The Robert Jones and Agnes Hunt Orthopaedic Hospital
NHS Foundation Trust

An evaluation of Thermarmour warming blanket for temperature management in hip replacement

Feb 2018 to October 2018

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Feb 2018

Contents

Project Number:

The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust

Service Evaluation Project Abstract

An evaluation of Thermarmour warming blanket for temperature management in hip arthroplasty surgery

Date of final report	Jan 15 19	**Division & Department**	Anaesthetics
Background	Maintaining temperature above 36 degrees is a crucial factor in the prevention of surgical infections. WHO recommends the use of warming devices in its 2016 publication of a global guideline for prevention of surgical site infections. NICE guidance from 2008 recommends the use of a forced air warming device and a resistive heating mattress. The current standard for hip replacement surgery at RJAH is to use a resistive heating mattress called Inditherm. This is often combined with warm cloth blankets that are placed on the top half of the body. Resistive heating mattresses work by heating only the parts that are directly in contact with the body. Since hip surgery patients are placed lateral, the area of the body that is in contact with the heated mattress is very limited. This may have an impact on the ability to adequately warm the patient. Thermarmour blankets have been shown to be effective in maintaining core temperature during spine surgery at RJAH.		
Aim and Objectives	Measure the impact of the current treatment i.e Inditherm on its own on temperature management in theatre. Compare the results of this analysis against a cohort of patients who have space blankets and Inditherm in primary hip replacement surgery		
Methodology	The baseline evaluation was conducted in a consecutive series of 24 patients undergoing primary hip arthroplasty surgery under a GA plus spinal. This control group was compared to another consecutive cohort of 25 patients undergoing hip arthroplasty under the same anaesthetic. In addition to the individual patients details, tympanic temperature was recorded on arrival in recovery. A temperature below 36 is defined as hypothermia All patients were covered with a warm cloth blanket on arrival in the anaesthetic room. Reasonable steps were taken to minimise areas and duration of exposure. After induction of anaesthesia, a Thermarmour blanket was placed over the upper half of the body on top of the warm cloth blanket. Intravenous fluids were warmed before administration.		
Key Results	In the control group temperature was measured as below 36 degrees on arrival in recovery in 4/24 patients. In comparison the standard treatment group temperature was recorded as below 36 in 1/25 patients. In the control group the temperature was recorded as above 36.4 in only 1 patient, whereas in the treatment group 9 patients had temperature greater than 36.4. Conclusion: The service evaluation has shown that the current management using Inditherm on its own, leads to an incidence of hypothermia in 16% of patients. The use of Thermarmour blankets in addition to Inditherm seems to lower this incidence to 4%. Patients in the treatment group also showed a trend towards higher core temperatures in recovery.		
Feedback	To be presented at anaesthetic audit meeting		
Actions	Continue to use Thermarmour blankets along with Inditherm in hip arthroplasty surgery		
Improvements / Outcomes	If this was a reaudit what improvements have been made since the original audit and what areas still require improvement		

Contact	Project Lead

Introduction

Maintaining temperature above 36 degrees is a crucial factor in the prevention of surgical infections. WHO recommends the use of warming devices in its 2016 publication of a global guideline for prevention of surgical site infections. NICE guidance from 2008 recommends the use of a forced air warming device and a resistive heating mattress.
The current standard for hip surgery at RJAH is to use a resistive heating mattress called Inditherm. This is often combined with warm cloth blankets that are placed on the top half of the body. Resistive heating mattresses work by heating only the parts that are directly in contact with the body. Since hip surgery patients are placed lateral, the area of the body that is in contact with the heated mattress is very limited. This may have an impact on the ability to adequately warm the patient. Thermarmour blankets have been shown to be effective in maintaining core temperature during spine surgery at RJAH.

Aims & Objectives

To study the effect of the current technique of using Inditherm and compare it to an alternative patient warming technique involving the use of space blankets with Inditherm to maintain normothermia in hip surgery.

The primary objective was to see if the new technique was effective in maintaining temperature on arrival in recovery above 36 degrees. We aim to compare this data from a similar cohort having a standard approach.

Sample

24 consecutive patients undergoing primary hip arthroplasty from January 2017 to November 2017 were compared to 25 consecutive patients from Jan 2018 to November 2018. The patients were identified using Bluespier.

Methodology

The project was discussed between 2 anaesthetic consultants who have a regular hip anaesthesia commitment. We decided to use patients belonging to two surgeons, Mr Phillips and Mr Whittaker

In addition to the individual patient's details, temperature on arrival in recovery was collected and recorded from the EPR

All patients were covered with a warm cloth blanket on arrival in the anaesthetic room.

Reasonable steps were taken to minimise areas and duration of exposure. Once the patient was anaesthetised a Thermarmour blanket was used to cover the upper torso. All intravenous fluids were warmed before administration.

The data was collected on a simple excel spreadsheet.

Patients were identified on Bluespier theatre lists and their clinical data was obtained from EPR . The first 10% of the data was crosschecked for accuracy by a second anaesthetist

The data was analysed using MS Excel.

The report was written by Dr John.

Results

All patients had the similar anaesthesia from one anesthetist comprising of a low dose spinal with a GA. In the control group temperature was measured as below 36 degrees on arrival in recovery in 4/24 patients. In the treatment group only 1 patient had temperatures below 36 degrees. Overall the patients in the treatment group had a trend towards a higher core temperature.

Discussion

This service evaluation has demonstrated that in hip arthroplasty, the use of a Thermarmour blanket with warm cloth blankets along with Inditherm can achieve a high degree of compliance with the WHO standard for temperature management. The current technique of using Inditherm in isolation was found to be inferior.

Conclusion

The service evaluation has shown that it is possible to maintain core temperatures above the standard of 36 degrees in over 96% of patient undergoing hip replacement surgery. The technique of using Thermarmour blankets in addition to Inditherm along with steps taken to prevent unnecessary heat loss has been shown to be highly effective.

Recommendations

We recommend the use of Thermarmour blankets as an adjunct to Inditherm in patients undergoing hip arthroplasty surgery.

Action Plan

This improvement plan should be drawn up when all the recommendations have been agreed and should be submitted at the same time as the Report It is intended to show what will be done and when, and who will be responsible for ensuring that the actions are carried out. It should also include a review date by which time all actions should have been completed and a re-audit date agreed.

Area Requiring Improvement	Actions Required	By Whom	By When

Review Method	Review Date	Review Group

Re-audit Date	Project Lead	Group

Appendix

Legg AJ, Hamer AJ. Forced-air patient warming blankets disrupt unidirectional airflow. Bone Joint J. 2013 Mar;95-B(3):407-10.
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