TITLE: Warmed Irrigation Fluids for Prostate-Related Surgical Procedures: Clinical and Cost-Effectiveness, and Guidelines

DATE: 25 March 2010

RESEARCH QUESTIONS:

1. What is the clinical effectiveness of using warmed irrigation fluids during surgical procedures for enlarged prostate?

2. What is the cost-effectiveness of using warmed irrigation fluids during surgical procedures for enlarged prostate?

3. What are the guidelines regarding the optimal temperature of irrigation fluids used during surgical procedures for enlarged prostate?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 2, 2010), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold), EuroScan, international health technology agencies, and a focused Internet search. The search was limited to human, English language articles without a date limit. No filters were applied to limit the retrieval by study type. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS:

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented...
first. These are followed by randomized controlled trials (RCTs), controlled clinical trials, observational studies, economic evaluations, and evidence-based guidelines. Four randomized controlled trials and two observational studies were identified pertaining to the clinical effectiveness of using warmed irrigation fluids during surgical procedures for enlarged prostate. No relevant health technology assessment reports, systematic reviews, meta-analyses, controlled clinical trials, economic evaluations, or evidence-based guidelines were identified. Only studies published more recently than 1990 and studies that incorporated a control group were included in the report. Additional information that may be of interest has been included in the appendix.

OVERALL SUMMARY OF FINDINGS:

Overall, the use of irrigation fluid warmed to a temperature of at least 35°C seems to decrease the change in core temperature\(^1,3,4,6\) and the incidence of hypothermia (temperature <36°C)\(^3\) in patients undergoing transurethral resection of the prostate (TURP). The use of warmed irrigation fluid may also decrease the incidence of urethral stricture in patients undergoing combined transurethral resection and vaporization of the prostate (CTURVP).\(^5\) One RCT, which used irrigation fluid warmed to 33°C, reported that the irrigation fluid temperature was not responsible for altering the core body temperature in patients undergoing TURP.\(^2\) For study details, see Table 1.

No economic information pertaining to the cost-effectiveness or guidelines for optimal temperature of fluids used during surgical procedures for enlarged prostate were identified.

<table>
<thead>
<tr>
<th>Author, date</th>
<th>Surgery type, sample size</th>
<th>Details of irrigation fluid</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| Okeke, 2007\(^1\)  | TURP N=120               | Group 1: irrigation and IV fluid at room temperature  
Group 2: warmed irrigation fluid (38°C), IV fluid at room temperature  
Group 3: warmed irrigation and IV fluid (38°C) | Mean decrease in body temperature was significantly less in group 2 versus group 1.  
The use of both warmed IV and irrigation fluid prevents perioperative hypothermia. |
| Jaffe et al., 2001\(^2\)  | TURP N=56               | Group 1: irrigation fluid at room temperature (70°F)  
Group 2: warmed irrigation fluid (91.5°F) | Irrigation fluid temperature is not a factor responsible for changes in core temperature. |
| Monga et al., 1996\(^3\)  | TURP N=28               | Group 1: irrigation fluid at room temperature (17°C)  
Group 2: irrigation fluid warmed in a fluid warmer (to 37°C)  
Group 3: irrigation fluid | Hypothermia was significantly less common in patients receiving warmed fluid.  
Method of fluid warming did not have any effect. |

\(^{1,3,4,6}\) References or additional notes for the findings are required.
<table>
<thead>
<tr>
<th>Study</th>
<th>Procedure(s)</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pit et al., 1996&lt;sup&gt;4&lt;/sup&gt;</td>
<td>TURP</td>
<td>Group 1: isothermic irrigation fluid</td>
<td>Group 2: fluid at room temperature (temperature not specified)</td>
<td>Isothermic irrigation fluid reduces level of hypothermia. Suggest performing all TURP with isothermic irrigation fluid.</td>
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<tr>
<td>Park et al., 2009&lt;sup&gt;5&lt;/sup&gt;</td>
<td>CTURVP</td>
<td>Group 1: irrigation fluid at room temperature</td>
<td>Group 2: warmed irrigation fluid (36°C)</td>
<td>Warmed irrigation fluid likely decreases the incidence of urethral stricture.</td>
</tr>
<tr>
<td>Mirza et al., 2007&lt;sup&gt;6&lt;/sup&gt;</td>
<td>TURP, TURBT, PCNL, and Cytoscopies</td>
<td>Irrigation fluid at room temperature</td>
<td>Warmed irrigation fluid (37°C)</td>
<td>Body temperature drop during surgery has multiple causes, including the amount of irrigation fluid used. Warmed irrigation fluid is beneficial and significantly reduces the degree of temperature drop.</td>
</tr>
</tbody>
</table>

°C = degrees Celsius, CTURVP = combined transurethral resection and vaporization of the prostate °F = degrees Fahrenheit, IV = intravenous, PCNL = percutaneous nephrolithotomy, TURP = transurethral resection of the prostate gland, TURBT = transurethral resection of bladder tumour
REFERENCES SUMMARIZED:

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses
No literature identified.

Randomized controlled trials


Controlled clinical trials
No literature identified.

Observational studies


Economic evaluations
No literature identified.

Guidelines and recommendations
No literature identified.
APPENDIX – FURTHER INFORMATION:

Observational studies without a control group


Review articles