Resource impact report: Hypothermia: prevention and management in people having surgery (CG65)

Published: December 2016
Summary

This report looks at the resource impact of implementing the updated recommendations of NICE’s guideline on hypothermia: prevention and management in adults having surgery in England.

This report focuses on the new recommendation that we think will have the greatest resource impact nationally, and will need the most additional resources to implement or potentially generate the biggest savings. It is:

- If the patient’s temperature is 36.0°C or above, start active warming at least 30 minutes before induction of anaesthesia, unless this will delay emergency surgery. [new 2016] (recommendation 1.2.4)

Implementing the guideline may result in the following additional costs:

- increased cost of consumables for forced-air warming before anaesthetic is administered
- increased spending on inductive heating mattresses and resistive heating blankets.

Implementing NICE’s guideline may result in the following benefits and savings:

- fewer patients becoming hypothermic during surgery
- a better experience of care for patients
- a reduction in costs from adverse events caused by hypothermia.

The estimated annual saving of implementing this guideline for the population of England based on the resource impact assumptions is shown in table 1.

<table>
<thead>
<tr>
<th>Table 1 Resource impact by year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource impact (£’000)</td>
</tr>
</tbody>
</table>

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The resource impact template for this guideline helps organisations in England, Wales and Northern Ireland to change variables and estimate the impact locally. A sample calculation using this template showed that savings of around £7,400 are possible for a population of 100,000 from year 5 onwards once uptake reaches 50%, this is equivalent to an annual saving of £4 million for England.

Surgical services are commissioned by clinical commissioning groups (CCGs) and NHS England. Providers are NHS hospital trusts.
1 Introduction

1.1 The guideline offers best practice advice on preventing and managing hypothermia in adults having surgery.

1.2 This report discusses the resource impact of implementing the updated recommendations in NICE’s guideline on hypothermia: prevention and management in adults having surgery in England. It aims to help organisations plan for the financial implications of implementing this NICE guideline.

1.3 A resource impact template accompanies this report to help with assessing the resource impact at a local level in England, Wales or Northern Ireland.

1.4 We have considered direct costs and savings to the NHS and not those for the individual, the private sector or the not-for-profit sector. Any cost savings arising from a change in practice have been offset against the cost of implementing the change.

1.5 Surgical procedures are commissioned by CCGs and NHS England. Providers are NHS hospital trusts.

2 Background

2.1 This guidance is an update of NICE guideline CG65 (published April 2008). Only 1 of the updated recommendations is expected to have a resource impact and this report focuses on that recommendation. Approximately 1.8 million people undergo a surgery with general anaesthetic for longer than 30 minutes.

2.2 During surgery patients’ core body temperature will change as a result of the anaesthetic and the removal of clothing for surgery. If their temperature drops too low they can become hypothermic, which can increase the risk of an adverse event.
2.3 Hypothermia for the purpose of the guidance refers to a core body temperature below 36.0°C.

2.4 Active warming is a process that transfers heat to the patient. A variety of devices can be used for active warming. The guideline looked at the following devices:

- forced-air warming, in which hot air is blown under a special blanket placed over the patient
- heating mattresses, which have a heating element built in
- heating blankets, which have a heating element to keep the patient warm.

3 Assumptions made

3.1 The resource impact template makes the following assumptions:

- An indicative prevalence of perioperative hypothermia of 10% was used in the template and can be amended locally.
- The prevalence of hypothermia is reduced by 50% among people who are pre-warmed.
- Uptake of pre-warming is expected to increase from 10% in the first year to 50% in the fifth year.

3.2 The resource impact template can be used to amend unit costs to account for any local market forces factor. The assumed unit costs used in the template are shown in table 2.
Table 2 Unit costs used in template

<table>
<thead>
<tr>
<th>Cost per adverse event</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical wound infection (minor surgery)</td>
<td>£950</td>
</tr>
<tr>
<td>Surgical wound infection (major surgery)</td>
<td>£3,858</td>
</tr>
<tr>
<td>Transfusion</td>
<td>£24</td>
</tr>
<tr>
<td>Morbid cardiac event</td>
<td>£1,906</td>
</tr>
<tr>
<td>Mechanical ventilation</td>
<td>£1,144</td>
</tr>
<tr>
<td>Pressure ulcer</td>
<td>£1,064</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warming device cost per operation</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced-air warming (Bair Hugger)</td>
<td>£15.37</td>
</tr>
<tr>
<td>Heating mattress (Inditherm)</td>
<td>£1.25</td>
</tr>
<tr>
<td>Heating blanket (HotDog)</td>
<td>£1.60</td>
</tr>
</tbody>
</table>

1Based on reference costs
2Costs from NHS supply chain information, Inditherm and HotDog costs are based on 1,000 uses per year, Bair Hugger is a consumable cost

4 Significant resource impact recommendations

4.1 If the patient’s temperature is 36.0°C or above, start active warming at least 30 minutes before induction of anaesthesia, surgery, unless this will delay emergency surgery. [new 2016] (recommendation 1.2.4).

4.1.1 Bair Hugger blankets for pre-warming cost £15.37 per blanket and are single-use consumables. Inditherm heating mattresses cost £1.25 per use and HotDog heating blankets are £1.60 per use.
Table 3 Costs and savings of implementation

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cost of pre-warming (£'000)</td>
<td>0</td>
<td>2,600</td>
<td>5,200</td>
<td>7,700</td>
<td>10,300</td>
<td>12,900</td>
</tr>
<tr>
<td>Saving from reduction in adverse events (£'000)</td>
<td>0</td>
<td>-3,400</td>
<td>-6,800</td>
<td>-10,100</td>
<td>-13,500</td>
<td>-16,900</td>
</tr>
<tr>
<td>Resource impact</td>
<td>0</td>
<td>-800</td>
<td>-1,600</td>
<td>-2,400</td>
<td>-3,200</td>
<td>-4,000</td>
</tr>
<tr>
<td>Number of people who are warmed for 30 minutes prior to anaesthetic ('000)</td>
<td>0</td>
<td>180</td>
<td>370</td>
<td>550</td>
<td>740</td>
<td>920</td>
</tr>
</tbody>
</table>

Figure 1 Resource impact, uptake and costs by year

Benefits and savings

4.1.2 The benefits of pre-warming for adult patients who are to have surgery with general anaesthetic lasting more than 30 minutes are a reduction in hypothermia and associated adverse events, which will result in shorter length of hospital stay, reduced costs and improved patient experience of care.

4.1.3 Patient experience is improved by reducing the risk of adverse events and the number of patients who have hypothermia after
surgery, which can be an upsetting experience because of intense shivering.

5 Other considerations

5.1 The cost of implementing this recommendation will be met by providers however this should lead to improved outcomes and reduce length of stay.

5.2 Consultees felt that implementation of this guidance would present a logistical challenge to providers. When people undergoing surgery are not inpatients, it may be necessary to ask them to arrive earlier than normal for surgery so that pre-warming can be included in the pre-operative process. There will be costs incurred locally but these are not possible to quantify so providers are advised to take this into account when planning for the implementation of the guidance.

6 Implications for commissioners

6.1 Preventing hypothermia does not fall under a single programme budgeting category because the recommendation covers any surgery that lasts for 30 minutes or more with general anaesthetic.
About this resource impact report

This resource impact report accompanies the NICE guideline on hypothermia: prevention and management in adults having surgery and should be read in conjunction with it. See terms and conditions on the NICE website.

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