

EPIDEMIOLOGY OF DIABETES INTERVENTION AND COMPLICATIONS
Neurological History and Examination

The neurological history and examination should be carried out to permit answering certain specific questions. First, is there clinical evidence of a peripheral nervous system disorder? If so, is it distal symmetrical polyneuropathy, a proximal motor neuropathy, a mononeuropathy or some other disorder that is unlikely to be related to diabetes? Second, if there is evidence of a polyneuropathy, what is the extent of the neurological deficit at the time of the examination? Decisions should be based on the history and physical findings, and must be made independent from the results of any neurophysiologic testing.

The physical examination should be carried out in a quiet, comfortable room such as an outpatient examining room or an EMG suite.

Send a copy of this form to the Coordinating Center in the monthly forms mailing. Retain a copy in the clinic files.

A. IDENTIFYING INFORMATION

- 1. Clinic Number: _____
- 2. Patient ID Number: _____
- 3. Patient's Initials: _____
- 4. Date Form Completed: ____ / ____ / ____
Month Day Year
- 5. EDIC Follow-Up Year: _____

- | | | |
|----------------------------------|-------------|------------------|
| b) Exposure to known neurotoxins | No
(1) | Yes
(2) |
| If yes, specify: | | |
| Toxin | | Date of Exposure |
| _____ | | _____ |
| _____ | | _____ |
| _____ | | _____ |

B. NEUROLOGICAL HISOTRY

NOTE: Your standard neurological history should be performed. The history should include an inquiry into possible exposure to neurotoxic drugs or chemicals, and a family history of neurological disease, weakness, or arthritis and joint deformities. Also make specific and detailed inquiry about symptoms of sensory, motor and autonomic dysfunction.

- | | | |
|---|-------------|--------------|
| c) A family history of neuromuscular disorders? | No
(1) | Yes
(2) |
| If yes, specify: | | |
| _____ | | |
| _____ | | |
| _____ | | |

1. Based on history, does the patient have:

- | | | |
|---|-------------|--------------|
| a) A condition other than diabetes, which could cause neuropathy? | No
(1) | Yes
(2) |
|---|-------------|--------------|

If yes, specify:

2. Are any of the following sensory symptoms present in the hands or feet?

	<u>No</u>	<u>Both Hands and Feet</u>	<u>Hands Only</u>	<u>Feet Only</u>
a) Numbness	(1)	(2)	(3)	(4)
b) Dyesthesias, paresthesias	(1)	(2)	(3)	(4)
c) Hypersensit- ivity to touch	(1)	(2)	(3)	(4)
d) Burning/ach- ing stabbing pain	(1)	(2)	(3)	(4)

3. Are any of the following motor symptoms present?

	No	Yes
a) Ankle weakness	(1)	(2)
b) Cramps	(1)	(2)

4. Are any of the following autonomic symptoms present? (Before they are ascribed to diabetic autonomic neuropathy, the symptoms must have been present for at least 30 days and should not be attributable to other condition to the best of the physician's knowledge.)

<u>Postural hypotension</u>	No	Yes
a) Weakness on standing relieved by lying down	(1)	(2)
b) Fainting on standing relieved by lying down	(1)	(2)

Gastroparesis

c) Dysphagia (difficulty in swallowing)	(1)	(2)
d) Anorexia	(1)	(2)
e) Nausea	(1)	(2)
f) Vomiting	(1)	(2)
g) Vague fullness after meal	(1)	(2)

<u>Diabetic Diarrhea</u>	No	Yes
h) Nocturnal diarrhea	(1)	(2)
i) Fecal incontinence	(1)	(2)
j) More than 20 bowel movements/day	(1)	(2)

Colonic Atony

k) Less than 2 bowel movements/week	(1)	(2)
l) Less than 1 bowel movement/3 days	(1)	(2)

Genitourinary

For section B, answer 4m and 4n for males only, otherwise skip to 4o.

m) Impotence (not due to other causes)	(1)	(2)
n) Retrograde ejaculation	(1)	(2)
o) Overflow bladder incontinence	(1)	(2)
p) Urinary dribbling	(1)	(2)
q) Incomplete bladder emptying	(1)	(2)
r) Increased urinary volume	(1)	(2)
s) Decreased urinary frequency	(1)	(2)

Sudomotor Abnormality

	No	Yes
t) Diminished sweating of legs	(1)	(2)
u) Feeling of increased sweating elsewhere	(1)	(2)

Hypoglycemic Unawareness

v) Decreased adrenergic awareness of hypoglycemia	(1)	(2)
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C. NEUROLOGICAL EXAMINATION

NOTE: Your standard neurological examination should be performed. Special attention should be paid to the peripheral nervous system. All abnormalities should be based on your personal clinical experience in evaluation of patients with peripheral nervous system disorders.

