



## Thermal properties of thermodilution catheters.

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Author: M. Laine  
J. Timisjärvi

Author Affiliation: Department of Physiology, University of Oulu, Finland.

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Abstract: A suitability of thermodilution catheters to hypothermic conditions was investigated. Thermal properties of two types of thermodilution catheters (Edwards and Spectramed) were checked within a temperature range of 37 degrees C to 22 degrees C. The linear calibration method normally used in normothermia appeared to be inadequate because of the non-linear character of the temperature-resistance curve of the thermistor probe. The best calibration was obtained by using second order formula ( $ax^2 + bx + c$ ) that was fitted to measured temperature-resistance points. An exponential calibration was also tested, but the correlation of the fit was not as good than in the case of the polynome. The absolute variation of resistance of catheters at 37 degrees C was large. If the catheters are calibrated according to mean values, the error in temperature determination was about 1 degree C at normothermia. Erroneously measured temperatures in hypothermia give false cardiac output measurements, which can be dangerous in clinical practice.

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