BARTHNeuroScience

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# Neuropathic Pain

## (With an emphasis on information of relevance to Workers Compensation)

### Based on Dr. Barth's 2016 Program for the American Academy of Orthopaedic Surgeons

The American Academy of Orthopaedic Surgeons has authorized Dr. Barth to share this chapter with you "for educational purposes only".



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AAOS

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

*Your Source for Lifelong Orthopaedic Learning*

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# Chapter 23

# Neuropathic Pain

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I (and my co-authors) have nothing to disclose.

# Neuropathic Pain

**Robert J. Barth, Ph.D.**

**Chapter 23 in**

***2016 AAOS Workers' Compensation and Musculoskeletal Injuries***

**American Academy of Orthopaedic Surgeons**

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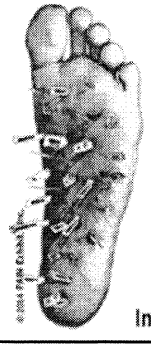
**For every reference that is mentioned in an abbreviated fashion within these slides, full reference information is provided in the front pages of the chapter**



2014 - 2015
GLOBAL
YEAR
AGAINST
NEUROPATHIC
PAIN

International Association for the Study of Pain

Finnerup NB, et al.
(a committee established by the IASP NeuPSIG)
Neuropathic pain: an updated grading system for research and clinical practice.
*Pain*, 157 (2016) 1599–1606.

## Relevance to Workers Compensation and Other Legal Claims?

**Real life example, composited from several actual cases...**

(Continued...)

## Relevance of this chapter on neuropathic pain to legal claims: Composited case example

- 47-year-old male sales rep rear-ends another car while driving his sales route
- Claims left lower extremity pain, attributed to stomping on the brake pedal
- No injury identified (ever)

(Continued...)

## Relevance of this chapter on neuropathic pain to legal claims: Composited case example (continued)

- Pain reportedly never subsides
- Referred to pain specialist who claims complex regional pain syndrome (CRPS)
- None of the pain specialist's treatments help, so the pain specialist refers the patient to another pain specialist for spinal cord stimulation

(Continued...)

## Relevance of this chapter on neuropathic pain to legal claims: Composited case example (continued)

**The spinal cord stimulation doctor documents the "*Primary diagnosis*" as "*Neuropathic Pain Left Leg*"**

(Continued...)

## What's wrong here?

First pain specialist claims CRPS, while the second pain specialist claims a "primary diagnosis" of "neuropathic pain"

CRPS has repeatedly singled out in medical literature as an example of a scenario which does ***NOT*** involve neuropathic pain

- Haanpaa et al. 2011 (Official Guideline)
- Jensen 2011 (Announcement of Definition)

(Continued...)

## What's wrong here?

First pain specialist claims CRPS, while the second pain specialist claims a "primary diagnosis" of "neuropathic pain"

**CRPS is definitionally incompatible with neuropathic pain**

(details provided later in this chapter, and also in Chapter L of this AAOS Course Book)

(Continued...)

**Relevance of this chapter on neuropathic pain to legal claims: Composited case example (continued)**

**In deposition, the first pain specialist is confronted with the *FACTS* that ...**

- **CRPS was actually created in a fashion that causes it to be inherently non-injury-related (see Chapter L of this AAOS Course Book)**
- **He did not document any compliance with any diagnostic method for CRPS (see Chapter L of this AAOS Course Book)**

**(Continued...)**

**Relevance of this chapter on neuropathic pain to legal claims: Composited case example (continued)**

**In response to being confronted with these *FACTS*, the pain specialist testifies:**

**"Let's forget CRPS. He has neuropathic pain in his lower extremity.**

***The diagnosis is neuropathic pain.***

**Let's get off CRPS because it's just a waste of time."**

**(Continued...)**

## What's wrong here?

- **During deposition, the first pain specialist withdraws his diagnosis of CRPS, and claims that the diagnosis is "neuropathic pain"**
- **The second pain specialist has claimed a "primary diagnosis" of "neuropathic pain"**

**Neuropathic pain is specifically defined as *NOT* being a diagnosis**

**Reference: IASP *Classification of Chronic Pain***

## Relevance of this chapter on neuropathic pain to legal claims: Composited case example (continued)

**After the claimant's attorney is educated about the *FACTS*, the case is settled, and the patient is freed from the reliably harmful health effects of being involved in a legal claim.**

**(see Chapter's L, M, N, and P of this AAOS Coursebook for discussions of scientific findings regarding the reliably harmful health effects of being involved in a legal claim)**

## The first thing you need to know:

**In 2011, the International Association for the Study of Pain (IASP) published a *NEW* definition of neuropathic pain.**

## NeuPSIG???

**Neuropathic Pain Special Interest Group (NeuPSIG) Of the International Association for the Study of Pain**

In 2011, the International Association for the Study of Pain (IASP) published a ***NEW*** definition of neuropathic pain.

**A recent citation analysis revealed that the new definition has been "widely accepted".**

**Finnerup et al., 2016**

**In 2011, the IASP published a *NEW* definition of neuropathic pain.**

**Relevant referencing from the first pages of this chapter:**

- **Treede 2008 – the first recommendations from the NeuPSIG (published in AAN's *Neurology*)**
- **Haanpää & Treede 2010 – NeuPSIG Definition published in IASP's *Pain Clinical Updates***
- **Jensen 2011 – the formal announcement of the new definition**
- **Haanpää 2011 – assessment guideline based on new definition**
- **IASP's *Classification of Chronic Pain* – the home of the definition**
- **Finnerup 2016 – and updated grading system created by a NeuPSIG committee**

**In 2011, the IASP published a *NEW* definition of neuropathic pain.**

# Why?

**In 2011, the IASP published a *NEW* definition of neuropathic pain.**

**Why?**

**Published reports indicate that the reason was:**

**To protect the concept of neuropathic pain from being contaminated by complex regional pain syndrome, fibromyalgia, etc.**

***(Continued)***

**Reasons for a new definition of neuropathic pain**

**From Jensen et al.'s 2011 announcement of the new definition:**

**"Clinicians with neurological training and background have found it difficult to accept conditions in which symptoms and signs were not reflected in abnormal neuropathophysiology."**

**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"It is regarded as essential, particularly in the clinical neurological specialties, to examine and classify patients based on the topography of the lesion and the underlying pathology."**

**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"Does it matter how *restrictive* we are in the current approach?**
**We maintain that it *does* make a difference."**
**(Because...)**

**Reasons for a new definition of neuropathic pain**

**"If clinical criteria are distinct and precise, then the door is open not only for studying the pathophysiology of the condition, but also its epidemiology, and for testing specific treatments."**
**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"Our understanding of underlying neuropathic mechanisms will not be improved by including pain conditions such as CRPS and fibromyalgia in the neuropathic pain syndrome, because the mechanisms causing pain in these disorders are *even more obscure* than in the classical neuropathic pain conditions, where pathology can be demonstrated."**
**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"The lack of structural abnormalities in so-called dysfunctional states (fibromyalgia, CRPS, vulvodynia, interstitial cystitis, etc.)**
***prevents* us from finding a relationship between structure and function,**
**which is important in the study of a subjective experience such as pain."**
**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"We are not doing the patients any good by giving them a diagnostic label for which there is no basis."**
**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

**"To include patient suffering from disorders with unexplained mechanisms under a specific label**
***in casu:* (Latin for "in this case")**
**neuropathic pain**
**will only serve as a sleeping pillow instead of sharpening our diagnostic searching and attempts to dissect the underlying mechanisms."**
**(continued next slide)**

**Reasons for a new definition of neuropathic pain**

"Also, it is our hope that the new definition will raise further scientific awareness and thus be an additional step in the direction of keeping up the scientific momentum and moving us from the domain of beliefs into evidence."