The recommended method for testing small-diameter sensory fibers is to begin with evaluation of cold perception. A dense metal object such as the weight at the end of a 128Hz tuning fork serves as a good cold stimulus. Begin by asking the patient to compare the temperature of this object as perceived over the dorsum of the foot and the top of the thigh. If the more proximal stimulus is colder, then starting on the dorsum of the toes, slowly move the object proximally until the level of change to normal is found. Pin prick should be used to verify this level, since patients without neuropathy may report a change in temperature if they are examined in a cool room. The level at which the pin prick feels normal (compared with the upper thigh or face), and not just "sharp", should be recorded.

To examine large fiber functions, the ability to detect the direction of the small upward or downward movements of the great toe should be determined, as well as the ability to perceive a low amplitude 128 Hz vibration at the first metatarsal-phalangeal joint, using your personal experience with individuals without neuropathy as a control.

For the most part, strength will be normal in this group of patients. To look for evidence of distal weakness, test the strength of great toe dorsiflexion (extensor hallucis longus muscle) and the strength of small toe dorsiflexion (extensor digitorum brevis). In addition, look for evidence of atrophy of intrinsic foot muscles and evaluate the size of the contracting EHL muscle for atrophy.

Reflexes should be elicited in your usual way. In this study we will be especially interested in the knee and ankle jerks. Reflexes should be graded as ++++ (very brisk with clonus), +++ (brisk), ++ and + (normal) +/- (elicited only with the Jendrassik maneuver) or 0 (cannot be elicited).

1. Based on the physical examination, are there abnormalities of:

	No	Yes
a) Proximal muscles	(1)	(2)
b) Distal muscles	(1)	(2)
c) Sensory function of small fibers (decreased pin or temperature)	(1)	(2)
d) Sensory function of large fibers (decreased vibration or position)	(1)	(2)
e) Gait and coordination	(1)	(2)

If any of the above abnormalities are present, explain:

2. Reflex Pattern (use number in parentheses)

++++ brisk with clonus	(5)
+++ brisk-normal	(4)
++ normal	(3)
+ normal	(2)
+/- present with reinforcement	(1)
0 unobtainable	(0)

	<u>Right</u>	<u>Left</u>
a) Biceps	_____	_____
b) Triceps	_____	_____
c) Brachioradialis	_____	_____
d) Quadriceps	_____	_____
e) Gastroc/soleus	_____	_____

D. CONCLUSIONS FROM NEUROLOGICAL HISTORY AND EXAMINATION

1. Based on your completed neurological history and physical examination, does this patient have:

- | | No | Yes |
|--|------|------|
| a) Symptoms consistent with a distal symmetrical polyneuropathy? | (1) | (2) |
| b) Abnormal sensory exam consistent with a distal symmetrical polyneuropathy? | (1) | (2) |
| c) Decreased or absent deep tendon reflexes consistent with a distal symmetrical polyneuropathy? | (1) | (2) |

2. Does this patient have a clinically-evident diabetic distal symmetrical polyneuropathy? (select only one)

- | | |
|--|------|
| Definite yes (at least two of the three responses to D1 must be positive) | (1) |
| Possible yes (one of the three responses to D1 must be positive) | (2) |
| No | (3) |

3. If the patient has any type of diabetic neuropathy, is it primarily: (select only one)

- | | |
|---|------|
| Diffuse (distal symmetrical sensory or sensorimotor polyneuropathy)? | (1) |
| Focal (proximal motor neuropathy, mononeuropathy, mononeuropathy multiplex)? | (2) |
| Not applicable (no evidence of diabetic neuropathy) | (3) |

4. Based on your completed neurological history and physical examination, is there evidence of a neurological disorder other than diabetic symmetrical sensorimotor polyneuropathy?

- | No | Yes |
|------|------|
| (1) | (2) |

If yes, describe: _____

Type or print name of person completing this form:

Certification Number (if any)

_____ - - - - -