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| **Quality Metric TEE 2: Transesophageal Echocardiogram Adverse Events** | |
| **Measure Description:** Identifying transesophageal echocardiogram (TEE) with adverse events. | |
| Numerator | Number of TEEs with adverse events identified during a TEE assessment.  Please see appendix for granular details to be tracked internally. |
| **Denominator** | All TEE assessment in the hospital. |
| **Period of Assessment** | Quarterly |
| **Sources of Data** | The operator within several day after TEE probe is removed or any adverse events recognized. |
| **Definitions**  **Definition of major and minor adverse events:**  Major adverse events:   1. Endotracheal dislodgement 2. Esophageal tear 3. Oral mucosa / GI injury that requires treatment 4. Deterioration of vital signs monitoring that requires treatment   Minor adverse events:   1. Teeth dislodgement 2. Oral mucosal /GI injury 3. Transient deterioration of vital signs monitoring (loss of arterial BP, dampening of arterial BP, desaturations) | |
| **Rationale**  To decrease complications rates associated with TEE use in the hospital setting and to improve safety use of TEE in pediatric and congenital heart disease patients.  Quality review is required of echocardiography laboratories for accreditation. | |
| **Clinical Recommendation(s)** | |
| ACC/AHA guidelines  [Spertus JA](file:///C:\pubmed%3fterm=Spertus%20JA%5bAuthor%5d&cauthor=true&cauthor_uid=21070935), et al; [ACCF/AHA Task Force on Performance Measures](file:///C:\pubmed%3fterm=ACCF\AHA%20Task%20Force%20on%20Performance%20Measures%5bCorporate%20Author%5d). ACCF/AHA new insights into the methodology of performance measurement: a report of the American College of Cardiology Foundation/American Heart Association Task Force on performance measures. J Am Coll Cardiol. 2010 Nov 16;56(21):1767-82  ASE/Other guidelines:  Ayres NA, Miller-Hance W, Fyfe DA, Stevenson JG, Sahn DJ, Young LT, Minich LL, Kimball TR, Geva T, Smith FC, Rychik J. Indications and guidelines for performance of transesophageal echocardiography in the patient with pediatric acquired or congenital heart disease: report from the task force of the Pediatric Council of the American Society of Echocardiography. [J Am Soc Echocardiogr.](http://www.ncbi.nlm.nih.gov/pubmed/15637497) 2005 Jan;18(1):91-8.  [Kallmeyer IJ](http://www.ncbi.nlm.nih.gov/pubmed/?term=Kallmeyer%20IJ%5BAuthor%5D&cauthor=true&cauthor_uid=11323333), [Collard CD](http://www.ncbi.nlm.nih.gov/pubmed/?term=Collard%20CD%5BAuthor%5D&cauthor=true&cauthor_uid=11323333), [Fox JA](http://www.ncbi.nlm.nih.gov/pubmed/?term=Fox%20JA%5BAuthor%5D&cauthor=true&cauthor_uid=11323333), [Body SC](http://www.ncbi.nlm.nih.gov/pubmed/?term=Body%20SC%5BAuthor%5D&cauthor=true&cauthor_uid=11323333), [Shernan SK](http://www.ncbi.nlm.nih.gov/pubmed/?term=Shernan%20SK%5BAuthor%5D&cauthor=true&cauthor_uid=11323333). The safety of intraoperative transesophageal echocardiography: a case series of 7200 cardiac surgical patients. [Anesth Analg.](http://www.ncbi.nlm.nih.gov/pubmed/?term=The+Safety+of+Intraoperative+Transesophageal+Echocardiography%3A+A+Case+Series+of+7200+Cardiac) 2001 May;92(5):1126-30. | |
| **Attribution** | |
| This measure should be reported by any personnel who performed TEE. | |
| **Method of Reporting** | |
| Adverse events can be found in a log in the echocardiography laboratory and can help capture late adverse events that occur days after the TEE is performed.  Adverse events can be reported by any caregiver.  Appendix below to help facilitate reporting by personnel who perform TEE.  **Implementation strategies:**   * **Full Review** – 100% of pediatric cardiac surgical cases * **Sample Review** – 100 cases per year (20 consecutive surgical cases per quarter) | |
| **Challenges to Implementation** | |
| Recognition of adverse events several days later after placement of TEE probe.  No documentation of adverse events after TEE use and no documentation in electronic platform after TEE are performed.  Rare events but this metric is meant to serve the echocardiography laboratory to document any adverse events that maybe related to the TEE procedure or the inappropriate use of TEE probes. | |
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**Appendix**

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| **Name:** |  | | | | | |
| **DOB:** |  | | | | | |
| **Age:** |  | | | | | |
| **Weight:** |  | | | | | |
| **Date of Study:** |  | | | | | |
| **Performing TEE personnel** |  | | | | | |
| **TEE Adverse Events?** | **Yes □** | | | **No □** | | |
| **Location:** | **OR □** | **Cath lab □** | **ICU □** | | **ER □** | **Other □** |
| **Placement:** | **Anesthesiologist □** | | | **Cardiologist □** | | |
| **Was history obtained to evaluate esophageal problems?** | **Yes □** | | | **No □** | | |
| **Appropriate TEE probe size?** | **Yes □** | | | **No □** | | |
| **Endotracheal dislodgement** | **Yes □ = 2 points** | | | **No □** | | |
| **Esophageal tear** | **Yes □ = 2 points** | | | **No □** | | |
| **Oral mucosa / GI injury that requires treatment** | **Yes □ = 2 points** | | | **No □** | | |
| **Deterioration of vital signs monitoring that requires treatment** | **Yes □ = 2 points** | | | **No □** | | |
| **Teeth dislodgement** | **Yes □ = 1 point** | | | **No □** | | |
| **Oral mucosal / GI injury** | **Yes □ = 1 point** | | | **No □** | | |
| **Transient deterioration of vital signs monitoring (loss of arterial BP, dampening of arterial BP, desaturations)** | **Yes □ = 1 point** | | | **No □** | | |
| **Total points out of 11 points** |  | | |  | | |