

# Ensuring optimum care temperature with the Care Thermometer: validation and use

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**Abstract:** The Care Thermometer is an easy-to-use, web-based, self-assessment tool, designed to provide an efficient and reliable overview of the present situation in two specific areas: the physical care load and prevention policy in a unit or facility. In short it provides a quick reading of the care “temperature”. The Care Thermometer allows the users to assess the current situation in their facility today, and, with regular use, it can help track progress over time. The Care Thermometer is a further step in the development of the TiThermometer®, a validated assessment tool (Knibbe & Friele, 1999).

## Introduction: the Care Thermometer

Healthcare facilities implementing ergonomic policies in the nursing profession feel an increased need to monitor and fine tune their policies. They invest considerable effort and money in the implementation process. Management therefore will need data to monitor progress and promote further change. Currently their vision is often limited to data on sick leave and costs of injuries and compensation claims. Additional data might allow for a faster and more sensitive monitoring on a ward level and provide a means to tailor policies to the exact situation per ward.

For this purpose the Care Thermometer was developed and a further study is undertaken to validate the Care Thermometer. The Care Thermometer is originally based on the Dutch ‘TiThermometer®’ developed by Knibbe et al. in the Netherlands (Knibbe & Friele, 1999). The TiThermometer was adapted for all health care sectors, tested by focus groups and is currently used on a large, national scale on a regular basis. This tool is endorsed by unions, employers and the Health and Safety Inspectorate. Currently about 80% of all clients in geriatric care have been assessed with the TiThermometer. The tool is also widely used in other health care sectors in the Netherlands. These databases assist in the validation process of the Care Thermometer.

When compared to the TiThermometer, the Care Thermometer is more comprehensive as it specifies more sources of potential physical overexposure. It also explicitly covers issues related to quality of care, whereas the TiThermometer is primarily an occupational and ergonomic tool.

## Exposure assessment and physical care load

The Care Thermometer focuses on the assessment of exposure. The reason for this is that research demonstrates a correlation between high levels of exposure to physical loads and the prevalence of musculoskeletal disorders. Therefore, exposure assessment is a sensitive and practical way of designing and evaluating a preventive policy. This holds especially true in nursing for exposure to:

➤ **dynamic loads**, such as lifting and transferring passive patients, and also to

➤ **static loads**, such as bending over a patient for prolonged periods during activities like wound care or washing and bathing.

## The assessments from the Care

Thermometer are also intended to be used to refine or design an effective injury prevention policy. Findings from the Care Thermometer can, for example, provide the basis for well-informed decisions on better allocation of equipment or provision of new equipment to ensure safe, high-quality care.

By using the Care Thermometer on a regular basis it is possible to monitor progress over time and redirect whenever and wherever necessary. Regular readings of the Care Thermometer for a specific unit or the facility will provide a good picture of the change in mobility levels, how this impacts the physical care load and if changes in equipment usage are necessary.

## Assessment of patients

One of the most important starting points for the design of a preventive policy is an assessment of the type and amount of assistance patients require. In the Care Thermometer this is summarised in the word “physical care load”.

For the purpose of monitoring the physical care load, the Care Thermometer uses a five-level classification system ranging from completely independent (category A) to fully dependent (category E) patients. The assessment of mobility is based on the functional mobility level of patients, not the exact nature, or diagnosis, of their disease, impairment or disability. The first step is therefore to assess and classify all patients in this five-level system. Although it may be difficult to place some individual patients in one of the five groups, the general picture appears to be reliable enough to base policy decisions on.

## Safety measures in place

The second basic element in the design of a policy is formed by the measures that are already taken or in place so carers can work safely.

The Care Thermometer assesses the presence of the different

types of equipment and relates this to the physical care load and the mobility level of the patients. The outcome will be an overview of the levels of care load risk involved in each activity and also per patient mobility level. The three levels of risk are symbolised by the colours red, yellow and green:

**+ Red risk level:** Transfer or activity is “unacceptable” for the carer/s. The assessment has revealed a high risk of physical overload during the transfer or activity when comparing equipment provision to patient mobility. A more detailed risk assessment should be undertaken and escalated as appropriate immediately. This may include involvement of your Moving and Handling Advisor or appropriate Clinical Manager.

