

2022 Joint Trauma System Funding Committee

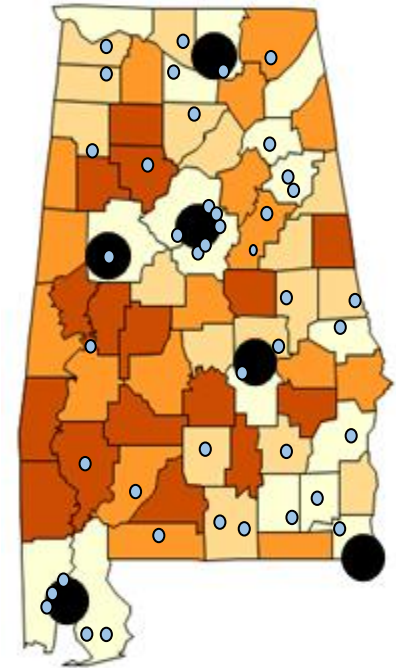
Date of Report: April 13, 2023

Committee Members:

- Jon D. Simmons, MD (Committee Chair): Chief, Division of Trauma, Acute Care Surgery & Burns. USA Health University Hospital.
- Representative Chris Sells: Chair of House Ways and Means General Fund Committee.
- Senator Greg Albritton: Chair of the Senate Finance and Taxation General Fund Committee.
- Mr. Dave White: Senior Policy Advisor to Governor Ivey.
- Elwin Crawford, MD: State EMS Medical Director at ADPH.
- Jamie Gray, B.S, NRP: State EMS Director at ADPH.
- Jeff Kerby, MD: Trauma Consultant, ADPH. Chief of Acute Care Surgery at UAB.
- Timothy Blake Lovely, MD: Emergency Medicine physician, Tuscaloosa, AL.
- Tracy Doughty: President and COO, Huntsville Hospital.
- Ginger Henry, PhD: COO, Baptist Medical Center South. Montgomery, AL.
- Aisha Hassan: Alabama Department of Economic and Community Affairs.
- David Waid: Alabama Association of Ambulance Services.
- Michael Bartlett: Alabama Association of Ambulance Services.

Report from Alabama Legislative Trauma Funding Committee

Trauma related injury is the leading cause of avoidable death nationwide but it is significantly higher in the State of Alabama when compared to the remainder of the United States. According to the Center for Disease Control (CDC), Alabama also has the second highest transportation related death in the United States (Figure right).¹ The higher death rates in Alabama compared to the remainder of the country is certainly multifactorial but likely centered on the lack of a fully funded state-wide trauma system. In 2007, Governor Bob Riley led the legislature to enact a state-wide trauma system for Alabama, but the lack of mandatory funding has led to only incremental progress since that time. To address this issue, the Alabama legislature recently mandated the formation of a Joint Trauma System Funding Committee (JTSFC) to evaluate the funding needed to improve the state's system of trauma care. This document shall serve as the initial assessment and recommendations from the JTSFC.



Heat map from the CDC¹ showing transportation-related death rates when compared to the entire country. The darker red/orange represent higher than average death rates. Large black dots represent existing hospitals containing a trauma service that can provide definitive care. Notice that counties surrounding these trauma centers have better than average death rates. Smaller dots represent hospitals that are capable of adding necessary infrastructure to provide trauma care if funding were available.

A well-developed and fully funded statewide trauma system is able to adequately respond to the needs of injured patients. Such a system is inclusive of all aspects of injury prevention and treatment by integrating all entities that are involved with caring for injured patients. Recent research has also demonstrated that a fully funded trauma system can have an economic multiplier of nearly nine times the amount invested by the state.² One of the most important elements of a state-wide trauma system is the integration of prehospital care (i.e., EMS), trauma centers, and rehabilitation. However, data acquisition and quality improvement are also essential in the system's ability to constantly improve and, as importantly, provide directed efforts towards injury prevention. Finally, a well-organized and integrated trauma system is the backbone for disaster preparedness which is particularly important for Alabama.

A recent independent consultation by the American College of Surgeons Committee on Trauma (ACS-COT) revealed that Alabama has a great foundation for a few of these components, but the ACS-COT also recognized that the lack of integration of each essential component and cited the lack of mandated funding as the major hurdle to improving trauma care for Alabama. It is clear from the CDC map above that existing Level 1 and 2 trauma centers (identified as black dots on the figure) are highly functioning, and have significantly lower mortality rates for the counties they serve. However, it is also obvious from the same map that large areas of Alabama are likely to have higher mortality because of the lack of access to a trauma center within a timeframe that would allow survival. Because Alabama already has an excellent EMS routing system and multiple highly functioning trauma centers, the JTSFC believes a goal of improving trauma related mortality for Alabama to above the national average is likely easily achievable.

