, CA, United States.	International Review of Neurobiology	Volume 127 # 2016 Elsevier Inc. ISSN 0074-7742
R12	**"Diabetic peripheral neuropathy: advances in diagnosis and strategies for screening and early intervention"** D. Selvarajah, D. Kar, K. Khunti, M.J. Davies, A.R. Scott, J. Walker, S. Tesfaye	The Lancet Diabetes & Endocrinology	Volume 7, issue 12, December 2019, Pages 938 –948a
R13	**"Hereditary transthyretin-related amyloidosis"** J. Finsterer[1], S. Iglseder[2], J. Wanschitz[3], R. Topadian[4], W.N. Löscher[3], W.Grisold [5] [1]Krankenanstalt Rudolfstiftung, Vienna, Austria. [2]KonventhospitalBarmherzige Brüder, Linz, Austria. [3]Department of Neurology, Medical University Innsbruck, Innsbruck, Austria. [4]Department of Neurology, Klinikum Wels-Grieskirchen, Wels, Austria. [5] Ludwig Boltzmann Institute for Experimental und Clinical Traumatology, Vienna, Austria.	Acta Neurol Scand.	2019; 139: 92-105

	Titel Review	Journal	Details
R14	**"Small-fiber neuropathy: Expanding the clinical pain universe"** M. Sopacua[1], J.G.J.Joeijmakers[1], I.S.J. Merkies[1,2], G. Lauria[3,4] S.G. Waxman[5,6], C.G. Faber[1] [1]Department of Neurology, School of Mental Health and Neuroscience, Maastricht University Medical Centre+, Maastricht, The Netherlands. [2]Department of Neurology, St. Elisabeth Hospital, Willemstad, Curaçao. [3]NeuroalgologyUnit, IRCCS Foundation, "Carlo Besta" Neurological Institute, Milan, Italy. [4]Department of Biomedical and Clinical Sciences "Luigi Sacco", University of Milan, Milan, Italy. [5] Department of Neurology, Yale University School of Medicine, New Haven, Connecticut. [6] Center for Neuroscience and Regeneration Research, VA Connecticut Healthcare System, West Haven, Connecticut.	J. PeropherNerv-Syst. Peripheral Nerve Society	2019; 24: 19-33
R15	**"Emerging Biomarkers, Tools and Treatments for Diabetic Polyneuropathy"** G.J. Bonhof[1], C. Herder[1,2,3], A. Strom[1,2], N. Papanas[4], M. Roden[1,2,5], D. Ziegler[1,2,5] [1]Institute forClinical Diabetology, German Diabetes Center, Leibniz Center forDiabetes Research, Heinrich Heine University Düsseldorf, Düsseldorf, Germany. [2]German Center forDiabetes Research, Munich-Neuherberg, Neuherberg, Partner Düsseldorf, Düsseldorf, Germany. [3]Medical Faculty, Heinrich Heine University, Düsseldorf, Germany. [4]Second Department of Internal Medicine, Diabetes Center, DiabeticFoot Clinic, Democritus University of Thrace, Alexandroupolis, Greece. [5] Division of Endocrinologyand Diabetology, Medical Faculty, Heinrich Heine University, Düsseldorf, Germany	Endocrine Reviews	40: 153 –192, 2019
R16	**"Recent advances in the diagnosis and management of diabetic neuropathy"** Aarti Pokhriyal, Preeti Katiyal, Arun Kumar Department of Pharmacology, School of Pharmaceutical Sciences, Shri Guru Ram Rai University, Patel Nagar, Dehradun, Uttarakhand, India	Indo American Journal of Pharmaceutical	2019, ISSN No: 2231-6876
R17	**"Diagnosing and managing diabetic somatic and autonomic neuropathy"** Shazli Asmi[1], Maryam Ferdousi[1], Alise Kalteniece[1], Hamad Al-Muhannadi2, Abdulrahman Al-Mohamedi[2], Nebras H. Hadid[2], Slah Mahmoud[2], Harun A. Bhat[2], Hoda Y. A. Gad2, Adnan Khan[2], Georgiios Ponirakis[2], Ioannis N. Petropoulos[2], Uazman Alam[3], Rayaz A. Malik[4] [1]Institute of CardiovascularSciences, University of Manchester and Central Manchester NHS FoundationTrust, Manchester, UK. [2]Weill Cornell Medicine-Qatar, Qatar Foundation, Doha, Qatar. [3]Department of Eye and Vision Science, University of Liverpool, Liverpool, UK. [4]Weill Cornell Medicine-Qatar, Education City, Doha 24144, Qatar.	Ther Adv Endocinol Metab	2019, Vol. 10: 1-10