**+ Yellow risk level:** Transfer or activity is “unsafe” for the carer/s. The assessment has revealed a medium risk of physical overload during the transfer or activity when comparing equipment provision to patient mobility. A risk assessment should be undertaken as soon as possible to ensure adequate controls are in place.

**+ Green risk level:** Transfer or activity is “safe” for the carer/s. The assessment has revealed a low risk of physical overload during the transfer or activity when comparing equipment provision to patient mobility and activities.

### Quality of care

Prevention and reduction of occupational risks is, of course, not only a matter of the right equipment. At least of equal importance is the maintenance and, if possible, improvement of mobility and independence within the patient population.

The Care Thermometer not only determines if the amount and type of equipment is adequate from a safety point of view, it also identifies if patient mobility and activity is stimulated or if too much assistance is given and there is a risk of rendering the patients passive.

### Activities included in the Care Thermometer

The following care tasks were identified as the most pronounced potential occupational risks. For this reason they were included in the Care Thermometer:

- 1) repositioning in bed;
- 2) lateral transfers;
- 3) general transfers;
- 4) hygiene care in a sitting position;
- 5) showering in a supine position;
- 6) bathing;
- 7) transfers to/from bath;
- 8) care on the bed;
- 9) use of compression stockings (AES).

### Care Thermometer in practice

With information from the Care Thermometer, one can further refine or design a prevention policy. The results will provide clear leads to tailor the policy and prioritise steps in a policy or action plan. This may result, for example, in a sound factual basis for decisions on additional equipment or re-distribution of equipment. Over time, the Care Thermometer can be used to evaluate progress. By comparing new results with the ones from previous assessments, it is easy to follow changes in care load risk levels as well as quality of care.

### Validation process

As the claims of the Care Thermometer (CT) are obviously

ambitious a validation study of the Care Thermometer is undertaken. This will provide an indication of the quality of the data gathered with the tool. In the validation process the following research questions will be answered:

- 1) Are the parameters of the CT complete?
- 2) Do these parameters actually measure what they intend to measure?
- 3) Does the CT produce valid and reliable results in real life conditions?
- 4) Are the parameters and the tool itself sensitive enough to highlight specific differences across health care sectors and across countries?

One of the options for validation-studies is to combine data gathered from different angles and measurement “sources” in order to determine the level of converging-validity. If the results of different sources converge, this can be considered as an indication of the validity. And, the other way around, a lack of convergence can pinpoint weaknesses in the validity of the tool. It will therefore need improvement. The results of the following three data sources (‘triangulation’) are currently being compared with the actual use and results of the Care Thermometer.

- 1) real life observations, quantitative and qualitative evaluation on the ward;
- 2) the use of the StaDyMeter;
- 3) the use of the RiskRadar.

Ad 1: The results will be compared with the results the facilities themselves collect on the Care Thermometer.

Ad 2: The StaDyMeter is a self-administered log used before in the validation process of the original TT and will now again provide relevant input and the option of comparing the results with the reference data collected in the validation process of the TT (Knibbe & Friele, 1999 and Knibbe et al. 2002- 2007). This tool collects data on a ward or team level, is quantitatively oriented and is more detailed than the TIThermometer and the Care Thermometer.

Ad 3: The RiskRadar is a protocolized tool that analyses the exposure to physical load on an individual (nurse) level. It will not only assess the exposure itself quantitatively, but will also check for missed sources of overload and will also additionally for each of the sources found assess the level of physical load that nurses experience. This subjective experience is also important, not only because it is relevant in itself, but also as it may provide a source of bias in the data gathered with the Care Thermometer.

For the validation study four countries are included and for each country 4 facilities participate: two from long stay and nursing homes and two from acute care. After this process the results of these three sources will be combined and the differences and degree of convergence with the results of the Care Thermometer will be determined. This will lead to a final conclusion as to the validity of the Care Thermometer and also (directions for) possible adaptations that might improve its validity. □

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### References

- <sup>1</sup> Knibbe J.J. and Friele D., 1999, *The use of logs to assess exposure to manual handling of patients illustrated in an intervention study in home care nursing*, *International Journal of Industrial Ergonomics*, 24: 445-54.
- <sup>2</sup> Knibbe J.J., Knibbe N.E., 2008 (in press), *Fourth National Monitoring with the Lift Thermometer*, SAB V&V, The Hague, (in Dutch).