(last several slides quoted from Jensen et al. 2011)

**Reasons for a new definition of neuropathic pain**

**Previous definitions "lacked both specificity and anatomic precision"**

Treede et al. 2008

**Reasons for a new definition of neuropathic pain**

**Previous definitions "lacked defined boundaries" between "neuropathic and nociceptive types of pain"**

Treede et al. 2008

**Reasons for a new definition of neuropathic pain**

"The lack of precision in the current (old) definition has prevented progress in diagnosis, classification, epidemiology, and treatment."

Treede et al. 2008

**Reasons for a new definition of neuropathic pain**

"to develop a more precise definition of neuropathic pain that will be useful for clinical and research purposes and will fit into the nosology of neurologic disorders."

Treede et al. 2008

**Reasons for a new definition of neuropathic pain**

"(NeuPSIG) noted the need to distinguish neuropathic pain from

- nociceptive pain arising indirectly from neurological disorders
- and pain conditions with secondary neuroplastic changes occurring in the nociceptive system."

Finnerup et al. 2016

**Reasons for a new definition of neuropathic pain**

**"The restriction to the somatosensory nervous system is important because conditions such as musculoskeletal pain (eg, due to spasticity) arising indirectly from disorders from the motor system should not be confused with neuropathic pain."**

**Finnerup et al. 2016**

**Reasons for a new definition of neuropathic pain**

**The new definition "excludes conditions involving ill-defined changes in the nervous system and conditions with no known lesion of the somatosensory nervous system from being classified as neuropathic pain."**

**Finnerup et al. 2016**

**2011: IASP published a *NEW* definition of neuropathic pain**

**2016: Citation analysis reveals this new definition to be widely accepted**

# Consequently...

**2011 *NEW* definition of neuropathic pain now widely accepted, consequently...**

**Any definition of neuropathic pain that was published before the 2011 IASP definition is now obsolete.**

**Any definition of neuropathic pain that was published before 2011 IASP definition is now obsolete.**

**Therefore, any discussions, or scientific findings, which are specifically focused on the concept of neuropathic pain,**

**and which were published before the 2011 IASP definition,**

**or which are based on previous definitions, are probably now *obsolete* and *irrelevant*.**

**any discussions, or scientific findings, which are ... based on previous definitions, are probably now *obsolete* and *irrelevant***

**WARNING:**

**Finnerup et al. 2016 found at least 8 publications which referenced the new definition, but actually used the old definition or some other definition, and 190 publications which referenced the new definition in a misdirected manner.**

## The 2011 IASP Definition

**Reference:**

**The online-only "updated" Classification of Chronic Pain, IASP Task Force on Taxonomy**

**IASP website accessed 8-9-2016**

(Continued next slide)

## The 2011 IASP Definition

**"Neuropathic pain: Pain caused by a lesion or disease of the somatosensory nervous system."**

(Continued next slide)

## Neuropathic pain: The 2011 IASP Definition (Continued)

***"Note:*** **Neuropathic pain is a clinical description (and not a diagnosis)..."**

(Continued next slide)

## Neuropathic pain: The 2011 IASP Definition (Continued)

**"...which requires a demonstrable lesion or a disease that satisfies established *neurological* diagnostic criteria."**

(Continued next slide)

## Neuropathic pain: The 2011 IASP Definition (Continued)

**"The term *lesion* is commonly used when diagnostic investigations (e.g. imaging, neurophysiology, biopsies, lab tests) reveal an abnormality or when there was obvious trauma."**

(Continued next slide)

## Neuropathic pain: The 2011 IASP Definition (Continued)

**"The term *disease* is commonly used when the underlying cause of the lesion is known (e.g. stroke, vasculitis, diabetes mellitus, genetic abnormality)."**

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"*Somatosensory* refers to information about the body per se including visceral organs, rather than information about the external world (e.g., vision, hearing, or olfaction)."

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"The presence of symptoms or signs (e.g., touch-evoked pain) alone does ***not*** justify the use of the term *neuropathic*."

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"Some disease entities, such as trigeminal neuralgia, are currently defined by their clinical presentation rather than by objective diagnostic testing."

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"Other diagnoses such as post-herpetic neuralgia are normally based upon the history."

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"It is common when investigating neuropathic pain that diagnostic testing may yield inconclusive or even inconsistent data."

(Continued next slide)

**Neuropathic pain: The 2011 IASP Definition (Continued)**

"In such instances, clinical judgment is required to reduce the totality of findings in a patient into one putative diagnosis or concise group of diagnoses."

(End of definition)

**A little more about this "somatosensory" focus of the 2011 definition**

**More about this "somatosensory" focus**

**"The somatosensory system comprises mechanoreception, thermoreception, nociception, proprioception and visceroception, providing conscious perception of sensory information from the skin, the musculoskeletal system and the viscera."**

**Haanpaa M, et al. 2011.**

**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 23.**

**A little more about...**

***"Note:*** **Neuropathic pain is a clinical description (and not a diagnosis)..."**

**(Continued next slide)**

**Neuropathic pain is not a diagnosis**

**Exam findings consistent with neuropathic pain reveal a need for additional diagnostic work, in order to identify a diagnosis – a cause of the exam findings...**

**(Continued next slide)**

**Neuropathic pain is not a diagnosis**

**"The neurologic diagnosis depends on the answers to two questions:**

- **Where is the lesion? (Anatomy) and,**
- **What type of lesion? (Pathology, including pathophysiology)."**

**Treede RD, et al. 2008, page 1632**

**Neuropathic pain is not a diagnosis**

**"Any suggestion that neuropathic pain might be recognized and treated without a thorough diagnostic assessment of the underlying lesion or disease must be resisted."**

**Treede RD, et al. 2008, page 1633**

**Neuropathic pain is not a diagnosis**

**"Relevant treatment is possible only if the differential *diagnosis* of the condition is performed adequately."**

**Haanpaa & Treede 2010**

**The Theme of the Neuropathic Pain Classification for ICD-11 has already been established**

## ICD-11

**"For the identification of definite neuropathic pain, it is *necessary* to demonstrate the lesion or disease involving the nervous system, for example, by imaging, biopsy, neurophysiological, or laboratory tests. In addition, negative or positive sensory signs compatible with the innervation territory of the lesioned nervous structure *must* be present."**

