

Evaluation of the pressure characteristics of the new Kanmed Warmcloud® body warming device in healthy volunteers

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Introduction

This study aims to evaluate the pressure characteristics of a new patient warming device (Kanmed Warmcloud®, Kanmed AB, Sweden), consisting of a warm air flow generator connected to an inflatable, disposable air mattress that is positioned underneath the patient. Besides adequate temperature management, this device possibly reduces the risk of pressure sores in the perioperative setting.

Materials and Methods

Demographics

Twenty healthy subjects volunteered to participate: 11 male, 9 female; aged 20-55; BMI 19,3-38.

Number	Age	Sex	Weight	Length	BMI
1	36	F	64	159	25,3
2	55	F	71	170	24,6
3	42	M	85	176	27,4
4	39	F	55	160	21,5
5	44	M	115	174	38
6	31	F	62	168	22
7	48	F	81	175	26,5
8	37	F	59	158	23,6
9	24	F	69	170	23,9
10	20	M	66	183	19,7
11	49	F	52	164	19,3
12	48	F	73	165	26,8
13	32	M	92	177	29,4
14	34	M	69	184	20,4
15	50	M	94	183	28,1
16	40	M	75	181	22,9
17	49	M	69	169	24,1
18	52	M	84	177	26,8
19	32	M	115	194	30,6
20	42	M	87	186	25,4

Device and settings

Photos of the Kanmed Warmcloud body warming device with patient in right lateral decubitus and in standardised supine.



Pressure recordings

By means of a pressure sensor mattress device (FSA, Vista Medical Europe BV, The Netherlands), we recorded pressures generated in the lower back and pelvic area.

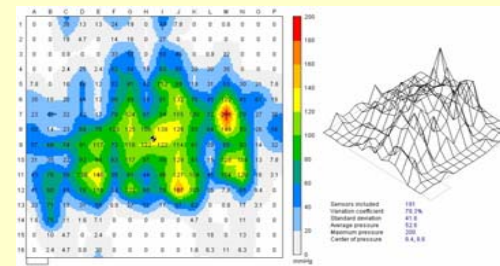


Fig. 1: Pressures recorded in standard operating table mattress setting

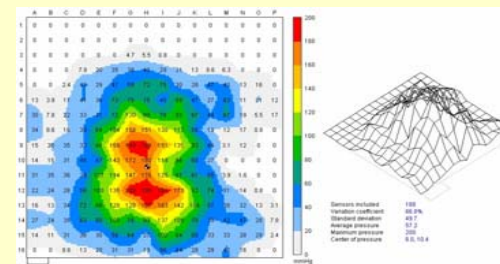


Fig. 2: Pressures recorded with the warming device superimposed on the operating table mattress using the maximum pressure settings of the device (60 mmHg)

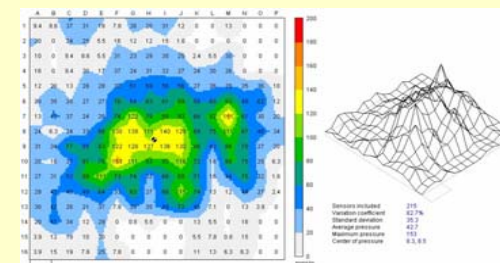
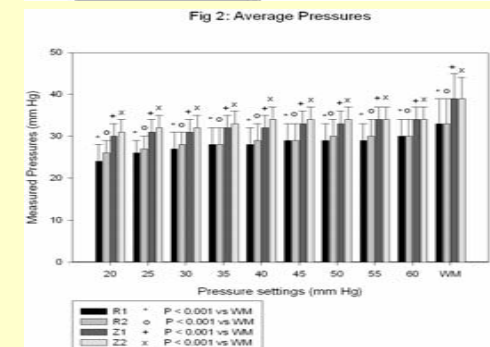
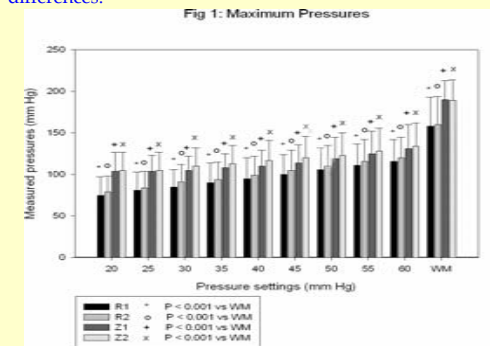


Fig. 3: Pressures recorded with the warming device superimposed on the operating table mattress using the minimum pressure settings of the device (20 mmHg)

Results

The obtained maximum and average pressure measurements are as shown in fig. 1 and fig. 2. Maximum and average pressure measurements showed equal statistical significant differences.



R1,R2: supine
Z1,Z2: right lateral decubitus

Conclusion

At all preset pressures and in all conditions, pressure measurements with the Kanmed Warmcloud® device were significantly lower than those obtained with the standard operating mattress alone. This characteristic can possibly prevent pressure sores in surgical procedures with protracted immobilisation of patients.