Support Surface Standards Tests for Microclimate Management

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Background

Microclimate is defined as the temperature and humidity in a specified location. Microclimate at the juncture of the support surface and body interface plays an important role in the development of pressure injuries. The physiology associated with regulating skin temperature through perspiration, its impact on the metabolic rate as well as the decrease in skin mechanical properties in conditions of high humidity are well researched as impacting pressure injury development. The ability to maintain lower temperature and moisture content within the skin can be an effective strategy to maintain homeostasis, lower frictional forces and thereby maintain skin integrity.

Methods

Three (3) test methods have been developed to test a support surface’s ability to manage heat and humidity removal from the patient interface.

<table>
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<tr>
<th>Method</th>
<th>Description</th>
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<td>Human Body Analog, RESNA SS-1 2019, Section 3</td>
<td>The Body Analog method specifies a method for the simultaneous measurement of the heat and water vapor dissipating properties of full body support surfaces under test conditions that simulate body loading with flat and contoured profiles.</td>
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<td>Sweating Guarded Hot Plate, RESNA SS-1 2019, Section 4</td>
<td>The Sweating Guarded Hot Plate method is designed to simulate the transfer processes of heat and moisture through materials next to the human skin and to measure the rate of transfer of heat and moisture in such processes. It is, therefore, particularly relevant for assessing the ability of support surface materials to transmit moisture or heat, primarily under steady-state ambient conditions.</td>
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<td>Hot Water Bladder Method, RESNA SS-1 2019, Section 8</td>
<td>The Heated Water Bladder method measures the water vapor dissipating properties (moisture transport) of full body support surfaces.</td>
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Results

Each standard test measures different variables of how microclimate is managed by the support surface. These methods are intended to help differentiate performance characteristics between full body support surfaces. They have been shown to differentiate performance levels of a range of available products and therefore should be a consideration for pressure injury prevention and treatment.

Clinical Implications

The different standard tests and their results can be used in the selection process of a support surface in a care setting. Not all support surfaces are designed to manage pressure injury risk through microclimate. Standard tests are not intended to demonstrate clinical outcomes or determining overall ranking or scoring of support surfaces, rather they should be used to match user needs to specific device capabilities and performance.

Reference