**Treede 2015**

# Examples of Health Problems that Can be Associated With Neuropathic Pain

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- **Peripheral nerve entrapment**
- **Intracranial tumor**
- **Multiple Sclerosis**

**Haanpaa M, et al. 2011. NeuPSIG Guidelines on Neuropathic Pain Assessment**

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- **Central post-stroke pain**
- **Trigeminal neuralgia**
- **Diabetic neuropathy**
- **Post-herpetic neuralgia**
- **Syringomyelia**

**Treede RD, et al. 2008, page 1633.**

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- Stroke
- Multiple sclerosis
- Some spinal cord injuries
- Syrinx of the central canal in the brainstem or spinal cord

Jensen et al. 2011

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- Polyneuropathy (e.g., post-chemotherapy, diabetic, alcoholic, HIV disease)
- Radiculopathy

Haanpaa et al. 2009

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- Traumatic nerve injury (preferably, identifiable separate from the pain complaint), e.g., ...
  - Amputation
  - Spinal cord injury

Finnerup et al. 2016

**Examples of Health Problems That Can be Associated with Neuropathic Pain**

- Channelopathies, e.g., ...
  - Familial episodic pain syndrome
  - Inherited erythromelalgia

Finnerup et al. 2016

# Examples of issues which do NOT involve Neuropathic Pain

**Examples of issues which do NOT involve Neuropathic Pain**

- Musculoskeletal Pain

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment

- Vulvodynia
- Interstitial cystitis

Jensen et al. 2011

## Examples of issues which do NOT involve Neuropathic Pain

**Fibromyalgia**

- Treede RD, et al. 2008, page 1633.
- Jensen et al. 2011
- Finnerup et al. 2016

**Lesions in the cerebellum or frontal cortices**

Jensen et al. 2011

## Examples of issues which do NOT involve Neuropathic Pain

**Chronic widespread pain**

**Irritable bowel syndrome**

**Cluster headache**

**Migraine**

**Parkinson's ("at the moment not sufficient evidence")**

- Finnerup et al. 2016

## Examples of issues which do NOT involve Neuropathic Pain

**Complex Regional Pain Syndrome**

NOTES:

- CRPS was specified as an example of why the new definition of neuropathic pain was created – in order to protect the concept of neuropathic pain from being contaminated by vague concepts such as CRPS (Jensen et al. 2011)
- The NeuPSIG Guideline for neuropathic pain specifies CRPS as an example of pain which is not neuropathic (Haanpaa M, et al. 2011)

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain

**Complex Regional Pain Syndrome**

NOTES (continued from previous slide):

The concept of CRPS is definitionally incompatible with the concept of neuropathic pain...

- CRPS is defined as involving pain that does NOT correspond to a specific nerve territory (IASP Task Force on Taxonomy)
- Neuropathic pain DOES correspond to a specific nerve territory (Eisenberg 2011; Haanpää et. al. 2011; Haanpää 2014; Treede et al. 2008; Treede 2015).

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain

**Complex Regional Pain Syndrome**

NOTES (continued from previous slide):

The concept of CRPS is definitionally incompatible with the concept of neuropathic pain...

- The IASP Taxonomy (IASP Task Force on Taxonomy) specifies that the history of nerve damage which must be present in order to justify a diagnosis of CRPS type two does ***NOT*** provide an explanation for the clinical presentation (e.g. pain).

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain

**Complex Regional Pain Syndrome**

NOTES (continued from previous slide):

The concept of CRPS is definitionally incompatible with the concept of neuropathic pain...

- The IASP Taxonomy specifies that CRPS (all types) is defined by a lack of any known pathology (as opposed to neuropathic pain being defined by pathology that is known to lie within the somatosensory nervous system).

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

**The concept of CRPS is definitionally incompatible with the concept of neuropathic pain...**

- **The IASP Taxonomy** (IASP Task Force on Taxonomy) **specifies that in CRPS-like presentations, "Abnormal inflammatory responses are likely to play a role."**
- **Finnerup et al. 2016...**
  - **specifies "an inflammatory reaction (is) considered to be to be at the core of development of CRPS"**
  - **indicates that inflammation should be ruled out as a cause of the pain, before even initiating an evaluation of the possibility of neuropathic pain (section 4.1, page 1601).**

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

**The concept of CRPS is definitionally incompatible with the concept of neuropathic pain...**

**Neuropathic pain has been specified as being a differential diagnostic issue for complex regional pain syndrome, rather than being compatible with complex regional pain syndrome.**

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

**Neuropathic pain has been specified as being a differential diagnostic issue for complex regional pain syndrome, rather than being compatible with complex regional pain syndrome.**

**The International Association for the Study of Pain's current conceptualization of complex regional pain syndrome (IASP Taskforce on Taxonomy) lists "specified neuropathy" as a differential diagnostic issue for complex regional pain syndrome. This means that a "specified neuropathy" must be ruled out before a diagnosis of complex regional pain syndrome can be credible. In contrast, the identification of a "specified neuropathy" (specifically, in the somatosensory nervous system) is fundamental to the modern conceptualization of neuropathic pain (e.g., Jensen 2011; Finnerup 2016). Consequently, while a "specified neuropathy" must be identified in order to characterize a clinical presentation as involving neuropathic pain, the identification of such a "specified neuropathy" excludes all types of complex regional pain syndrome from diagnostic consideration.** *(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

**Neuropathic pain has been specified as being a differential diagnostic issue for complex regional pain syndrome, rather than being compatible with complex regional pain syndrome.**

Similarly, the curriculum from the 2015 Conference of the International Association for the Study of Pain's Special Interest Group for Complex Regional Pain Syndrome specified neuropathic pain as a differential diagnostic issue for complex regional pain syndrome (Brunner 2015). As is the case for the current IASP conceptualization of complex regional pain syndrome, this means that a finding of neuropathic pain excludes complex regional pain syndrome (or all types) from diagnostic consideration.

