

# What Are the Costs of Trauma Center Readiness? Defining and Standardizing Readiness Costs for Trauma Centers Statewide

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Trauma center readiness costs are incurred to maintain essential infrastructure and capacity to provide emergent services on a 24/7 basis. These costs are not captured by traditional hospital cost accounting, and no national consensus exists on appropriate definitions for each cost. Therefore, in 2010, stakeholders from all Level I and II trauma centers developed a survey tool standardizing and defining trauma center readiness costs. The survey tool underwent minor revisions to provide further clarity, and the survey was repeated in 2013. The purpose of this study was to provide a follow-up analysis of readiness costs for Georgia's Level I and Level II trauma centers. Using the American College of Surgeons *Resources for Optimal Care of the Injured Patient* guidelines, four readiness cost categories were identified: Administrative, Clinical Medical Staff, Operating Room, and Education/Outreach. Through conference calls, webinars and face-to-face meetings with financial officers, trauma medical directors, and program managers from all trauma centers, standardized definitions for reporting readiness costs within each category were developed. This resulted in a survey tool for centers to report their individual readiness costs for one year. The total readiness cost for all Level I trauma centers was \$34,105,318 (avg \$6,821,064) and all Level II trauma centers was \$20,998,019 (avg \$2,333,113). Methodology to standardize and define readiness costs for all trauma centers within the state was developed. Average costs for Level I and Level II trauma centers were identified. This model may be used to help other states define and standardize their trauma readiness costs.

**I** NJURY IS THE leading cause of death in the United States for individuals between the ages of 1 and 44 years.<sup>1</sup> This results in the nation spending more than \$400 billion annually to cover cost associated with trauma care.<sup>2, 3</sup> According to the Centers for Disease Control and Prevention, in 2013, the total lifetime medical and work loss cost of injuries in the United States was \$671 billion.<sup>4</sup> Therefore, trauma continues to be an urgent public health concern.<sup>5</sup> In an effort to meet this public healthcare need for organized trauma care, trauma centers proliferated in the 80s; however, by the end of the decade, development stalled, and trauma centers started to close secondary to economic

challenges.<sup>6-8</sup> These challenges have persisted, as healthcare reform has evolved over the past two decades with different payment reforms from fee-for-service to value-based supplemental payments to bundled payments.<sup>9</sup> Despite changes in payment formulas, trauma centers continue to be under funded.<sup>10</sup> Trauma center costs are comprised of two large categories: treatment costs and readiness costs.

Treatment costs for the trauma patient are relatively well defined by standardized hospital cost accounting systems because well established methodology enables severity adjusted comparisons of such costs among trauma centers. Readiness costs, however, are extraordinary cost over and above patient treatment costs that are not normally allocated to trauma patient care by hospital allocation formulas. These costs are required by trauma center regulations to maintain essential infrastructure and capacity to

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provide emergent services on a 24/7 basis. These are nonpatient care costs which the hospital would not have to pay if it were not a trauma center and are incurred before the first patient is seen or treated. Although the trauma center regulations or requirements for readiness are well described in the American College of Surgeons' *Resources for Optimal Care of the Injured Patient* manual, associated cost is not. There is no national consensus on the cost of these readiness requirements.<sup>4</sup>

In 2010, the Georgia Trauma Commission collaborated with all trauma centers throughout the state to develop a survey tool. This tool was based on the requirements for trauma center designation in the *Resources for Optimal Care of the Injured Patient* and provided standardized cost definitions for each regulation. This study revealed that the average readiness cost for a Level I trauma center was \$5,600,372, and the average cost for a Level II trauma center was \$1,956,966.<sup>10</sup>

The survey tool underwent minor revisions to provide further clarity, and the survey was repeated in 2013. The purpose of this study was to provide a follow-up analysis of readiness costs for Georgia's Level I and Level II trauma centers.

