Reveal the wound healing capacity by performing an intelligent tcpO₂

**Why measure tcpO₂?**

Peripheral Arterial Disease (PAD) will influence the outcome of wound healing. To prevent limb loss, the degree of ischemia has to be assessed at an early stage. Transcutaneous oxygen (tcpO₂) has proven to be a useful tool for this purpose as it reflects the oxygen tension in the skin. tcpO₂ is the local oxygen tension that has diffused from the capillaries, through the epidermis, to a Clark-type electrode at the measuring site. Transcutaneous tcpO₂ measurement helps assess the body's ability to deliver oxygen to the tissue. Any requirement for the ability to deliver oxygen to the tissue will be revealed immediately since the skin is ranked very low in the body's system of oxygenation priority. tcpO₂ measurements usually require at least 2-3 sites, preferably 4 or more, to provide a good picture of the oxygenation status of the skin.

Transcutaneous carbon dioxide (tcpCO₂) is the local carbon dioxide tension in the skin. The carbon dioxide level is affected by both the local metabolic processes and the blood perfusion ability to remove carbon dioxide.

**tcpO₂ to predict benefit from hyperbaric oxygen treatment**

Hyperbaric oxygen therapy (HBOT) is a medical treatment in which the patient breathes 100% oxygen inside a pressurized chamber. The aim is to increase the general oxygen level in the tissue. It is commonly used in conditions where partial or total tissue hypoxia is present, such as diabetic foot lesions or arterial ulcers. Not all patients will benefit from HBOT. Therein, tcpO₂ can help decide whether to start the therapy. Furthermore, tcpO₂ can monitor the tissue oxygenation throughout the treatment. Perimed offers a remote panel system to take measurements inside a multi-place chamber. In addition, all equipment is compatible with extension cables and connections used in mono-chambers.

**Conclusion of the examination**

Right foot:
- Low baseline value tcpO₂: No response to O₂ challenge. If capillary or pulmonary problems are present, PAD is the most probable cause.
- Right foot critical limb ischemia with severely affected microcirculation

Left foot:
- Baseline tcpO₂ baseline value. Good response to O₂ challenge.
- Beneficial conditions for spontaneous healing

**PeriFlux 6000 - tcpO₂ / tcpCO₂ monitoring**

Why measure tcpCO₂?

 tcpCO₂ will help assess metabolic state of the lower limb. tcpCO₂ has proven to be a useful tool for this purpose as it reflects the oxygen tension in the skin. tcpCO₂ measurement helps assess the body's ability to deliver oxygen to the tissue. Any requirement for the ability to deliver oxygen to the tissue will be revealed immediately since the skin is ranked very low in the body's system of oxygenation priority. tcpCO₂ measurements usually require at least 2-3 sites, preferably 4 or more, to provide a good picture of the oxygenation status of the skin. tcpCO₂ is particularly important for the assessment of wounds and prediction of amputation levels in patients with critical limb ischemia and/or diabetes, as these patients commonly also have impaired microvascular function and impaired ABI values.

**What is tcpO₂ and tcpCO₂?**

Transcutaneous oxygen (tcpO₂) and tcpCO₂ are local non-invasive measurement reflecting the amount of O₂ that has diffused from the capillaries, through the epidermis, to a Clark-type electrode at the measuring site. Transcutaneous tcpO₂ measurement helps assess the body's ability to deliver oxygen to the tissue. Any requirement for the ability to deliver oxygen to the tissue will be revealed immediately since the skin is ranked very low in the body's system of oxygenation priority. tcpO₂ measurements usually require at least 2-3 sites, preferably 4 or more, to provide a good picture of the oxygenation status of the skin.

**Interpreting results**

As a tcpO₂ value can be influenced by many factors, extending the baseline with provocations, or including a reference electrode, may prove valuable for the clinical decision making.

Oxygen challenge: tcpO₂ measurement during 100% oxygen inhalation will distinguish low values due to a barrier to oxygen diffusion, such as from macrovascular disease (PAD).

Leg elevation: for a duration of 5-15 minutes may be used to confirm macrovascular disease. Other methods to confirm macrovascular disease include toe and ankle pressure.

Reference electrode or oxygen saturation pulse oximetry will rule out arterial hypoxia (due to pulmonary disease, for example).
PeriFlux 6000 is the latest generation transcutaneous O₂ and CO₂ equipment from Perimed

Compact and elegant solution
The PeriFlux 6000 is operated using a touch screen interface. It can be equipped with up to 8 channels of tcO₂ allowing for accurate mapping of the extremity. It is small, portable and can be mounted on an arm or stand.

Step-by-step-instructions
The user is guided throughout the procedure by simple instructions displayed on the screen. Different tests may be implemented, including exam room and in-chamber measurements.

Automatic report generator
All test results, including the site positioning photo, are displayed in an automatically generated report that may be printed or exported as a PDF file. The report template can be customized according to the requirements of the user.

HIPAA compliant
For patient security the PeriFlux 6000 is HIPAA compliant.

Billing and Reimbursement
Use CPT codes 93922 and 93923 for billing and reimbursement of tcO₂ measurements.

Connection to PC
Data from the PeriFlux 6000 can be transferred to a PC. The PeriFlux Configuration Software (PCS) also makes it possible to review generated data on a PC.

References

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