	Titel Review	Journal	Details
R18	**"Novel insights into sensorimotor and cardiovascular autonomic neuropathy from recent-onset diabetes and population"** C. Herder, M. Roden, D. Ziegler Institute of Clinical Diabetology, German Diabetes Center, Leibniz Center for Diabetes Research at Heinrich Heine University Düsseldorf, 40225 Düsseldorf, Germany; German Center for Diabetes Research (DZD), Partner Düsseldorf, Düsseldorf, Germany; Division of Endocrinologyand Diabetology, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany;	Trends in Endocrinology & Metabolism	Volume 30, issue 5, May 2019, pages 286-298
R19	**"Diabetic neuropathy collection: Progress in diagnosis and screening"** Nikolaos Papanas Advisory Board Member of Diabetes Therapy	Diabetes Therapy	(2020) 11:761-764
R20	**"Instruments of choice for assessment and monitoring diabetic foot: A systematic review"** R. Fernández-Torres[1], M. Ruiz-Munoz[1], A.J. Pérez-Panero[1], J. Garcia-Romero[2], M. Gónzalez-Sánchez[3] [1]Department of Nursing and Podiatry, ArquitectoFrancisco Peñalosa, s/n, Ampliación-campusde Teatinos, University of Málaga, 29071 Málaga, Spain. [2]Medical School of thePhysicalEducation and Sports, C/ Jiménez Fraud 10, EdificioLópez de Peñalver, University of Málaga, 29010 Málaga, Spain. [3]Department of Physiotherapy, ArquitectoFrancisco Peñalosa, s/n, Ampliacióncampusde Teatinos, University of Málaga, 29071 Málaga, Spain.	J. Clin. Med. Research	2020, 9, 602; Doi: 10.3390/jcm9020602
R21	**"Diabetic peripheral neuropathy in people with type 2 diabetes: too little too late"** S. Javed[1], T. Hayat[2], L. Menon[3], U. Alam[4], R.A. Malik[1,3] [1]Division of Cardiovascular Sciences, School of Medical Sciences, University of Manchester, Manchester, UK [2]Primary Health Care Corporation, Doha, Qatar [3]Department of Medicine, Weill-Cornell Medicine-Qatar, Doha, Qatar [4]Institute of Ageing and Chronic Disease, University of Liverpool, Liverpool, UK	Diabetic Medicine	37, 573-579 (2020)
R22	**"Diabetic neuropathy: A focus on small fibres"** Rayaz A Malik	Diabetes & Metabolism Journal	36 Suppl. 10.1002/dmrr.3255 (March 2020)

NATIONAL & INTERNATIONAL GUIDELINES AND TECHNICAL REVIEWS

	Titel national and international guidelines and technical reviews	Journal	Details
G1	**"Diabetic Neuropathies: Update on Definitions, Diagnostic Criteria, Estimation of Severity, and Treatments"** Solomon Tesfaye, Md, Frcp Andrew J.M. Boulton, Md Peter J. Dyck, Md Roy Freeman, Md Michael Horowitz, Md, Phd Peter Kempler, Md, Phd Giuseppe Lauria, Md Raya A. Malik, Md Vincenza Spallone, Md, Phd, Aron Vinik, Md, Phd, Luciano Bernadi, Md Paul Valensi, Md On Behalf of The Toronto Diabetic Neuropathy Expert Group*	Diabetes Care	Diabetes Care 33:2285-2293, 2010
G2	**"Small Fiber Neuropathy: Role in the diagnosis of Diabetic Sensorimotor Polyneuropathy"** Malik R, Veves A, Tesfaye S, Smith G, Cameron N, Zochodne D, Lauria G; on behalf of the Toronto Censensus Panel on Diabetic Neuropathy.	Diabetes Metabolism Research and Reviews	Res Rev. 2011 Jun 22. doi: 10.1002/dmrr.1222.
G3	**"Gastrointestinal autonomic neuropathy, erectile-, bladder- and sudomotor dysfunction in patients with diabetes mellitus: clinical impact, assenssment, diagnosis, and management."** Kempler P, Amarenco G, Freeman R, Frontoni S, Horowitz M, Stevens M, Low P, Pop-Busui R, Tahrani A, Tesfaye S, Varkoni T, Ziegler D, Valensi P; on behalf of the Toronto Censensus Panel on diabetic Neuropathy.	Diabetes Metabolism Research and Reviews	Diabetes Metab Res Rev. 2011 Jul 11. doi: 10.1002/dmrr.1223
G4	**"A simple new non-invasive sweat indicator test for the diagnosis of diabetic neuropathy"** N. Papanas, A. J. Boulton, R. A. Malik, C. Manes, O. Schnell, V. Spallone, N. Tentolouris, S. Tesfaye, P. Valensi, D. Ziegler, P. Kempler.	Diabetic Medicine	Diabetic MEdicine Volume 30, Issue 5, pages 525-534, May 2013
G5	**DDG Praxisempfehlung Diabetische Neuropathie** D. Ziegler[1], J. Keller[2], C. Maier[3], J. Pannek4. 1Institut für Klinische Diabetologie, Deutsches Diabetes-Zentrum an der Heinrich-Heine-Universität, Leibnitz-Zentrum für Diabetesforschung; Klinik für Stoffwechselkrankheiten, Universitätsklinikum Düsseldorf - 2Medizinische Klinik, Israelitisches Krankenhaus, Hamburg - 3Abteilung für Schmerzmedizin, Berufsgenossenschaftliches Universitätsklinikum Bergmannsheil, Ruhr-Universität, Bochum - 4Neuro-Urologie, Schweizer Paraplegiker-Zentrum Nottwil, Schweiz.	Diabetologie 2012	Diabetologie 2012; 7: S88-S98

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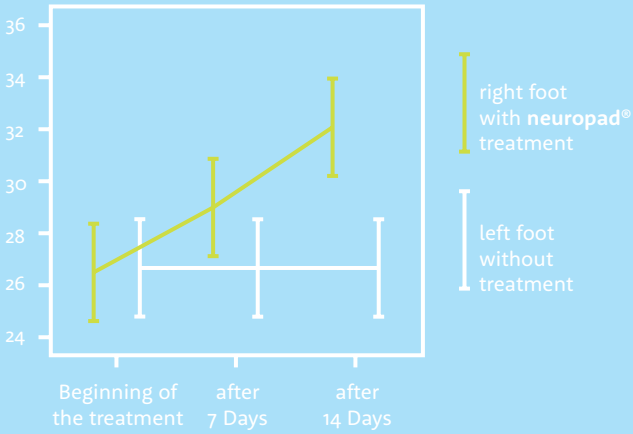

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