### Methods

In the summer of 2009, the Georgia Trauma Care Network Commission established a readiness cost evaluation subcommittee charged with developing a rigorous and transparent methodology to measure the financial requirements for starting and maintaining a state designated trauma center. A time line was established to keep the group on task. The expectation was to provide consensus definitions and common understanding for the reporting of readiness cost. The categories of cost inclusion criteria were based on the American College of Surgeons' *Resources for Optimal Care of the Injured Patient* 2006 to assure that only required costs were included. Several conference calls and meetings of the subcommittee were held, and a draft tool was developed.

To reach a broad audience and begin the process of refining the readiness cost tool, a webinar was scheduled in December of 2009, with all key stakeholders including hospital financial officers and trauma program directors to introduce the proposed readiness inclusion criteria and definitions. A brief review of the background on readiness determination was provided, and each of the categories and definitions were reviewed. Four main components of readiness cost emerged: Administrative, Clinical Medical Staff, In-House Operating Room (OR), and Education/Outreach. At the conclusion of the webinar, stakeholders were directed to take the

content and definitions proposed back to their respective trauma centers for review and discussion. A follow-up face-to-face meeting was scheduled for January 2010.

During the face-to-face meeting, stakeholders came to a consensus on the definitions for each of the proposed readiness criteria. A survey tool was developed for use by all designated Level I and II trauma centers. Subcategories were developed under the main headings of Administrative, Clinical Medical Staff, In-House OR, and Education/Outreach. Care was taken to ensure all parties who would be completing the survey clearly understood each definition and how to measure cost.

#### *The Survey Tool*

##### Administrative

The administrative section included cost for various staff members such as senior administrators, trauma program managers, outreach coordinators, case managers, injury prevention coordinators, performance improvement coordinators, trauma registrars, and administrative supportive staff. The standard calculation for these staff positions was salary and benefits X per cent of time dedicated to trauma. It was important to emphasize that for services that cover multiple specialties such as case management only time spent working with trauma patients was to be included.

In addition to the positions listed previously, trauma medical directors, emergency department medical directors, intensive care unit surgical directors, and both the orthopedic and neurosurgical liaisons were included. The formula used to calculate their associated cost was administrative stipend if contracted or if employed salary and benefits X per cent of time spent on trauma center administrative functions. The final piece included in the administrative section was the cost of hardware and software for registry activities.

##### Clinical medical staff

The clinical section covered trauma medical staff compensation which was complicated because the state had a mix of community and academic medical centers. All specialties listed as required by the American College of Surgeons Committee on Trauma were included. Daily stipends or other payments to specialties for trauma call were included. In addition, resident cost was included in the calculations for the academic medical centers.

##### In-house OR

This section included OR availability cost to maintain a room 24/7. There were some specific caveats related to the OR cost. If an OR was maintained and

dedicated exclusively for trauma, the estimated net cost was included (less reimbursement). If a facility maintained 24-hour in-house OR availability but did not maintain a specific dedicated OR staffed exclusively for trauma, the cost for a registered nurse and an OR tech seven days a week was included.

#### Education and outreach

This section of the survey included cost for travel, courses, training, supplies, and materials. Injury prevention, community outreach, professional outreach, and outlying hospital education programs were included. Cost for continuing medical education was also included in this section. Costs associated with course fees and travel for up to 16 hours of continuing medical education were added for the trauma medical director, trauma program manager, as well as the emergency department, neurosurgical, and orthopedic liaisons. The final piece of this section included specific cost plus salary and education time associated with trauma center staff trauma specific education and included the emergency department, intensive care unit, and surgical staff.

The survey tool was distributed to all Level I and Level II trauma centers. Surveys were then completed based on

calendar year 2008 costs. Table 1 summarizes these results.<sup>10</sup> Based on the lessons learned from the first survey and feedback from stakeholders, the survey tool underwent minor modifications. These included clarifications in the cost definitions for case management/discharge planning, injury prevention coordinator, anesthesiologists, intensivists, injury prevention outreach, and professional education. The survey tool was redistributed to all Level I and Level II trauma centers in 2012 to survey 2011 trauma center cost data. The full survey tool for 2011 is listed in the Appendix A.