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

**In spite of all of that above considerations, Finnnerup et al. 2016 makes a claim that a diagnosis of CRPS type two is compatible with neuropathic pain (while acknowledging that CRPS type one is incompatible with neuropathic pain).**

***Given everything that has been noted in the previous slides, and everything else that has been published based on the NeuPSIG's work, Finnerup et al. 2016 appears to be incorrect on this issue.***

*(continued next slide)*

## Examples of issues which do NOT involve Neuropathic Pain
### Complex Regional Pain Syndrome

**NOTES (continued from previous slide):**

***Finnerup et al. 2016 incorrectly claims that CRPS type 2 is compatible with neuropathic pain.***

**Direct correspondence with Finnerup, 8-11-2016:**

**"It is therefore a bit unfortunate that we included that sentence on CRPS type II. In an individual patient (CRPS or not), each criteria in the grading system should be fulfilled for definite neuropathic pain, so *if the pain distribution and sensory signs are not in a neuroanatomically plausible distribution, the criteria for neuropathic pain is not fulfilled in that patient*."**

*(continued next slide)*

**Examples of issues which do NOT involve Neuropathic Pain**

**Complex Regional Pain Syndrome**

**NOTES (continued from previous slide):**

**Direct correspondence with Finnerup, 8-11-2016:**

**"...if the pain distribution and sensory signs are not in a neuroanatomically plausible distribution, the criteria for neuropathic pain is not fulfilled in that patient."**

**This means that...**

**CRPS (all types) are NOT consistent with neuropathic pain (because, by definition, a CRPS diagnosis means that "the pain distribution and sensory signs are not in a neuroanatomically plausible distribution").**

**Examples of issues which do NOT involve Neuropathic Pain**

**Complex Regional Pain Syndrome**

**NOTES (continued from previous slide):**

**Direct correspondence with Finnerup, 8-13-2016:**

- **The NeuPSIG committee "did not consider" the IASP definition of CRPS (even though the NeuPSIG is an IASP entity) , when deciding to include this "unfortunate" passage in Finnerup et al. 2016.**
- **"Anyway, thanks for pointing out this definition, it is indeed interesting and absolutely a good argument for not calling CRPS neuropathic pain."**

# How to evaluate for neuropathic pain

**How to evaluate for neuropathic pain**

**Labeling systems have been developed, e.g., ...**

- **Unlikely to be neuropathic**
- **Possible neuropathic pain**
- **Probable neuropathic pain**
- **Definite neuropathic pain**

**Finnerup et al. 2016**

## Grading the level of *CLINICAL* certainty

**Warning: This labeling system has little-to-no value for legal purposes, because, in reality, there is always a lack of certainty for any claim of neuropathic pain.**

**Grading the level of *CLINICAL* certainty**

## Warning:

**The original grading system (Trede et al. 2008; Haanpää et al. 2011) is now considered to be obsolete due to the publication of a new grading system (Finnerup et al., 2016)**

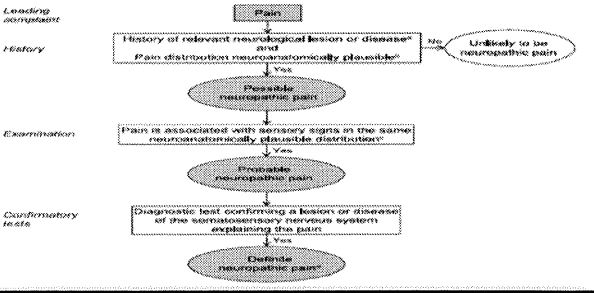
## Labeling the level of CLINICAL certainty

# Warning:

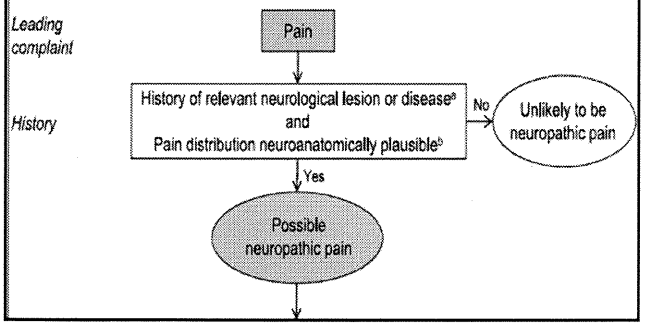
**"We present...a word of caution that even the "definite" level of neuropathic pain does not always indicate causality."**

**Finnerup et al. 2016**

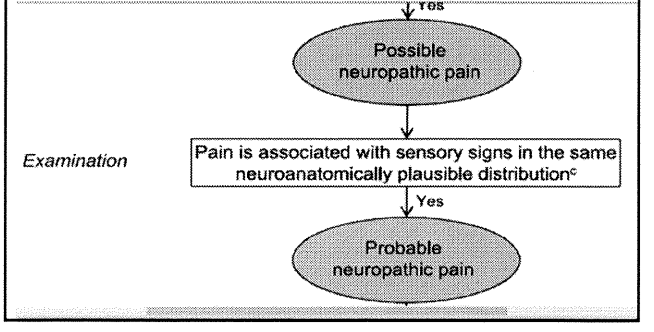
## How to evaluate for neuropathic pain
## Flow Chart from Finnerup et al. 2016



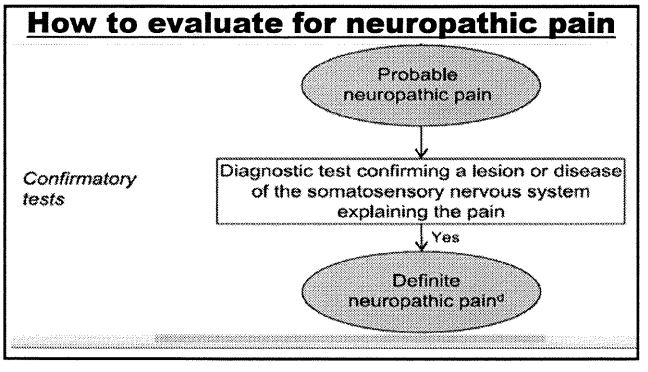

## How to evaluate for neuropathic pain




## How to evaluate for neuropathic pain




## How to evaluate for neuropathic pain




## How to evaluate for neuropathic pain
## from Finnerup et al. 2016

# Step 1

**(continued...)**

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

## Step 1

## Is there a relevant complaint of pain?

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 1 (continued)

"Evaluation of the patient according to the grading system should be undertaken if the patient's history suggests that pain could be related to a neurological lesion or disease and not other causes such as inflammation or non-neural tissue damage."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 1 (continued)

- Is the complaint consistent with neuropathic pain?
  - Pain descriptions that are consistent with neuropathic pain: e.g., burning, hot, electric shocks, shooting, pricking, pins and needles, evoked by light touch, evoked by cold
  - Non-pain reports that are consistent with neuropathic pain (which accompanied by complaints of pain) include numbness and tingling.

(continued...)

Step 1 (continued)

**Warning/Reminder:**

**"Although neuropathic pain is often described as burning, no single feature of pain is diagnostic for neuropathic pain."**

**Haanpaa M. 2014 Refresher Course p.203**

***(continued)***

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 1 (continued)

- Is the complaint consistent with neuropathic pain?
  - Complaints that are consistent with neuropathic pain justify further investigation, but "are not pathognomic for neuropathic pain"

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 1 (continued)

- Is the complaint consistent with neuropathic pain?
  - "screening tools (questionnaires) have been developed to identify patients who may have neuropathic pain to alert the clinician to undertake further assessment (though they cannot be used alone to identify neuropathic pain)"
  - Finnerup et al. 2016 offers specific examples of such questionnaires

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- Is the complaint consistent with neuropathic pain?
  - If not, grade as "unlikely to be neuropathic pain".
  - If the complaint *IS* consistent with neuropathic pain, then further investigation is warranted.

