
A safety checklist for transoesophageal echocardiography from the British Society of Echocardiography and the Association of Cardiothoracic Anaesthetists.

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A Safety Checklist For Transoesophageal Echocardiography From the British Society of Echocardiography and the Association of Cardiothoracic Anaesthetists.

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Abstract

The World Health Organisation (WHO) launched the Surgical Safety Checklist in 2008. The introduction of this checklist resulted in a significant reduction in the incidence of complications and death in patients undergoing surgery. Consequently the WHO Surgical Safety checklist is recommended for use by the National Patient Safety Agency for all patients undergoing surgery. However many invasive or interventional procedures occur outside the theatre setting and there are increasing requirements for a safety checklist to be used prior to such procedures. Transoesophageal echocardiography (TOE) is an invasive procedure and although generally considered to be safe, it carries the risk of serious and potentially life threatening complications. Strict adherence to a safety checklist may reduce the rate of significant complications during TOE. However the standard WHO Surgical Safety Checklist is not designed for procedures outside the theatre environment and therefore this document is designed to be a procedure specific safety checklist for TOE. It has been endorsed for use by the British Society of Echocardiography and the Association of Cardiothoracic Anaesthetists.

Key words
Transoesophageal echocardiography, Safety Checklist

Running Head
Safety checklist for transoesophageal echocardiography
Introduction
The number of surgical procedures being performed worldwide continues to increase. However despite the introduction of more advanced surgical techniques, there remains a significant risk of complications and death from surgical procedures.[1] Previous studies have shown that over 50% of surgical complications are avoidable.[2] In addition the importance of effective teamwork has been established and been shown to improve outcome.[3] Consequently the World Health Organisation (WHO) developed the Surgical Safety Checklist in 2008. Following the introduction of the WHO surgical Safety checklist, a large global multicentre study demonstrated a 40% reduction in complications and death following surgery.[4] The use of this checklist is now recommended for all patients undergoing surgery in the UK by the National Patient Safety Agency.

The rationale for a safety checklist in Transoesophageal echocardiography
A large number of invasive and interventional procedures are now performed outside the theatre environment. Many of the factors contributing to surgical complications and serious untoward incidents are present when performing invasive procedures and/or administrating sedation in other environments. Consequently there is an increasing requirement to utilise safety checklists for all invasive procedures. The indications, guidelines and protocols for transoesophageal echocardiography are well established [5, 6, 7]. Transoesophageal echocardiography is generally considered to be low risk but is occasionally associated with serious complications including
Adherence to the British Society of Echocardiography (BSE) guidance on TOE probe cleaning and disinfection (9) is important to reduce the risk of transmission of infection between patients. In addition the BSE has produced guidance on the use of safe sedation during TOE (10). The incidence of complications may be further reduced by implementation and adherence to a safety checklist together with effective team working. The current WHO Surgical safety checklist was designed for use within the theatre environment and hence is not directly relevant for use in TOE. This document produced by the British Society of Echocardiography and the Association of Cardiothoracic Anesthetists aims to outline a procedure specific safety checklist for TOE.

**How to use the checklist**

The form is designed to be printed on a double sided A4 page and can be filed in the patient medical records once it has been completed. However the form can be adapted for use locally or converted into an electronic format for use in an electronic patient record if necessary. In keeping with the format of the WHO safety checklist, the procedure has been broken down into 3 phases, corresponding to patient checks, immediately pre-procedure and post procedure checks. There is also an appendix to be completed if the TOE is being performed under general anaesthesia.

In order to complete the checklist effectively it is important that one member of the team assumes responsibility for completion of each stage of the checklist. This can be any member of the team. At the start, it is important that the patient verbally confirms their identity and the intended procedure in their own words. During the ‘Time Out’
phase, all team members should be present and should confirm their name and role. If the same team is unchanged during a list this stage can be performed at the start of the list but does not need repetition for each patient. Immediately pre-procedure the team should reconfirm that the correct patient is about to undergo the correct procedure and outline any anticipated difficulties for each patient. Once the procedure has been completed appropriate handover to the recovery team and any specific instructions should be given and all documentation completed.