### Results

Table 2 shows Level I and II trauma center mean costs for administrative and program support, with the number reporting costs, and the range in each category. Total cost for all Georgia Level I and II trauma centers was \$9,437,150 with a Level I mean cost of \$945,567 and a Level II mean cost of \$523,257. The administrative component of readiness costs includes \$797,040 in senior administrator support because of the complexity and management challenges presented by trauma centers. Total cost for trauma program managers was \$1,311,485, the largest personnel cost.

TABLE 1. *Calendar year 2008 Trauma Center Readiness Cost Survey Results*

Cost Category	LI Total	LI Average	LII Total	LII Average	Georgia Totals
Administrative	2,431,530	607,883	3,339,644	371,072	\$5,771,174
Medical staff	18,003,208	4,500,802	12,836,008	1,426,223	30,839,216
In-house OR	1,744,231	436,058	2,284,553	253,839	4,028,784
Education/Outreach	222,518	55,630	1,437,046	159,672	1,659,564
Georgia totals	\$22,401,487	\$5,600,372	\$19,897,251	\$1,992,890	\$42,298,738

TABLE 2. *Calendar year 2011 Administrative & Program Costs*

Administrative & Program Support	LI TC Mean	#	Range (\$000's)	LII TC Mean	#	Range (\$000's)	Georgia Totals
Senior admin support	\$44,165	5	5–106	\$64,024	9	32–124	\$797,040
Trauma program manager	124,066	5	72–234	76,795	9	58–106	1,311,485
State/Region participation	3,244	4	2–9	881	7	7–28	24,151
TC staff support							
Outreach coordinator	3,831	2	2–17	2,255	2	1–19	39,452
Case management/Discharge planning	420,758	5	144–737	161,361	9	10–313	3,556,033
Injury prevention coordinator	18,892	2	11–84	97,034	4	4–424	967,763
Research/PI coordinator	24,496	2	12–110	19,740	3	4–87	300,142
Trauma registrar	182,304	5	76–323	26,356	7	13–57	1,148,725
Secretarial staff	28,342	3	25–62	8,497	6	1–27	218,181
Trauma medical director	36,675	4	31–66	31,058	8	18–71	462,897
State/Reg participation	8,020	5	1–15	598	2	2–3	45,480
ED medical director	3,201	3	2–10	14,668	5	4–84	148,015
ICU surgical director	30,710	3	13–110	5,489	3	4–23	202,948
Ortho liaison	8,280	1	41	3,694	2	15–18	74,650
Neuro liaison	500	1	3	5,737	3	1–32	54,130
Registry hard/Software	8,083	5	3–12	5,071	8	2–13	86,058
Total	\$945,567		\$443–1,939	\$523,257		\$176–1,429	\$9,437,150

ED, emergency department; ICU, intensive care unit; PI coordinator, performance improvement coordinator; TC, trauma center.

Case management cost of \$3,556,033 is the largest program support cost, although there was a high degree of variability among trauma centers reporting these costs. The next largest program support cost was \$1,148,725 for trauma registrars. Only the administrative component of trauma medical director costs was reported in this section, and it amounts to \$462,897. All five Level I and all nine Level II trauma centers reported cost for this section. In Table 2 the number of trauma centers that actually had costs associated with each administrative category are listed. For example, only one trauma center provided a stipend to the orthopedic liaison to cover costs of their duties as mandated by the American College of Surgeons guidelines. The other four Level I trauma centers paid no stipends for these positions.