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- Is there justification for suspecting a lesion or disease of the somatosensory nervous system?
  - Examples that would provide such justification include recent herpes zoster episode, recent traumatic nerve injury...
    - "the onset of pain is usually immediate or within a few weeks of the lesion of disease"

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- Is there justification for suspecting a lesion or disease of the somatosensory nervous system?
  - Examples that would provide such justification include stroke within the past few months, diabetes

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- Is there justification for suspecting a lesion or disease of the somatosensory nervous system?
  - Examples which might not involve any relevant history other than the symptoms...
    - Polyneuropathy / peripheral neuropathy: "insidious onset of distal pain or numbness may be the only history indicating the disease"
    - Trigeminal neuralgia: "characteristic sudden short-lasting (usually a few seconds) paroxysmal pain in the face...is the only symptom"

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- Is there justification for suspecting a lesion or disease of the somatosensory nervous system?
  - If yes, continued investigation is warranted.
  - If there is *NOT* justification, then grade the complaints as "unlikely to be neuropathic pain".

(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**
Step 1 (continued)

- **Is the pain distribution neuro-anatomically plausible? / Is it consistent with the suspected location of the lesion or disease in the somatosensory nervous system?**

(continued...)

## How to evaluate for neuropathic pain from Finnerup et al. 2016

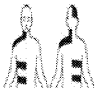
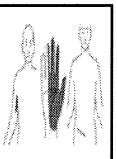
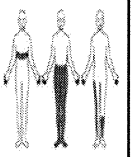
Step 1 (continued)

- Is the pain distribution neuro-anatomically plausible? / Is it consistent with the suspected location of the lesion or disease in the somatosensory nervous system?

- **Finnerup et al. 2016 provides examples…**

(continued…)

Common neuropathic pain conditions and neuroanatomically plausible distribution of pain symptoms and sensory signs.

| Neuropathic pain condition | Neuroanatomically plausible distribution of pain and sensory signs | Illustration of typical distribution |
|---|---|---|
| Trigeminal neuralgia | Within the facial or intraoral trigeminal territory |  |
| Postherpetic neuralgia | Unilateral distribution in one or more spinal dermatomes or the trigeminal ophthalmic division |  |
| Peripheral nerve injury pain | In the innervation territory of the lesioned nerve, typically distal to a trauma, surgery, or compression |  |
| Postamputation pain | In the missing body part and/or in the residual limb |  |
| Painful radiculopathy | Distribution consistent with the innervation territory of the nerve root |  |
| Neuropathic pain associated with spinal cord injury | At and/or below the level of the spinal cord lesion |  |

## How to evaluate for neuropathic pain from Finnerup et al. 2016

Step 1 (continued)

- Is the pain distribution neuro-anatomically plausible? / Is it consistent with the suspected location of the lesion or disease in the somatosensory nervous system?

➢ If yes, continued investigation is warranted.

➢ If the distribution is NOT neuro-anatomically consistent with the suspected lesion or disease, grade the presentation as "unlikely to be neuropathic pain".

(continued…)

## How to evaluate for neuropathic pain from Finnerup et al. 2016

Step 1 (continued)

- At the completion of Step 1, you can grade the presentation as "possible neuropathic pain", if…
  - There is a relevant complaint of pain
  - The complaints are consistent with neuropathic pain
  - There is justification for suspecting a lesion or disease of the somatosensory nervous system
  - The distribution of pain is neuro-anatomically consistent with the suspected lesion or disease

(continued…)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016, and several of the other publications referenced at the beginning of this chapter**

# Step 2

"Clinical Examination"
(i.e., physical examination, neurological examination)

(continued...)

## How to evaluate for neuropathic pain

**"Clinical examination, including accurate sensory examination, is the basis of neuropathic pain (evaluation)."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 14.**

***(continued)***

## How to evaluate for neuropathic pain

**"Sensory testing is the most important part of this examination and includes testing of touch, vibration, pinprick, cold and warmth."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 18.**

***(continued)***

## How to evaluate for neuropathic pain

**"Clinical examination is a crucial part of the (evaluation) process of neuropathic pain, aiming at finding possible abnormalities relating to a lesion of the somatosensory system."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 18.**

***(continued)***

## How to evaluate for neuropathic pain

**"Hence, surveying the borders of sensory dysfunction is *mandatory*."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.**

***Why? (see next slide)***

## How to evaluate for neuropathic pain

**"Somatosensory aberrations found in neuropathic pain conditions have some *common* denominators..."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.**

***(continued)***

**How to evaluate for neuropathic pain**

**"...i.e., borders fitting the distribution of the affected peripheral nervous structure (nerve, plexus, root)..."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.**

***(continued)***

**How to evaluate for neuropathic pain**

**"... or the topographic representation of a body part in the central nervous system."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.**

***(continued)***

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

**Step 2: Physical Examination**

**"The examination should optimally confirm the presence of negative sensory signs, ie, partial or complete loss to one or several sensory modalities concordant with the lesion or disease of the somatosensory nervous system (eg, light touch, cold temperature)."** (continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

**Step 2: Physical Examination**

**"Demonstrating sensory loss to one or more of these modalities and delineation of the area affected by the negative sensory phenomena are central to the determination as to whether a nervous system lesion is the cause of the sensory disturbance (ie, whether it is compatible with neuropathy)"**
(continued...)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

**Step 2: Physical Examination**

**"Often, sensory changes...can be confirmed by a clinical examination..."**
(continued)

**Step 2: Physical Examination**

Table 2

Bedside sensory examination.

| Modality | Bedside assessment |
|---|---|
| Touch | Cotton bud or ball, painter's brush |
| Vibration | Tuning fork |
| Pinprick | Pin, toothpick, cocktail stick |
| Cold | Cold metal, tube with cold water, cloth with surgical spirit, Lindblom roller[21] |
| Warm | Warm metal, tube with warm water, Lindblom roller[21] |

## How to evaluate for neuropathic pain

**"Tactile sense is assessed by a piece of cotton wool,..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## How to evaluate for neuropathic pain

**The 2010 IASP *Clinical Updates* (Haanpaa & Treede 2010) adds "a soft brush" can also be used to assess "Touch Sensation"**

*(continued)*

## How to evaluate for neuropathic pain

**"...pinprick sense by a wooden cocktail stick,..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## How to evaluate for neuropathic pain

**"...pinprick sensation by the response to sharp pinprick stimuli,..."**

Haanpaa M. 2014 Refresher Course

*(continued)*

## How to evaluate for neuropathic pain

**"...thermal sense by warm and cold objects (e.g. metal thermorollers),..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## How to evaluate for neuropathic pain

**"...thermal sensation by warm and cold objects (e.g. water-filled tubes),..."**

Haanpaa M. 2014 Refresher Course

*(continued)*

## How to evaluate for neuropathic pain

**"...and vibration sense by a 128-Hz tuning fork."**

- Haanpaa M, et al. 2011. NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.
- Haanpaa M. 2014 Refresher Course

*(continued)*

## How to evaluate for neuropathic pain

### Further clarification from Haanpaa 2014 Refresher Course

"For definite neuropathic pain, the abnormal sensory findings are confined to the innervation territory of the lesioned nervous system structure,

and diagnostic tests confirm a nervous system lesion or disease that could explain neuropathic pain."