**Conclusion**

It is anticipated that the use of this checklist will ensure a consistent process is followed when performing TOE. This will minimize the risk of avoidable complications that may occur during TOE.
References


Transoesophageal Echocardiogram Safety Checklist

Sign In: Patient Checks

<table>
<thead>
<tr>
<th>Patient verbally confirms procedure</th>
<th>☐</th>
<th>☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOE consent form completed</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Clinical records available</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Transport arrangements</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Indication/previous imaging reviewed</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

**Known Allergies**
- Yes ☐  No ☐
- Details: 

**Previous problems with sedation**
- Yes ☐  No ☐
- Details: 

**Relative contraindications**
- Yes ☐  No ☐
- Details: (active GI bleeding, dysphagia, surgery, liver disease, anticoagulation, dental)

**Patient fasted (>6 hours)**
- Yes ☐  No ☐
- Details: (Clear fluids can be taken up to 2 hours prior)

**Attach monitoring**
- Yes ☐  No ☐
- Details: 

**Equipment functioning normally**
- Yes ☐  No ☐
- Details: (ECG, Sats, BP, Echo)

**IV access established and checked**
- Yes ☐  No ☐
- Details: 

**Medication available (sedation/reversal)**
- Yes ☐  No ☐
- Details: 

**TOE probe clean and ready for use**
- Yes ☐  No ☐
- Details: 

Decontamination patient’s notes stickers to be attached below if applicable:

---

Time Out: Immediately Pre-Procedure

**All members confirm name and role**
- Yes ☐  No ☐
- Details: 

**Verbally confirm patient and procedure**
- Yes ☐  No ☐
- Details: 

**Any anticipated difficulties**
- Yes ☐  No ☐
- Details: 

**TOE operator: any sedation or patient issues**
- Yes ☐  No ☐
- Details: 

**Sonographer: any equipment issues**
- Yes ☐  No ☐
- Details: 

Nursing team: any equipment issues

---

**Sign Out: Post Procedure**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure note documented</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>All images acquired and stored</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>Any complications</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>Probe intact</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>Post procedure observations satisfactory</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>Any equipment problems to be addressed</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
<tr>
<td>Specific instructions to recovery team</td>
<td>☐</td>
<td>☐</td>
<td>………………</td>
</tr>
</tbody>
</table>

**Drugs administered**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Yes</th>
<th>No</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>☐</td>
<td>☐</td>
<td>Dose …………… Given by ……………</td>
</tr>
<tr>
<td>Xylocaine</td>
<td>☐</td>
<td>☐</td>
<td>Dose …………… Given by ……………</td>
</tr>
<tr>
<td>Flumazenil</td>
<td>☐</td>
<td>☐</td>
<td>Dose …………… Given by ……………</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>Dose …………… Given by ……………</td>
</tr>
</tbody>
</table>

**Team Members**

<table>
<thead>
<tr>
<th>Role</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOE operator</td>
<td>……………</td>
</tr>
<tr>
<td>Lead sonographer</td>
<td>……………</td>
</tr>
<tr>
<td>Assistant</td>
<td>……………</td>
</tr>
<tr>
<td>Nurse</td>
<td>……………</td>
</tr>
<tr>
<td>Other</td>
<td>……………</td>
</tr>
</tbody>
</table>

**General Anaesthesia Appendix**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the anaesthetic equipment check complete</td>
<td>☐</td>
<td>☐</td>
<td>………………………………</td>
</tr>
<tr>
<td>Is there a difficult airway/risk of aspiration</td>
<td>☐</td>
<td>☐</td>
<td>………………………………</td>
</tr>
<tr>
<td>Notes</td>
<td>………………………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the patients ASA grade</td>
<td>………………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any specific anaesthetic concerns</td>
<td>☐</td>
<td>☐</td>
<td>………………………………</td>
</tr>
<tr>
<td>Notes</td>
<td>………………………………</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the correct monitoring available</td>
<td>☐</td>
<td>☐</td>
<td>………………………………</td>
</tr>
<tr>
<td>Resuscitation equipment available</td>
<td>☐</td>
<td>☐</td>
<td>………………………………</td>
</tr>
<tr>
<td>Additional questions</td>
<td>………………………………</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>