Table 3 shows Level I and II trauma center mean costs for trauma clinical medical staff support by specialty, with the number reporting costs and the range for each specialty. The total costs for all Level I and II trauma centers was \$38,217,383 with a Level I mean cost of \$4,980,311 and a Level II mean cost of \$1,479,537. It is important to note that all Level I and II trauma centers provide funding for trauma surgery medical staff costs. Most provide funding for orthopedics, neurosurgery, ENT/plastics, and anesthesia. However, only one of five Level I trauma centers provide medical staff funding with regard to trauma for hand, cardiac, obstetrics, and thoracic surgery.

Table 4 shows Level I and II trauma center mean costs for in-house OR support with the number supporting costs and the range. The total cost for all Level I and Level II trauma centers was \$6,092,448 with a Level I mean cost of \$787,490 and a Level II mean cost of \$239,444.

Table 5 shows Level I and Level II trauma center mean costs for education and outreach with the number reporting costs and the range in each category. The total costs for all Level I and Level II trauma centers was \$1,356,354 with a Level I mean cost of \$107,696 and a Level II mean cost of \$90,875. The striking characteristic of these results is that very few dollars are being spent by Georgia trauma centers on injury prevention and outreach. Georgia totals for Level I and Level II trauma centers were only \$495,911 for injury prevention and \$243,206 for community outreach.

Table 6 shows Level I and II trauma center total readiness costs and their mean. The total cost for all Georgia Level I and II trauma centers was \$55,103,337 with a Level I mean cost of \$6,821,064, and a Level II mean cost of \$2,333,113. For each of the 13,433 patients admitted to Georgia's Level I and II trauma centers in 2011, the total readiness cost amounted to \$4,102.

### Discussion

Through collaboration with chief financial officers, trauma medical directors, and trauma program managers

TABLE 3. *Calendar year 2011 Trauma Clinical—Medical Staff Cost*

Clinical—Medical Staff	LI TC Mean	#	Range (\$000's)	LII TC Mean	#	Range (\$000's)	Georgia Totals
Trauma surgery	\$1,387,521	5	500–3,600	531,646	9	71–1,936	11,722,418
Orthopedics	749,843	5	240–1,712	337,649	7	56–847	6,788,020
Neurosurgery	401,472	4	135–1,067	285,687	7	37–712	4,578,546
Anesthesia	1,091,059	5	548–2,068	66,700	6	23–161	6,055,598
Hand surgery	54,750	1	274	33,861	1	305	578,500
Microvascular surgery	-	-	-	-	-	-	-
Cardiac surgery	17,289	1	86	2,231	1	20	106,519
OB/GYN	5,475	1	27	2,000	1	18	45,375
Ophthalmology	69,605	2	81–267	12,117	3	3–85	457,080
Oral/Maxillofacial	36,500	1	183	47,901	5	2–151	613,606
ENT/Plastics	287,930	4	185–647	28,982	6	7–101	1,700,488
Critical care medicine	-	-	-	27,473	3	49–109	247,258
Radiology	250,318	3	324–500	16,451	3	20–108	1,399,647
Thoracic	36,500	1	183	30,186	2	37–235	454,172
Surgical resident support	548,062	4	44–1,806	-	-	-	2,740,309
Subtotal	\$4,936,324		2,810–12,420	1,422,883			37,487,569
Uninsured payment	43,987	3	67–77	56,653	6	16–241	729,814
Total	\$4,980,311			1,479,537			38,217,383

OB/GYN, obstetrics and gynecology; ENT, ear, nose, and throat; TC, Trauma Center.

TABLE 4. *Calendar year 2011 In-House OR Availability Costs*

In-House OR Availability	LI TC Mean	#	Range (\$000's)	LII TC Mean	#	Range (\$000's)	Georgia Totals
In-house OR	787,490	5	333–2,233	239,444	7	64–514	6,092,448

TC, Trauma Center.

