Evaluation of an alternative to forced air warming for temperature management in major spine surgery

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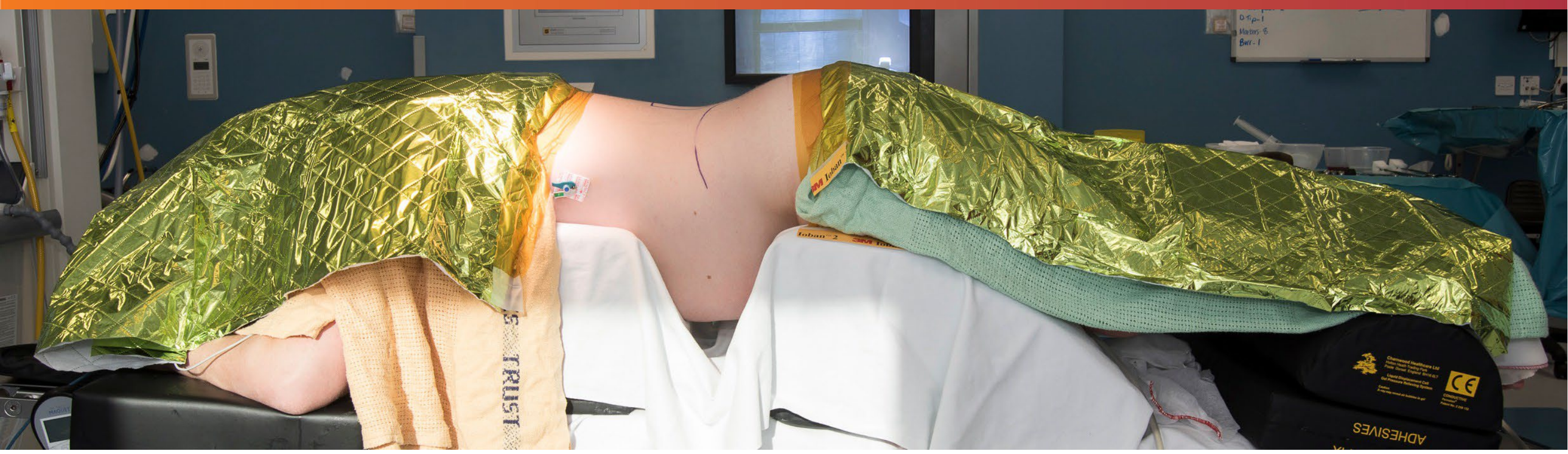

Background

Maintaining patient temperature above 36 degrees is crucial to reduce infection in surgical patients [1]. A forced air warming device (FAW) is routinely used to maintain temperature for spine surgery. Several studies have raised concerns about the potential for FAW devices to be a source of infection due to its effect on laminar flow and direct bacterial contamination of the machine's hose [2]. Resistive heating mattresses are an alternative that is difficult to use in prone spine surgery as the patient lies on two cushioned supports. We conducted a prospective trial of a new warming blanket (Thermarmour) and compared it to a similar cohort of patients who had a standard approach using FAW.

Method

50 consecutive patients undergoing various spine surgeries were studied. Precautions were taken to minimise exposure and heat loss during induction. Once turned prone on to cushions the patients exposed body areas outside the surgical field were covered with warm cloth blankets over which a Thermarmour warming blanket cut in two were placed, over the thorax and lower limbs. Thermarmour is a unique 6 layer laminate passive stand alone warming blanket manufactured by Interweave Textiles Ltd that is used to keep and maintain a patient in a normothermic state. Tympanic temperature was checked hourly and on arrival in recovery. The data obtained was compared to a similar consecutive cohort of patients using a FAW device. The primary outcome measure was % of patients with temperature above 36 degrees on arrival in recovery.

Results

The control group had 40 lumbar and 10 anterior cervical surgeries with an average procedure time of 163 minutes (67-270 min). 90% of the procedures took longer than 2 hours. The treatment group was similar with 43 lumbar surgeries, 6 anterior cervical surgeries and 1 anterior lumbar surgery. The average procedure time was 191 minutes (85-410min). In the control group 3/50 patients had temperatures below 36 degrees, however 5 patients were recorded as being hyperpyrexial (above 37.5 degrees) in recovery. In the treatment group temperature was measured as below 36 degrees on arrival in recovery in 4/50 patients. No patients had temperatures above 37.5 degrees.

Discussion

This service evaluation demonstrated that in spine surgery, the use of a warming blanket (Thermarmour) can achieve a high degree of compliance with the WHO standard for temperature management. The warming blankets are £13 cheaper than FAW and can save £8,000 in our institution.

References

1. Global guidelines for prevention of surgical site infection WHO 2016 116

2. Forced-air patient warming blankets disrupt unidirectional airflow A. J. Legg,A. J. Hamer Bone Joint J 2013;95-B:407–10.