*(continued)*

## How to evaluate for neuropathic pain

### Further clarification from Haanpaa 2014 Refresher Course

"It is ***crucial*** to

survey the borders of sensory dysfunction

to differentiate diffusely located non-neuropathic pains from neuroanatomically plausible distribution of neuropathic pain."

*(continued)*

## How to evaluate for neuropathic pain

"Surveying the borders of sensory dysfunction to differentiate diffusely located non-neuropathic pains from neuroanatomically plausible distribution of neuropathic pain is ***crucial***."

Haanpaa M, et al. 2011. NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## How to evaluate for neuropathic pain

"Hence, surveying the borders of sensory dysfunction is ***mandatory***."

Haanpaa M, et al. 2011. NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## "Surveying the borders"

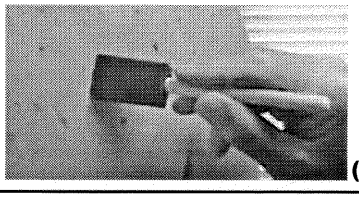
The 2012 IASP Refresher Course (Haanpaa et al. 2012) contains the most detailed instructions for "surveying the borders"

- Take photographs of the body parts that the patient's complaints are focused upon – print them in color
- Patient estimates area of spontaneous pain, numbness, etc. by marking on photo
- Patient estimates areas of skin that feel abnormal to touch by marking on photo

(Continued next slide)

## "Surveying the borders" (continued)

- Using the photographs as a guide...
- Use a foam brush for stroking, with the long axis of the brush parallel to the direction of stroking.
- Apply enough pressure to slightly bend the brush.



(Continued next slide)

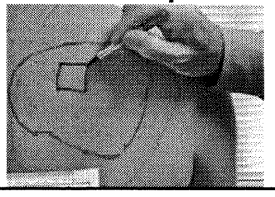
## "Surveying the borders" (continued)

- Start brushing ***outside*** of the area of pain as indicated on photos
- Stroke parallel to the photo-marked perimeter
- If the patient reports abnormal sensation, move further out
- If patient reports normal sensation, start next stroke 1 cm closer to the photo-marked area

(Continued next slide)

## "Surveying the borders" (continued)

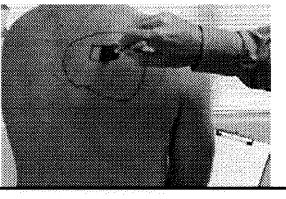
- Mark the skin at the point where the patient says the abnormal sensation begins
- Repeat the technique from all sides of the photo-marked area
- Connect the marks on all sides to indicate the perimeter of the pain



(Why the multiple lines?...)

## "Surveying the borders" (continued)

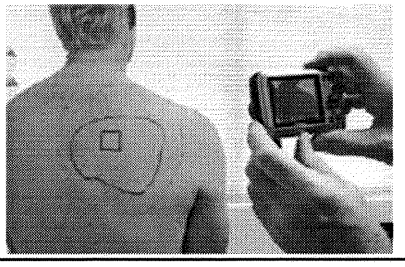
- In this example...
  - The outer line is the area of spontaneous and continuous pain
  - The inner square is the area of allodynia



(Continued)

## "Surveying the borders" (continued)

- Photograph the results



(Why?...)

## How to evaluate for neuropathic pain

**"The outcome of repeated testing during one session should be reproducible."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

**How to evaluate for neuropathic pain**

**Haanpää M. 2014 Refresher Course**

**"In neurological examination the findings should be consistent when tested multiple times in multiple ways, and they should be consistent with the pre-examination observation of behavior."**

**(continued)**

**How to evaluate for neuropathic pain**

**"If there is any discrepancy between the patient's performance during the history and clinical examination, testing needs to be repeated and modulated so that the clinician can titrate out the real impairment from possible functional variation due to malingering or conversion syndrome."**

**Haanpää M, et al. 2014 Refresher Course**

**How to evaluate for neuropathic pain**

**Haanpää M, et al. 2012 Refresher Course**

**"It is *extremely valuable* to mentally note one's observations of the patient in multiple settings *before the examination begins*, in two ways."**

**(continued)**

**How to evaluate for neuropathic pain**

**Haanpää M, et al. 2012 Refresher Course**

**"First, pre-examination observation is *needed* for comparison with pain behavior in the form of wincing, guarded movement, obvious limitations, and so on, during the examination."**

**(continued)**

**How to evaluate for neuropathic pain**

**Haanpää M, et al. 2012 Refresher Course**

**"Second, what appear to be neurological deficits should be consistent throughout."**

**How to evaluate for neuropathic pain**

**"Despite the development of neurophysiological and neuroimaging methods, taking a history and performing a clinical examination of a patient, using simple tools, remain the most important step in the diagnostic process."**

**Haanpaa M. 2014 Refresher Course**

***(continued)***

**How to evaluate for neuropathic pain**

**"Bedside sensory examination using simple utensils should always precede the use of more sophisticated neurophysiological techniques, including quantitative sensory testing."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 18.

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Physical Examination

"Often, sensory changes…can be confirmed by a clinical examination, but more detailed analysis using quantitative sensory testing may be needed." (continued)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Physical Examination

"Demonstrating sensory loss to one or more of these modalities and delineation of the area affected … are central to the determination …"

**Exceptions…**

(continued…)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Exceptions

"…there are some conditions where sensory loss is not a prerequisite for a neuropathic pain condition…hereditary channelopathies…subgroups of patients with, eg, peripheral nerve injury…"

(continued)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Exceptions

"…trigeminal neuralgia is a special case…sensory deficits may not be found on clinical examination…" (continued)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Exceptions

"In phantom pain, a sensory examination is not possible in the pain area…" (continued)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 2: Exceptions

"Prolonged pain after herpes zoster is associated with sensory abnormalities in a neuroanatomically plausible distribution in most, but not all cases."

(continued)

**Examination findings that mislead some clinicians into mistakenly claiming neuropathic pain**

**Examination findings that mislead some clinicians into mistakenly claiming neuropathic pain**

**"Negative sensory phenomena (hypoesthesia and hypoalgesia) have also been reported in non-neuropathic pain, e.g., in muscular pain."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

***(continued)***

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 2: Physical Examination

WARNING:

"Negative sensory signs may also be seen in nociceptive pain, but....they lack neuroanatomically distinct borders and are not reproducible." (continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 2: Physical Examination

"Positive sensory signs alone (eg, pressure-evoked hyperalgesia) carry less weight towards neuropathic pain probability..." (continued...)