TABLE 5. *Calendar year 2011 Education & Outreach Costs*

Education & Outreach	LI TC Mean	#	Range (\$000's)	LII TC Mean	#	Range (\$000's)	Georgia Totals
Injury prevention	4,187	2	2–19	52,775	4	0.4–237	495,911
Community outreach	48,631	2	1–242	6	1	0.1	243,206
Prof. outreach	5,223	4	3–16	3,712	5	2–12	59,520
Outlying hospital education	330	1	2	-	-	-	1,651
16 hours trauma CME							
Trauma medical director	4,254	5	1–8	1,372	3	2–8	33,619
Trauma program manager	2,179	4	2–4	1,046	7	0.4–3	20,312
Emergency department	2,540	3	4–5	381	1	3	16,133
trauma liaison							
Neurosurgical liaison	1,800	2	4–5	878	2	3–4	16,898
Orthopedic liaison	5,473	3	4–18	389	1	4	30,864
Trauma education—hospital							
staff							
ED	14,961	4	5–31	22,164	9	1–71	274,286
ICU	13,060	4	3–42	4,578	6	0.4–19	106,501
Surgery	5,058	2	12–13	3,574	3	1–19	57,453
Total	\$107,696		\$43–40517	\$90,875		\$17–380	\$1,356,356

ED, emergency department; ICU, intensive care unit, TC = Trauma Center.

TABLE 6. *Calendar year 2011 Trauma Center Readiness Cost Survey Results*

Cost Category	LI Total	LI Average	LII Total	LII Average	Georgia Totals
Administrative	4,727,837	945,567	4,709,313	523,257	9,437,150
Clinical medical staff	24,901,553	4,980,311	13,315,830	1,479,537	38,217,383
In-house OR	3,937,448	787,490	2,155,000	239,444	6,092,448
Education/Outreach	538,480	107,696	817,876	90,875	1,356,356
Georgia totals	34,105,318	6,821,064	20,998,019	2,333,113	55,103,337

at Georgia's Level I and II trauma centers, a set of standardized definitions for reporting readiness costs were developed and incorporated into a survey tool. Using this tool, all adult Level I and II trauma centers were surveyed with 100 per cent response rate. Results for CY 2011 showed that the average readiness cost for a Level I trauma center was \$6,821,064, and the average readiness cost for a Level II trauma center was \$2,333,113. The costs have increased from the 2008 survey. This earlier survey revealed that the average readiness cost for a Level I trauma center was \$5,600,372, and the average readiness cost for a Level II trauma center was \$1,992,890.

The available literature on the cost of readiness is sparse which is most likely because of the lack of standardized definitions on how to calculate or allocate costs for each regulation and the difficulty for trauma centers to capture nonpatient care costs.<sup>11, 12</sup> This lack of standardized definitions makes the task of surveying trauma centers about their readiness costs almost impossible as each center interprets how the costs are calculated or allocated differently. As Georgia continues to build an inclusive trauma system, it is imperative that the financial data reflecting the costs of trauma care at trauma centers are accurate. This was the catalyst that led the Georgia Trauma Commission to collaborate with stakeholders from all trauma

centers with the overarching goal of developing a consensus on how to define and calculate each readiness cost. It is important to note that the standardization of definitions on readiness costs in the survey tool were the consensus of Georgia stakeholders. Although the tool could be used in its current form by other states, it is not absolute and could be modified to reflect the consensus or difference of opinion of other stakeholders.

The most significant cost for readiness for both Level I and II trauma centers fell into the category of clinical medical staff. This category covers all costs associated with maintaining support for each surgical specialty. Of the \$6,821,064 average cost for a Level I trauma center, medical staff costs consisted of \$4,980,311 or 73 per cent. Of the \$2,333,113 average cost for a Level II trauma center, medical staff costs consisted of \$1,479,537 or 63 per cent.

