# Thoracic Epidural Protocol

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## Background

Thoracic and open abdominal surgeries are commonly performed at UMC. Patients undergoing these procedures often develop significant postoperative pain and try to limit their pain by taking shallow breaths and avoiding coughing. This can lead to respiratory complications such as atelectasis and pneumonia, increasing morbidity and mortality.

Thoracic epidurals demonstrate superior efficacy in pain control compared to opioids, allowing these patients to have normal respiratory function and avoid the above complications.

## Objectives

Our goal was to institute an easily accessible and concise protocol that all anesthesiology residents could use as a reference for the placement, initiation, and follow-up of thoracic epidurals in postoperative patients.

## Methods

The Written protocol included:

- Information about the supplies that would be needed prior to placement of the epidural.
- Important tips regarding safe epidural placement (i.e. knowing the patient's anticoagulation status and platelet count prior to epidural placement).
- Instructions and screenshots demonstrating how to use the pre-existing epidural order set in Epic.
- Information on the epidural dot-phrase and what information should be gathered on daily follow-up of the patient.

The written protocol was uploaded to the LSU anesthesiology Sharepoint, a filesharing resource that all the LSU anesthesiology residents have access to. An email regarding the new protocol was sent to all LSU residents to make them aware.

## Methods Cont.

Daily follow up of patients with thoracic epidurals was the responsibility of the resident on call. To ensure appropriate daily follow-up on inpatients with thoracic epidurals, these patients were placed on a shared patient list in Epic titled "Acute Pain/Epidural List". The last names of patients with thoracic epidurals were also placed on a white board in the anesthesiology office next to the anesthesia resident call phone.

To ensure that all daily epidural follow-up notes documented important information regarding the patient's epidural, a dot-phrase (.epidural) was created in Epic to be used as a template.

This template required information such as:

- The rate of infusion and the type of local anesthetic/opioid being infused
- Catheter depth
- Assessment of the insertion site for any signs of infection or unsecured catheter
- The patients sensory/motor level
- The patients pain score
- If the patient is on any anticoagulation
- What day the epidural catheter should be removed.

## Results

To assess resident's familiarity and utilization of the thoracic epidural protocol as well as the epidural dot-phrase, a survey was created which all LSU anesthesiology residents were eligible to fill out.
Thirteen (68%) of residents responded to the survey. Out of the 13 responses, 6 people reported that they have placed a thoracic epidural. Review of survey data demonstrated that only 2 out of 6 residents who placed a thoracic epidural were aware of the protocol upon placement.
Regarding thoracic epidural follow-up, 9 residents reported participation in rounds, 8 of which used the dot-phrase created on Epic to document the appropriate measures for thoracic epidurals. The survey results are summarized in the table below.

| Survey Questions | Yes | No |
|---|---|---|
| Question 1: Are you familiar with the thoracic epidural protocol?<br>- If yes, have you read the protoocol? | 7 (53.8%)<br><br>6 (85.7%) | 6 (46.2%) |
| Question 2: Have you ever placed a thoracic epidural at UMC? | 6 (42%) | 7 (53.8%) |
| Question 3: Have you rounded on a thoracic epidural at UMC?<br>- Did you use the .epidural dot-phrase when rounding on thoracic epidural patients? | 9 (69%)<br><br>8 (88.9%)* | 4 (30%) |

**Table 1:** Survey responses (* percentage calculated with the denominator as the number of individuals that selected "yes" on the previous question.

## Conclusions

Based on initial survey results, only two residents used the thoracic epidural protocol when initially placing an epidural. This low utilization of the protocol could be due to a lack of resident awareness of the protocol's existence or could be due to upper-level residents having prior knowledge of how to place, order, and maintain thoracic epidurals, negating the need to use the protocol as a reference.

We predict that the awareness of the thoracic epidural protocol will increase following this study in large part due to the distribution of our survey assessing resident's familiarity and utilization of the thoracic epidural protocol.

The epidural dot-phrase has an 88.9% utilization rate based on survey respondents for the follow-up of epidurals postoperatively. This number is reassuring and demonstrates that the residents are using the proper measures to document epidural follow-up.

We recommend that anesthesia providers at UMC attempt to identify appropriate candidates for thoracic epidurals including but not limited to thoracic surgery cases, patients with large abdominal incisions, and trauma patients with extensive rib fractures. Once an appropriate patient has been identified, our written protocol should be used as a standardized guide for placement and initiation of thoracic epidurals, and our epidural dot-phrase should be used as a template for daily evaluation of patients who have a thoracic epidural in place. The regional anesthesia resident should be responsible for updating the protocol as guidelines for epidural placement and management are subject to change with emerging research.