

Table 1: Definitions of Terminology Used in Patients Undergoing EDT

emergency department thoracotomy (EDT) = thoracotomy performed in the emergency department for patients arriving *in extremis*; this should not be used interchangeably with nor confused with a thoracotomy that is performed in the operating room (OR) or intensive care unit (ICU) within hours after injury for delayed physiologic deterioration.

"no signs of life" = no detectable blood pressure, respiratory or motor effort, cardiac electrical activity, or pupillary activity (i.e., clinical death).

"no vital signs" = no palpable blood pressure, but demonstrate electrical activity, respiratory effort or pupillary reactivity.

and colleagues [5] virtually eliminated the practice of open-chest resuscitation for medical cardiac arrest. The use of emergent thoracotomy following trauma also declined as less invasive therapeutics, such as pericardiocentesis for cardiac tamponade, were preferred [6]. In the late 1960s, the pendulum toward emergent thoracotomy swung again, as refinements in cardiothoracic surgical techniques salvaged patients with life-threatening chest wounds [7] and use of temporary thoracic aortic occlusion saved patients with exsanguinating abdominal hemorrhage [8,9].

In the past three decades there has been a significant clinical shift in the performance of EDT. While the use of EDT in resuscitation of the patient in profound shock but not yet dead is unquestionable, its indiscriminate use, renders it a low-yield and high-cost procedure [10-12]. During

this swing of the pendulum, several groups have attempted to elucidate the clinical guidelines for EDT [13,14]. In 1979, we conducted a critical analysis of 146 consecutive patients undergoing EDT and suggested a selected approach to its use in the moribund trauma patient, based on consideration of the following variables: (1) location and mechanism of injury, (2) signs of life at the scene and on admission to the ED, (3) cardiac electrical activity at thoracotomy, (4) systolic blood pressure response to thoracic aortic cross-clamping [12].

To validate these clinical guidelines, we established a prospective study in which these data were carefully documented in all patients at the time of thoracotomy. In 1982, the first 400 patients were analyzed [11]. A more recent review has summarized the data on 868 patients who have undergone EDT at the Denver Health Medical

Table 2: Survival Following Emergency Department Thoracotomy in Adults

Injury Pattern	Shock	No Vital Signs	No Signs Of Life	Total
<u>Cardiac</u>				
Denver (57)	3/9 (33%)	0/7 (0%)	1/53 (2%)	4/69 (6%)
Detroit (58)	9/42 (21%)	3/110 (3%)		12/152 (8%)
Johannesburg (59)				13/108 (12%)
Los Angeles (60)	2/5 (40%)	6/11 (55%)	2/55 (4%)	10/71 (14%)
New York (61)	7/20 (35%)	18/53 (32%)	0/18 (0%)	24/91 (26%)
San Francisco (62)	18/37 (49%)	0/25 (0%)		18/63 (29%)
Seattle (63)	4/11 (36%)	11/47 (23%)		15/58 (26%)
Overall	43/124 (35%)	47/254 (19%)	4/126 (3%)	96/612 (16%)
<u>Penetrating</u>				
Denver (15)	19/78 (24%)	14/399 (4%)		33/477 (7%)
Detroit (58)	9/42 (21%)	3/110 (3%)		12/152 (8%)
Houston (64)	14/156 (9%)	18/162 (11%)		32/318 (10%)
Indianapolis (65)	3/7 (43%)	1/50 (2%)	0/80 (0%)	4/137 (3%)
Johannesburg (59)	31/413 (8%)	10/149 (7%)	1/108 (1%)	42/670 (6%)
Los Angeles (60)	2/5 (40%)	6/11 (55%)	2/55 (4%)	10/71 (14%)
New York (66)	8/32 (25%)	8/77 (10%)	0/25 (0%)	16/134 (12%)
Oakland (67)	8/24 (33%)		2/228 (1%)	10/252 (4%)
San Francisco (62)				32/198 (30%)
Seattle (63)	4/11 (36%)	11/47 (23%)		15/58 (25%)
Washington (68)	7/13 (54%)	3/47 (6%)		10/60 (17%)
Overall	145/1007 (14%)	100/1252 (8%)	6/615 (1%)	283/2986 (10%)
<u>Blunt</u>				
Denver (15)	4/86 (5%)	4/311 (1%)		8/397 (2%)
Houston (64)	0/42 (0%)	0/27 (0%)		0/69 (0%)
Johannesburg (59)	1/109 (1%)	0/39 (0%)	0/28 (0%)	1/176 (1%)
San Francisco (62)				1/60 (2%)
Seattle (63)				1/88 (1%)
Overall	5/237 (2%)	4/377 (1%)	0/28 (0%)	11/790 (1.4%)