This is similar to Taheri's 2004 survey findings of Level I and II trauma centers in Florida. Taheri et al. noted that the median cost of readiness for each trauma center, Level I and II combined, was approximately \$2.7 million annually with the majority of cost, \$2.1 million, being ascribed to physician compensation for on-call coverage.<sup>12</sup> This is not surprising because the surgery call panel consists of a large number of specialties most of which receive a stipend or some type of compensation to cover emergency room call. What is

surprising in our study is the wide range of physician compensation between individual Level I and II trauma centers. This is because of the different arrangements for call including stipend payments, in which call costs are clear, and incorporating call in employment contracts, where costs of call are elusive. With employed surgeons, a hospital could allocate a small part of their salary to call up to the bulk of their salary because the surgeons' employment made them available for call. In other cases, the surgeons were employed by a medical school which received a combined payment for all support provided to a hospital.

Administrative and program support cost was the second largest cost for trauma centers. Of the \$6,821,064 average cost for a Level I trauma center, the administrative and program support cost consisted of \$945,567 or 14 per cent. Of the \$2,333,113 average cost for a Level II trauma center, the administrative and program support cost consisted of \$523,257 or 22 per cent. In the administrative component, the trauma program managers were the largest personnel costs which is not surprising because they are totally dedicated to the trauma program. Case management was responsible for the largest program support costs, although there was a high degree of variability among trauma centers reporting these costs. The next largest program support cost was for the trauma registrars. Interestingly, very few Level I or II trauma centers paid a stipend for their orthopedic and neurosurgery liaisons. This is noteworthy because these physicians are mandated to participate in trauma conferences with their attendance tracked for compliance. Failure to meet this requirement will result in a type II deficiency for trauma center designation.

The lowest cost reported was in the category of education and outreach. Of the \$6,821,064 average cost for a Level I trauma center, the education and outreach cost consisted of only \$107,696 or 2 per cent. Of the \$2,333,113 average cost for a Level II trauma center, the education and outreach cost consisted of only \$90,875 or 4 per cent. Only two of five Level I trauma centers and four of nine Level II trauma centers reported costs in injury prevention. The mean costs for injury prevention for Level I and Level II trauma centers were \$4,187 and \$52,775, respectively. Robust injury prevention programs should have a much higher cost, but it seems that trauma centers are not able to provide significant funding in these areas.

The cost of continuing medical education for the physicians seems to be low as well which may indicate that the mandate for 16 hours of annual continuing medical education is not being fully captured. One reason for this may be that individual physicians or institutions are paying for these education mandates outside the trauma center budget.

The study has at least one significant limitation; the survey relied on self-reporting, and the answers involved significant discretion in applying new accounting definitions. Although extensive guidance was provided to those completing the survey, there was no attempt to verify accuracy. Because all trauma centers responded, there is no issue with sample selection.

In conclusion, the Georgia Trauma Commission working with clinical and financial stakeholders from all of the state's Level I and II trauma centers has standardized the definitions for trauma center readiness costs. This has led to a thorough analysis of the costs of trauma center readiness in the categories of Administrative, Clinical Medical Staff, OR, and Education/Outreach. The average costs of readiness for a Level I and Level II trauma centers were \$6,821,064 and \$2,333,113 respectively. Clinical Medical Staff costs for both Level I and II trauma centers were the most significant contributors to overall readiness costs. Georgia's readiness cost assessments provide a functional framework for assessing trauma center readiness costs. This assessment may be used by other states who wish to assess their trauma center readiness costs.

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# Appendix A: CY 2011 Georgia Trauma Center Readiness Costs

