Table 2. Evidentiary Table 1997-2011

Author(s)	Year	Title/Reference	Class	Antibiotics/ Placebo	n =	Duration	PNA (%)	Empyema (%)	Synopsis
Aguilar et al.[16]	1997	Posttraumatic empyema. Risk factor analysis. *Arch Surg.* 1997;132:647-650.	III	No patients received presumptive antibiotics. 40 patients received antibiotics for other reasons at time of chest tube placement	544 40			4%	Retrospective evaluation of risk factors associated with the development of empyema. Predictive factors found were retained HTX, pulmonary contusion and multiple chest tube placements. Antibiotics were not associated with a reduced risk of developing empyema, however, no patient received antibiotics prophylactically to prevent empyema.
Mandal et al.[17]	1997	Posttraumatic empyema thoracis: a 24-year experience at a major trauma center. *J Trauma.* 1997;43:764-771.	III	No pts received presumptive antibiotics	5,474			1.6%	Retrospective review of outcomes in patients who developed posttraumatic empyema. Prophylactic antibiotics were not given for chest tube placement alone, but for other indications: soft tissue chest wall shotgun injuries, emergent/urgent thoracotomy, pulmonary contusion with hemoptysis, associated long bone fractures and patients requiring exploratory laparotomy. They conclude that due to the low incidence of posttraumatic empyema, routine antibiotics prophylaxis is not warranted.
Gonzalez et al.[15]	1998	Role of prophylactic antibiotics for tube thoracostomy in chest trauma. *Am Surg.* 1998;64:617-620; discussion 620-621.	I	Cefazolin 1gm IV q8h Albumin 1 gm IV q8h	71 68	Until chest tube removed Until chest tube removed	0% 3%	0% 3%	Prospective, randomized, double-blind study which enrolled a total of 139 patients (mostly penetrating). Study included only patients with ISS 9 or 10 (isolated chest injuries). Pre-procedural antibiotics reduced incidence of infectious complications. All patients were given antibiotics until chest tube removed. Authors conclude significant reduction in infectious complications, however this is based on combining both empyema and pneumonia.

Maxwell et al.[14]	2004	Use of presumptive antibiotics following tube thoracostomy for traumatic hemo-pneumothorax in the prevention of empyema and pneumonia—a multicenter trial. *J Trauma.* 2004;57:742-748; discussion 748-749.	I	Cefazolin 1gm IV q8h Placebo	77 76 71	Abx until chest tube removal Abx for 24 hours and then crossed over to placebo group Placebo for entire duration of chest tube	6.5% 8% 4%	0% 2.6% 5.6%	Multicenter, prospective, randomized, double-blind study comparing cefazolin for the entire duration of tube thoracostomy versus placebo. Use of presumptive antibiotics did not reduce the incidence of empyema or pneumonia, however, the study was stopped early because of problems accruing patients, and thus, isunderpowered. Study found that groups receiving antibiotics had higher rates of resistant organisms.
Eren et al.[18]	2008	The risk factors and management of post-traumatic empyema in trauma patients. *Injury*. 2008;39:44-49.	III	No patients received presumptive antibiotics unless emergency thoracotomy, soft-tissue destruction of chest wall, or associated long bone fractures.	2261	Unknown	Unknown	3.1%	Retrospective study of blunt and penetrating chest trauma patients requiring chest tube. Duration of chest tube, ICU LOS, pulmonary contusion, retained hemothorax, and exploratory laparotomy were independent risk factors for post-traumatic empyema. Use of prophylactic antibiotics may be recommended for patients with these risk factors.