The majority of cases of pleuropneumonia can be successfully managed with intravenous antimicrobials, anti-inflammatories, and thoracic drainage with chest tubes. However, horses with chronic pleuropneumonia or thoracic abscessation unresponsive to medical management are candidates for thoracotomy. Thoracotomy is the most effective method to remove the large amounts of fibrin, purulent debris, and abscessed lung parenchyma associated with chronic pleuropneumonia. We have found that in our hospital that once the lung has adhered to the thoracic wall (enough to prevent the development of pneumothorax) thoracotomy can an effective method of speeding the resolution of pleuropneumonia when compared to medical management alone.

Surgical technique: Thoracotomy is generally performed with the horse standing. Prior to surgery ventilatory support should be provided. This includes the placement of a nasotracheal tube and insufflation of oxygen. If needed an oxygen demand valve can be attached to the nasotracheal tube to assist ventilation. If pneumothorax of the opposite hemithorax is possible a chest tube should be placed in the dorsal lung field and connected to a pleural evacuation device such as a Pleurovac. Once ventilatory support has been established the horse is sedated with IV detomidine hydrochloride and butorphanol tartrate. If a large amount of pleural fluid is expected to be removed during thoracotomy IV fluids are recommended to prevent cardiovascular shock. Currently there are two methods of thoracotomy described in the horse: rib resection or lateral thoracotomy without rib resection. Rib resection is preferred when a larger opening is required to evacuate large quantities of fibrin and purulent debris. While lateral thoracotomy without rib resection has been recently described by Hilton et al (Vet Surg 39(2010):847-855) with good results. Prior to either procedure the affected hemithorax should be examined with ultrasonography to aid in localization of the thoracotomy site and to confirm that the lung is adhered to the thoracic wall. This is important to determine because of the risk of pneumothorax associated with inadequate adhesion formation between the thoracic wall and the lung. Ideally the thoracotomy site should be centered over the middle of the diseased portion of the pleural space. In cases where lung adherence to the thoracic wall cannot be confirmed with ultrasonography thoracoscopy can be performed prior to thoracotomy. Thoracoscopy can also be useful in positioning the thoracotomy site over the appropriate rib or rib space.

Rib resection: Local anesthesia with lidocaine or mepivacaine is provided by injecting the anesthetic directly over the rib to be resected. The incision should be made directly over the rib for a distance of 10-20 cm depending on how much of the rib is to be removed. At least 10 cm is recommended for most all cases. The periosteum of the rib is incised and reflected with a periosteal elevator. The rib can either be transected with obstetrical wire or an oscillating saw. The author prefers to use an oscillating saw. Once the rib has been transected it is grasped and manually fractured at the costochondral junction and removed. The periosteum on the medial aspect is incised to gain access to the pleural space.

Lateral thoracotomy: Lateral thoracotomy without rib resection is performed by instilling local anesthetic on the cranial aspect of the rib centered on the diseased portion within the pleural
A 10-20 cm incision is made over the cranial aspect of the rib to avoid the intercostal vessels on the caudal aspect of the rib. The intercostal muscles are incised to reach the pleura. If desired a portion of the intercostal muscles can be excised to aid access to the pleural space. The pleura is incised and pleural cavity is entered.

Once the pleural space has been entered purulent fluid is allowed to drain. Fibrin and purulent debris can then be manually removed. It is important that adhesions between the lung and pleural wall not be disrupted to avoid pneumothorax. Once all debris and exudate has been manually removed lavage can be performed with a fluid pump. Once manual evacuation and thoracic lavage has been performed a stent bandage is placed over the thoracotomy site.

Experience with rib resection and lateral thoracotomy has shown that rib resection provides a larger opening which makes manual debridement easier to perform. Lateral thoracotomy without rib resection leaves a smaller opening and can make manual debridement difficult to perform. Either method of thoracotomy is allowed to heal via second intention. Frequent follow-up ultrasonography should be performed to make sure additional “pockets” of fluid accumulation do not occur. If this does occur it may become necessary to place a thoracostomy tube for drainage. The wound healing for both techniques is allowed to proceed by second intention healing. Occasionally, fistulous tracts develop following thoracotomy and can occur secondary to osteomyelitis of the proximal aspect of rib resection or chronic, necrotic lung infection following healing of the thoracotomy site. In most instances this is not clinically significant but can be annoying to owners. Osteomyelitis of the rib has to be treated with surgical debridement. Chronic drainage from infected lung or pleura can be evaluated with ultrasonography, contrast radiography, or evaluation of the draining tract with an endoscope.