**Examination findings that mislead some clinicians into mistakenly claiming neuropathic pain**

**"Positive sensory phenomena (allodynia and hyperalgesia) are common in nociceptive pain states, especially in inflammatory conditions."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

***(continued)***

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Physical Examination

"Positive sensory symptoms and signs may be seen in...other conditions such as inflammatory pain, pain of unknown origin, anxiety, and sleep deprivation, and can be affected by stress and negative emotions." (continued)

**Examination findings that mislead some clinicians into mistakenly claiming neuropathic pain**

# How to avoid being misled...

*(continued)*

**How to avoid being misled...**

**"Surveying the borders of sensory dysfunction to differentiate diffusely located non-neuropathic pains from neuroanatomically plausible distribution of neuropathic pain is *crucial*."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

**Because...**

**How to avoid being misled...**

**"Somatosensory aberrations found in neuropathic pain conditions have some *common* denominators..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

**How to avoid being misled...**

**"...i.e., borders fitting the distribution of the affected peripheral nervous structure (nerve, plexus, root)..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

**How to avoid being misled...**

**"... or the topographic representation of a body part in the central nervous system."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

**How to avoid being misled...**

**In other words, in order for the examination findings to be supportive of a claim of neuropathic pain, ...**

**In other words, in order for the examination findings to be supportive of a claim of neuropathic pain,...**

**"...the sensory abnormalities must be (reproducibly) found for a "neuroanatomically plausible distribution",..."**

**In other words, in order for the examination findings to be supportive of a claim of neuropathic pain, the sensory abnormalities must be (reproducibly) found for a "neuroanatomically plausible distribution",...**

**..."fitting the distribution of the affected peripheral nervous structure", "or the topographic representation of a body part in the central nervous system".**

**Quotes on this slide and the previous slide from Haanpaa M, et al. 2011. NeuPSIG Guidelines on Neuropathic Pain Assessment**

# Example: Sciatica

**"In order to make a diagnosis of definite sciatica, for example, it will be necessary – aside from obtaining a history of pain radiating along the leg and a positive MRI study – to demonstrate an altered somatosensory examination (i.e., hypoesthesia, hyperalgesia, and allodynia) within the territory of the affected nerve root."**

**Eisenberg E. 2011**

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

Step 2: Physical Examination

- If sensory loss is demonstrated in the same neuro-anatomically plausible distribution as the pain complaint, grade the complaint as "probable neuropathic pain".
- If not, leave the grade at "possible neuropathic pain" (except for the exceptions noted in Finnerup et al. 2016)

**How to evaluate for neuropathic pain**
**from Finnerup et al. 2016**

# Step 3

**Attempting to objectively confirm a lesion or disease in the somatosensory nervous system**

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"The final level of certainty requires that *an objective diagnostic test confirms* the lesion or disease of the somatosensory nervous system."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"Examples of such diagnostic tests include computed tomography, magnetic resonance imaging, or other imaging techniques to confirm the presence of stroke, multiple sclerosis, spinal cord injury, or nerve lesion..." (continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"...skin biopsy showing reduced intraepidermal nerve fiber density,..."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"...neurophysiological tests such as nerve conduction velocity, heat and laser evoked potentials, nerve excitability tests, R1 blink reflex demonstrating neural function compromise..."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"...microneurography with evidence of aberrant nociceptor activity..."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"...and genetic tests confirming a hereditary neuropathic pain disorder such as inherited erythromelalgia..."

(continued...)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

"In cases of amputation or a surgeon's clear verification of an intraoperative nerve lesion, further diagnostic tests are not necessary…"

(continued…)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

If a lesion or disease of the somatosensory nervous system is ***NOT*** objectively confirmed, the grading should remain "possible neuropathic pain" (assuming that the case is consistent with "possible neuropathic pain").

(continued…)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

If a lesion or disease of the somatosensory nervous system is confirmed, and the clinical presentation had already been graded as "possible neuropathic pain", the presentation can be re-graded as "definite neuropathic pain". ***BUT***…

(continued…)

**How to evaluate for neuropathic pain from Finnerup et al. 2016**

Step 3: Objectively confirming the lesion or disease

A grade of "definite neuropathic pain" does ***NOT*** mean that the presentation definitely involves neuropathic pain.

(continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

- The grade of "definite neuropathic pain" can be granted "without excluding other potential causes of pain."
- "…despite fulfilling all (requirements for a grade of "definite neuropathic pain), the pain may still not be neuropathic."

(continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

"Because the grading system only determines the level of certainty with which the presence or absence of a lesion or disease of the somatosensory nervous system can explain the pain, it is always important to consider if other causes for the patient's pain conditions may be present." ("other conditions…may fully or partially explain the pain") (continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

"reaching the final level of certainty (definite neuropathic pain) … does not establish causality (ie, there may still be other causes of the pain such as a diabetic ulcer)." (continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

"Such grading is naturally based on clinical judgment."

I.e., the grading system and associated evaluation method is NOT objective (continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

"The lack of positive criteria for identifying non-neuropathic pain, and the lack of pathognomonic features of neuropathic pain make it difficult to reach a level of "definite" neuropathic pain." (continued…)

A grade of "definite neuropathic pain" does *NOT* mean that the presentation definitely involves neuropathic pain.

Finnerup et al. 2016:

"Previous *attempts to define a gold standard for neuropathic pain have been hampered* by the inherent circular bias imposed by the fact that the criteria for defining clinical neuropathic pain are also used as measures in newly introduced tools." (continued…)

**NeuPSIG Guidelines (Haanpää et al. 2011) provide more detailed discussions of…**

**NeuPSIG Guidelines (Haanpaa et al. 2011) Also Address**

- ***Screening Tools***
- ***Quantitative Sensory Testing***
- ***Pain Intensity Assessments***
- ***Pain Quality Assessments***
- ***Temporal Aspects of Pain***
- ***Treatment Efficacy Assessments***
- ***Psychological Assessment***
- ***Disability Assessment***
- ***Quality of Life Assessment***

**NeuPSIG Guidelines (Haanpaa et al. 2011)**
**Also Address**

- ***Reflex Testing***
- ***Evoked Potentials***
- ***Microneurography ("cannot be recommended")***
- ***Functional Brain Imaging ("not currently useful")***
- ***Skin Biopsy***
- ***Autonomic Nervous System Assessment***
- ***Nerve Blocks and Drug Infusions ("we were unable to locate any reports or systematic evaluation or their utility")***

## IASP Clinical Updates

**(Haanpää and Treede 2010)**

**"In addition, assessment of psychosocial aspects is *necessary* for an individually tailored management strategy."**

**(Why?...)**

**Why is the assessment of psychosocial aspects *necessary*?**

**NeuPSIG Guidelines on Neuropathic Pain Assessment, Haanpää M, et al. 2011**

**"A longstanding literature documents the influence of *psychological factors* on the *severity and impact* of neuropathic pain."**

***(continued)***

**Why is the assessment of psychosocial aspects *necessary*?**

**"A newer literature demonstrates the predictive utility of *psychological factors* in identifying patients at risk for *chronicity* of neuropathic pain..."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment**

# Additional Considerations Of Relevance to Legal Claims

**Additional Considerations**
**Of Relevance to Legal Claims**

# A claim of neuropathic pain cannot be proven

***(Continued next page)***

## Remember this?

**"Clinical examination, including accurate sensory examination, is the basis of neuropathic pain (evaluation)."**

Haanpää M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 14.