Georgia Trauma Care Network Commission Survey

LINE ITEM/	LEVEL				SURVEY INSTRUCTIONS	AMOUNT
<b>Criteria Deemed Essential for Level in ACS Gold Book</b>	I	II	III	IV	<b>Do Not Respond to Item If Your Trauma Center Level Is This Color*</b>	<b>Use Actual Costs in 2011</b>
<b><u>ADMINISTRATIVE</u></b>						
Senior Administrator Support					Per cent of time focused on trauma by main senior administrator involved in trauma X salary and benefits	
Program administrator: Trauma Director, Trauma Program Manager, or Trauma Coordinator					Salary & benefits X per cent of time on trauma (if position has other duties in low volume trauma centers).	
Participation in state, regional and national activities					Trauma program administrator travel costs to meetings	
<b>Trauma Center Staff Support</b>					<ul style="list-style-type: none"> <li>• If any of the following positions generate reimbursement or are supported by grants, use net hospital costs X time spent on trauma to calculate their costs.</li> <li>• If position employed by trauma program, or if employed by another department which focuses trauma responsibility on few staff, use salary and benefits less revenue and grant support for costs.</li> <li>• If employed by another department which spreads trauma responsibility among most staff, use portion of trauma patient admissions of total admissions X department salary costs.</li> </ul>	
Outreach Coordinator			*	*	<b>* E.g., Level III/IV trauma centers should skip this as not required</b> Salary & benefits X per cent of time on trauma	
Case Management Discharge Planning					Divide your total trauma admissions, including admits less than 48 hours, by 333. This is your estimated FTEs, which you then multiply times your average case manager salary + benefits	
Injury Prevention Coordinator					Salary & benefits (less grant support) X per cent of time on trauma. (if less than one year, multiply times portion of year in place.	
Research/PI Coordinator					Salary & benefits (less grant support) X per cent of time on trauma.	
Trauma Registrar					Salaries & benefits X per cent of time on trauma – Limit of 1 registrar per 500–1000 patients.	
<b>LINE ITEM/</b>			<b>LEVEL</b>		<b>SURVEY INSTRUCTIONS</b>	<b>AMOUNT</b>
Trauma Program Secretary					Salaries & benefits X per cent of time on trauma.	
Trauma Medical Director					Board-certified surgeon with specialty interest in trauma care. Administrative stipend if contracted, or if employed, salary & benefits X per cent of time spent on trauma center administrative functions only.	

(continued)



(Continued)

LINE ITEM/	LEVEL	SURVEY INSTRUCTIONS	AMOUNT
Participation in national, state and regional activities ED Medical Director or Liaison		Trauma Medical Director travel costs to meetings. Administrative stipend if contracted, or if employed, salary & benefits X per cent of time spent on trauma center administrative functions.	
ICU Surgical Director		Administrative stipend if contracted, or if employed, salary & benefits X per cent of time spent on trauma center administrative functions.	
Orthopedic Liaison		Administrative stipend if contracted, or if employed, salary & benefits X per cent of time spent on trauma center admin functions. Must participate actively with trauma service with documented CME and PI.	
Neurosurgeon Liaison		Administrative stipend if contracted, or if employed, salary & benefits X per cent of time spent on trauma center admin functions. Must participate actively with trauma service with documented CME and PI.	
Registry Hardware and Software		Costs for registry hardware, software and maintenance fees. Use full costs; do not reduce by state grant amount.	
LINE ITEM/ <u>CLINICAL – MEDICAL STAFF</u>	LEVEL	SURVEY INSTRUCTIONS	AMOUNT
<b>Trauma Medical Staff Compensation</b> Do not include amounts paid for administrative duties.		Includes the costs of maintaining trauma physician support for your trauma center other than the costs of admin functions addressed above. <ul style="list-style-type: none"> <li>• If you pay specialty a stipend exclusively for trauma call, enter the full amount.</li> <li>• If you pay a stipend to a specialty that is for both trauma and ED call, estimate the portion attributable to trauma care.</li> <li>• If you employ your physicians, determine net cost (salary + benefits – pro fee reimbursement) and estimate portion attributable to trauma.</li> <li>• If you are supported by a faculty practice arrangement, take portion of trauma admissions to overall admissions and apply to overall hospital subsidy provided to faculty practice structures,</li> </ul> Or Total number of physicians by specialty and apply AAMC salary database (at 50% of range) for SE region, add estimated benefits, subtract estimated pro fee reimbursement, and then apply portion of trauma admissions to overall admissions to arrive at net cost for specialty support. <ul style="list-style-type: none"> <li>• Do not include amounts specifically paid to trauma physicians for care of uninsured trauma patients in the amounts for each specialty; you will be asked for a total amount of such pay at the end of this section.</li> </ul>	

