Tcore™ Temperature Monitoring System
Safe, accurate, non-invasive
Significance of temperature management

**KEEPING PATIENTS WARM AND WELL**
Over the last decade, more and more clinicians have come to recognize the significance of patient temperature management. Studies have shown the importance of careful thermal management. This goes beyond simple patient comfort and well-being; it can have a measurable, positive impact on patient outcomes.\(^1,^2,^3\) As a result, many healthcare institutions have adopted thermal management protocols and made them an integral part of their diagnostic and therapeutic processes.

**LIMITED PERCEPTION**
Mild and moderate hypothermia often occurs in patients undergoing medical procedures and can go unnoticed by caregivers. Thermal monitoring is not a universal practice, and many of the methods currently in use deliver insufficient accuracy or are unreasonably invasive.\(^4,^5,^6,^7\) In order to monitor and maintain core temperature in a wide range of clinical situations, preferably a non-invasive, precise measurement method is necessary.
Accurate non-invasive measurement for high comfort and low costs

MORE THAN JUST COMFORT
Of course, comfort is an important factor in the patient care process. However, temperature monitoring is not just about comfort. Studies have shown that patients who become even mildly hypothermic during medical procedures have longer recovery room times, longer ICU stays and require more analgesics than patients who maintain normal core temperatures\(^2\). Maintaining normal core temperature helps reduce infections, complications and postoperative mortality rates which can lower the total cost of treatment.\(^8,9\)
In fact, because of the positive impacts, many insurers provide additional compensation when active thermal management is used.

THE CORE OF THE CHALLENGE
The non-invasive accurate measurement of core body temperature is a surprisingly complex technical challenge. However, because of the potential benefits for both patients and hospitals, Dräger was eager to take on the challenge.
TCORE – A NEW NON-INVASIVE TECHNOLOGY

Tcore™ employs a unique dual-sensor heat flux technology, which, following a short ramp-up time, calculates core body temperature continuously and accurately. A simple, self-adhesive sensor placed on the patient's forehead is all that’s required. This single-use sensor can be connected through a battery-powered adapter to all current Dräger monitors*, eliminating the need for a dedicated display.

COMFORTABLE, SAFE AND EASY TO USE

Because Tcore is non-invasive, it brings the advantages of accurate core temperature monitoring to a broad range of patients. Tcore can be used with comfort and ease, even with fully conscious patients who would not well tolerate conventional invasive methods. The disposable sensor helps to eliminate the possibility of cross-contamination and therefore reduces the likelihood of nosocomial infections.

REUSABLE ADAPTER

The Tcore Sensor can be connected to all current Dräger monitor* via a reusable, battery-operated adapter. The integrated battery will provide power to the adapter for up to two years, after which point it can be discarded. The sealed battery compartment facilitates disinfection of the unit, which is otherwise maintenance-free. Because there is no need for a separate monitoring system, Tcore can be easily and quickly integrated into your clinical routine at minimal expense.

* Exception: Vista 120 patient monitor

Tcore™ Sensor
Better patient outcome

SUITABLE FOR ALL CARE AREAS
The simplicity of the Tcore system means that it can be used in practically any setting, including the operating room, the recovery room, the ICU, step-down unit or ward. Within minutes of attaching the sensor to the patient’s forehead, continuous, accurate and reliable measurements are obtained.

A WARM FEELING INSIDE
Tcore allows you to reliably recognize hypothermia, giving you the ability to take appropriate steps to prevent its adverse effects. When combined with an active thermal management protocol, Tcore can help you improve outcomes, shorten stays and lower costs – and keep your patients warm and comfortable.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;28 °C</td>
<td>Severe hypothermia</td>
</tr>
<tr>
<td>28 – 32 °C</td>
<td>Moderate hypothermia</td>
</tr>
<tr>
<td>33 – 36 °C</td>
<td>Mild hypothermia</td>
</tr>
<tr>
<td>36,5 – 37,2 °C</td>
<td>Normal temperature range</td>
</tr>
<tr>
<td>37,8 – 38,5 °C</td>
<td>Moderate fever</td>
</tr>
<tr>
<td>40 – 42 °C</td>
<td>Very high fever</td>
</tr>
<tr>
<td>&gt;39 °C</td>
<td>High fever</td>
</tr>
<tr>
<td>&gt;42 °C</td>
<td>Circulatory collapse</td>
</tr>
<tr>
<td>&gt;42,6 °C</td>
<td>Denaturation of proteins and enzymes</td>
</tr>
</tbody>
</table>
Comparison of temperature measurement methods: Previously, non-invasive core temperature measurement was not as accurate as invasive methods. Now the Tcore sensor combines the accuracy of invasive measurements with the advantages of non-invasive methods!
Tcore™ Adapter (reusable)

Order information:
Part number: MP00999
Package unit: one adapter

Technical data:
Operation time: two years
Storage time: one year (before 1st use)

Tcore™ Sensor (single patient use)

Order information:
Part number: MP00989
Package unit: 20 sensors

Technical data:
- Latex free
- Replacement interval: 24 hours
- Storage time: max. two years

1 Mahoney C, Odom J. Maintaining intraoperative normothermia: a meta-analysis of outcomes with costs; AANA Journal; 67:155-164; 1999
3 Karalapillai D, Story DA, Calzavacca P, Licari E, Liu YL, Hart GK. Inadvertent hypothermia and mortality in post-operative intensive care patients: retrospective audit of 5050 patients; Anaesthesia; 64:968-972; 2009
4 Torossian A. Survey on intraoperative temperature management in Europe; Eur J Anaesthesiol; 24:668-75; 2007
8 Bräuer A, Perl T, Quintel M. Perioperatives Wärmemanagement; Der Anaesthetist; 55:1321-1340; 2006
9 Sessler DI. Complications and treatment of mild hypothermia; Anesthesiology; 95:531-543; 2001
10 Wartzek, Mühlsteff, Imhoff; Temperature measurement; Biomed Tech; 56:241-257; 2011