*(Continued next page)*

## Well...

**"It is important to emphasize that the clinical examination *can never prove* any pain to be of neuropathic origin, it can *only* provide supporting evidence for altered function of the nervous system."**

- Haanpää M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.
- Repeated page 206 Haanpää M. 2014 Refresher Course

*(Continued next page)*

## Well...

**"Determination of lesion type and location does not necessarily prove that the pain is caused by that lesion or disease"**

Finnerup et al. 2016

*(Continued next page)*

**A claim of neuropathic pain cannot be proven**

**"It needs to be stressed that patients with somatosensory deficits do not necessarily have pain."**

Treede et al. 2008, page 1634

**A claim of neuropathic pain cannot be proven**

**"It is not known why the same condition is painful in some patients and painless in others."**

Haanpaa 2014 Refresher Course, page 202

**A claim of neuropathic pain cannot be proven**

**"...there are no clinically feasible means, in the clinic or laboratory, to differentiate neuropathy with pain from a neuropathy without pain."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 24.

**A claim of neuropathic pain cannot be proven**

**"Importantly, *no gold standard* is available to label a specific pain within an area of sensory abnormalities as neuropathic pain."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 18.

*(Continued next page)*

**A claim of neuropathic pain cannot be proven**

**"It is recognized that at present there is no specific diagnostic tool which permits an unequivocal (determination) of neuropathic pain to be established."**

Treede et al. 2008, page 1634

**A claim of neuropathic pain cannot be proven**

**"...we can only aim to confirm the diagnosis of an underlying neuropathy (that can be rationally connected to the clinical pain condition)."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 24.

**A claim of neuropathic pain cannot be proven**

**"...according to a carefully performed prospective study, only 5% of patients who had a peripheral nerve lesion verified by intraoperative ENG developed neuropathic pain."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 24.

## Additional Considerations Of Relevance to Legal Claims

## A determination of "definite neuropathic pain" is meaningless for legal claims

**A determination of "definite neuropathic pain" is meaningless for legal claims**

**"Note that this grading system is for communication among clinicians and researchers, not for medico-legal purposes."**

Treede RD, et al. 2008. Page 1634

**A determination of "definite neuropathic pain" is meaningless for legal claims**

**"...the grading system is not intended for medico-legal purposes"**

**Finnerup, et al. 2016. Page 1602**

**Why? Because, in reality, a claim of neuropathic pain can never be proven (as was previously discussed and referenced).**

## Additional Considerations Of Relevance to Legal Claims

## Has this concept, and its evaluation method, been scientifically validated?

## Remember this?

**"Clinical examination, including accurate sensory examination, is the basis of neuropathic pain (evaluation)."**

**Haanpaa M, et al. 2011.**

**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 14.**

***(continued)***

## Well...

**"The sensitivity of clinical examination *has not been systematically studied* in neuropathic pain patients, e.g. how accurate the (determination) achieved by pure bedside examination is compared with information retrieved from additional tests."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 25.**

## Well...

**"...it will be important to perform field testing of this system, in particular, to assess it's test-retest reliability and inter-rater reliability."**

**Finnerup, et al. 2016. Page 1602**

**i.e., reliability for the evaluation method has not been established – it has not even been researched yet.**

## Well...

**"...there is no validated approach to defining relevant pain distribution and history."**

**Finnerup, et al. 2016. Page 1602**

**i.e., there is no validated methodology for the first step of the method that was discussed above**

## Remember this?

**"Somatosensory aberrations found in neuropathic pain conditions have some *common* denominators..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## Remember this?

**"...i.e., borders fitting the distribution of the affected peripheral nervous structure (nerve, plexus, root)..."**

Haanpaa M, et al. 2011.
NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 17.

*(continued)*

## Well...

**"The standard dermatome maps detailed in any textbook with cleanly delineated linear dermatomes come close to bordering on fiction."**

Haanpaa M. et al. 2012 Refresher Course

*(What does the 2014 Refresher course say about this...)*

## Well...

**"The location of sensory abnormalities may not perfectly resemble published diagrams of an innervated territory. There are several reasons.**

Haanpaa M. 2014 Refresher Course p.206

**(Reasons include...)**

**"The location of sensory abnormalities may not perfectly resemble published diagrams of an innervated territory. There are several reasons."**

**"First there is great variance in nerve distribution among individuals."**

Haanpaa M. 2014 Refresher Course p.206

**Haanpaa M. 2014 Refresher Course**
**"The location of sensory abnormalities may not perfectly resemble published diagrams of an innervated territory. There are several reasons."**

**Finnerup et al. 2016**

**"Innervation territories of nerves and roots vary between individuals, they are not always clearly demarcated, and there is often overlap between them."** (continued...)

**Finnerup et al. 2016**

**"Innervation territories of nerves and roots vary between individuals, they are not always clearly demarcated, and there is often overlap between them."**

**"...current textbook figures are based on often imprecise renditions of very old data from relatively small case series."**

## Additional Considerations Of Relevance to Legal Claims

**Causation considerations in regard to**

- **severity,**
- **chronicity, and**
- **impact on the patient's life (e.g. disability)...**

**Causation considerations in regard to severity, chronicity, and impact on the patient's life (e.g. disability)...**

**"A longstanding literature documents the influence of *psychological factors* on the *severity and impact* of neuropathic pain."**

***(continued)***

**Causation considerations in regard to severity, chronicity, and impact on the patient's life (e.g. disability)...**

**"A newer literature demonstrates the predictive utility of *psychological factors* in identifying patients at risk for *chronicity* of neuropathic pain..."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 19.**

## And Remember...

**"It was recognized that at present there is no specific diagnostic tool which permits an unequivocal diagnosis of neuropathic pain to be established."**

**Treede, et al. 2008. Page 1631.**

## And Remember...

**"...according to a carefully performed prospective study, only 5% of patients who had a peripheral nerve lesion verified by intraoperative ENG developed neuropathic pain."**

**Haanpaa M, et al. 2011.**
**NeuPSIG Guidelines on Neuropathic Pain Assessment, Page 24.**