(continued)

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LINE ITEM/	LEVEL	SURVEY INSTRUCTIONS	AMOUNT
Trauma Surgery		See above.	
Orthopedics		See above.	
Neurosurgery		See above.	
Anesthesia		Divide trauma surgeries by total hospital surgeries and multiply time hospital's net cost for anesthesia (including CRNA's). This is hospital cost attributable to trauma.	
Hand		See above.	
Microvascular		Include only if hospital pays for support and then only portion attributable to trauma.	
Cardiac		Include only if hospital pays for support and then only portion attributable to trauma.	
LINE ITEM/	LEVEL	SURVEY INSTRUCTIONS	AMOUNT
OB/ GYN		Include only if hospital pays for support and then only portion attributable to trauma.	
Ophthalmology		Include only if hospital pays for support and then only portion attributable to trauma.	
Oral/Maxillofacial		See above.	
ENT/Plastics		See above.	
Critical Care Medicine		Divide trauma patient days in ICU by total ICU days and multiply time net hospital subsidy for critical care physicians.	
Radiology		Estimate portion of hospital net cost for radiology that is attributable to trauma.	
Thoracic		Include only if hospital pays for support and then only portion attributable to trauma.	
<b>Surgical Resident Support</b>		This applies to surgical residency only. There are two options: Take residency costs and subtract federal funding and apply portion attributable to trauma, or take residents' hourly salary + benefits for time on trauma rotation, and subtract federal funding for this time	

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(Continued)

LINE ITEM/	LEVEL	SURVEY INSTRUCTIONS	AMOUNT
<b>Payment for uninsured trauma patient care for all specialties</b>		If you paid your trauma medical staff (those listed above) specifically for uninsured trauma patient care in 20011 (with hospital and/or state trauma funds), enter the total amount for all specialties on this line.	
<b><u>IN HOUSE OR AVAILABILITY</u></b>	Level I hospitals require in-house 24 hour availability and some Level IIs maintain this as well. <ul style="list-style-type: none"> <li>• If you maintain a dedicated OR that remains open, staffed and is used exclusively for trauma, please estimate net costs (less reimbursement) below.</li> <li>• If you maintain 24 hour in-house OR availability but do not maintain a dedicated OR that remains open and staffed exclusively for trauma, provide your costs for an RN and OR tech for PM and night shift for seven days a week.</li> </ul>		
<b>Costs of In House OR Availability</b>		Use cost for night and weekend OR coverage of one OR nurse and one OR tech.	
<b><u>LINE ITEM/</u></b> <b><u>EDUCATION &amp; OUTREACH</u></b>	<b>LEVEL</b>	<b>SURVEY INSTRUCTIONS</b>	<b>AMOUNT</b>
	Includes costs for travel, courses, training, supplies and materials for activities specific to trauma. Personnel costs should have been included in the Administrative Section.		
Injury prevention		Must be specific to trauma, and amount should be reduced by grant funding for program.	
Community outreach		This includes public education.	
Professional education		Net cost (i.e., less participant fees) of offering courses/trauma clinical education to EMS and other hospital staff in your region.	
Outlying hospital education		This addresses the unique responsibilities of Level I trauma centers in supporting outlying hospitals (e.g., Grand Rounds)	
<b>16 hours trauma CME</b>	Includes costs for courses and travel for up to 16 hours of trauma CMEs only for personnel below:		
Trauma Medical Director		16 hours of Continuing Education	
Trauma Program Manager			
ED Trauma Liaison			
Neurosurgical Liaison			
Orthopedic Liaison			
<b>Education – trauma related for hospital staff</b>	Includes cost of courses plus salary costs for educational time.		
Emergency Department			
Intensive Care unit			
Surgery			

### Appendix B

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