Eccrine sweat glands are innervated by long, thinly myelinated and unmyelinated C fibers of the sympathetic nervous system that are prone to early damage in many neuropathic processes, including dysautonomia. The results of SUDOSCAN tests are provided as hand and foot conductances that indicate sweat dysfunction and are a marker of small fiber peripheral neuropathy.

Small fiber neuropathy (SFN) may be the first manifestation of systemic disease and can predict progression to a more diffuse neuropathy, making this early diagnosis important for the treatment of patients. The two main points to consider for correct interpretation of SUDOSCAN results are symmetry and length dependency of the damages.

In order to correctly diagnose SFN specific diagnostic tests need to be selectively performed and their results interpreted to provide precise treatment for this disease. This interpretation guide is provided to assist in outlining the primary steps for treatment efficacy.

SUDOSCAN results will enable you to perform an objective assessment of small nerve fiber function. This will help you to identify the etiology of the disease, keeping in mind that about 33% of small fiber neuropathies remain idiopathic despite appropriate diagnostic evaluation. Early disease-modifying or symptomatic treatments can be started. Awareness of the disease can increase patient compliance, which can be particularly important in the treatment of neuropathic pain, if present.

**First steps for a diagnostic strategy of small fiber neuropathy**

The following questions should first be answered:
- Where: Is there asymmetry between sides? Is the disturbance in the hand and/or feet? Is it length-dependent?
- What: Are sensory and/or motor nerves and other parts of the autonomic system involved?
- When: If symptoms are present, was their onset acute or chronic?
- Context: What are the patient’s medical history, current or past medications, family history (hereditary diseases)?

<table>
<thead>
<tr>
<th>Potential causes of SUDOSCAN disturbances*</th>
<th>Suggested evaluation</th>
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<tr>
<td>Diabetes or glucose intolerance</td>
<td>Fasting glucose, 2-hour oral glucose tolerance test</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>Fasting lipid panel</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>Medical history, clinical examination, liver function tests</td>
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<td>Pharmacological toxins</td>
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<td>Environmental Toxins</td>
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<tr>
<td>Other causes (including systemic autoimmune diseases)</td>
<td>See details for specific laboratory tests in references</td>
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</tbody>
</table>

* classified according to frequency of occurrence; potential causes are not mutually exclusive

Key points for appropriate medical care of small fiber neuropathies are cause-specific treatment, lifestyle modification (especially if diabetes, impaired glucose tolerance or metabolic syndrome could be involved), and pain control.

As SUDOSCAN is non-invasive, quantitative, quickly and easily performed, and reproducible, it can be used serially and potentially assist in monitoring treatment efficacy.
A high level of observed asymmetry (i.e., >20% between both sides) indicates a focal or multifocal neuropathy. The differential diagnosis in such cases should comprise local neurological, vascular and traumatic conditions.

- **No symmetry?**
  - **No**
    - **Conductance Level**
      - **Hands Only**
        - **High conductances (>60µS)**
          - Nerve degeneration observed in the feet is predominantly a length-dependent process. Low levels are indicative of nerve damage to the C fibers in the legs—the most prevalent cause of this is diabetes or glucose intolerance. Other possible causes include hyperlipidemia, hypothyroidism, alcoholism, side effects of drugs including but not limited to anti-hyperlipidemia medications such as statins, cisplatinum or other toxic chemotherapeutic agents, anti-retroviral therapy, vitamin B12 deficiency or Fabry disease.
        - **Common peroneal nerve, femoral nerve dysfunction, sciatic nerve dysfunction.**
      - **FEET ONLY**
        - **Intermediate conductances (40-60µS)**
          - Nerve degeneration observed in the feet is predominantly a length-independent process. Potential interpretation under investigation.
        - **Potential dysautonomia must be clearly ruled out; notable signs and symptoms include light intolerance, orthostatic hypotension, nocturnal diarrhea and bladder dysfunction.**
    - **FEET & HANDS**
      - **Low conductances (<40µS)**
        - Nerve degeneration observed in the hands is a length-independent process. Possible causes include immune processes such as vasculitis, Sjögren’s syndrome, sarcoidosis, amyloidosis, Lupus, and Lyme disease. Sensory neuropathy affecting dorsal root ganglia should also be evaluated.
      - **NEURPSHIEH**
        - **Hands Only**
          - **Nerve degeneration observed in the hands is a length-independent process. Possible causes include immune processes such as vasculitis, Sjögren’s syndrome, sarcoidosis, amyloidosis, Lupus, and Lyme disease. Sensory neuropathy affecting dorsal root ganglia should also be evaluated.**
        - **FEET & HANDS**
          - **Potential dysautonomia must be clearly ruled out; notable signs and symptoms include light intolerance, orthostatic hypotension, nocturnal diarrhea and bladder dysfunction.**

**References for more complete information:**
- THERAPATH: Small fiber neuropathy overview.