Specific areas the JTSFC identified that a new funding model should address included the following:

- Need for more Trauma Centers: The lack of statewide funding has led to 70% of transportation related deaths occurring in rural areas where existing hospitals are not providing definitive trauma care. Additionally, there are no level I or II trauma centers in several major cities and other large areas within Alabama, largely because of the tremendous financial and infrastructure needs related to the provision of trauma care. Using a needs-based assessment tool while accounting for mortality and current distribution of hospitals, the JTSFC identified the need for establishing four Level 3 Trauma Centers and one additional Level 2 trauma center.
- Secondary transfer-rate: Over 30% of trauma patients that are treated at Level 1 Trauma Centers are transferred from another hospital. Of these transfers, over 25% do not require admission and are discharged from the emergency department shortly after arrival. These unnecessary transfers lead to capacity issues at Level 1 and 2 trauma centers which are also the tertiary referral centers for Alabama. These unnecessary transfers also cause tremendous financial burden on the system in terms of ambulance and hospital bills. Importantly, many of the ambulances used to transport these patients are the only available EMS option for the surrounding area.
- Lack of robust Emergency Medical Services in rural areas: Many of the areas with the highest injury related mortality only have one ambulance available which means a long transport leaves that specific area “uncovered” by EMS for many hours.
- Lack of comprehensive data infrastructure: Data for Process Improvement and Quality Assurance is necessary for maximizing all the essential components of a trauma system. This would allow the creation of a needs-based assessment of ideal location for trauma centers, determine EMS staffing patterns in rural areas, improve the routing of trauma patients throughout the system. Most importantly, improved data collection would allow the creation of best practices among all aspects of the trauma system.
- Readiness cost of trauma centers: In a publication by Ashely et al in 2019,³ they determined the average readiness cost for a level I trauma center is \$10,078,506 and \$4,925,103 for a Level 2. They cited clinical medical staff as the costliest component, representing 55% of costs for Level 1 centers and 64% for Level 2 centers. Regarding Level 3 trauma centers, Atkins et al⁴ determined the average annual readiness cost is \$1,715,025 for a Level 3 trauma center.
- Halo Affect of creating a new trauma center: The funding of an all-inclusive trauma system will have a significant effect as an economic multiplier for all communities while also enhancing the medical care (e.g., EMS, Stroke, Heart, etc.) provided throughout Alabama. Because the creation of trauma services at rural hospitals must include the addition of general surgeons, this will significantly enhance the services available to these communities and prevent unnecessary death from common surgical conditions such as appendicitis, gall bladder disease, hernia complications, etc. Finally, the financial health of rural hospitals is vital for the communities they service because of the economic multiplier the hospital creates for additional non-hospital jobs (multiplier = 2.08) and purchasing of good and services from the community (community multiplier of \$2.3 for every dollar spent by the hospital). Simply stated, the creation of a trauma service at rural hospitals will have a significant economic impact on the surrounding communities.

What is the method to distribute funds to the Trauma System?

The JTSFC evaluated multiple existing funding models to determine the most appropriate for Alabama. Using a blend of multiple models to account for the strengths and weaknesses of the current trauma system, JTSFC proposes a distribution model that includes \$30 million per year. Over the first two years, 66% of available funding would be specifically directed to addressing the previously stated needs.

The following distribution model was created using elements from multiple existing state-wide funding models. The committee determined \$30 million dollars would be necessary to maintain the Alabama system after the creation of four Level 3 trauma centers, and one Level 2 center. To create the necessary infrastructure, 66% of the funding (\$20 million) will be directed to specific needs while the remaining 33% (\$10 million) will go to existing trauma centers.

Year 1-2

- \$15M = Five \$3M grants to create new Level 3 Trauma Centers in designated areas based on needs assessment.
- \$2M = Creation trauma office and personnel to manage the trauma system.
- \$2M = Increase rural EMS through grants.
- \$1M = Creations of comprehensive data infrastructure.
- \$10M = Distribution to existing Trauma Centers according to the funding model.

Year ≥ 3

- \$30M = Normal Distribution to the Trauma System as maintenance.

Summary of Distribution of Trauma System Funds*

APDH Trauma Systems Management	\$1,700,000	fixed
Levels I-III: Hospital Fixed Component	\$8,490,000	30%
Level I (3)	\$2,547,000 (1.2x)	\$849,000 (ea)
Level II (4)	\$2,830,000 (1.0x)	\$707,500 (ea)
Level III (4)	\$2,264,000 (0.8x)	\$566,000 (ea)
Pediatric (1)	\$849,000 (1.2x)	\$849,000 (ea)
X = \$8,490,000/12)*(number of centers)		
Levels I-III: Variable Distribution to Hospitals*	\$12,735,000	45%
Region I	\$ 2,692,947 (21%)	
Region II	\$ 1,629,201 (13%)	
Region III	\$ 3,192,145 (25%)	
Region IV	\$ 1,048,316 (8%)	
Region V	\$ 2,191,933 (17%)	
Region VI	\$ 1,980,455 (16%)	
EMS Component	\$4,245,000	15%
Burn Fund (uncompensated care)	\$1,415,000	5%
Rehab Fund (uncompensated care)	<u>\$1,415,000</u>	<u>5%</u>
Total Funding	\$30,000,000	100%

*The distribution model above accounts for the creation of four Level 3 trauma centers and one Level 2 center.

How other States fund state-wide trauma systems

Driving Related

1. Red Light camera fine (Florida)
2. Super speeder fines (Georgia)
3. Traffic violation fines (Illinois, Maryland, Georgia, Mississippi, Nebraska, Oklahoma, Texas, Washington)
4. Motor vehicle registration (Indiana, Oklahoma, Washington)
5. Driving without insurance (Oregon, Oklahoma)
6. Suspended driver's license (Virginia)
7. Tire purchase
8. Legislative requirement for commercial payers to pay 100% charges for MVC (Pennsylvania)

Activity Related

1. ATV purchases (Mississippi)
2. Boat license renewals (Oklahoma)
3. Fireworks

Tobacco

1. Fees on Tobacco products (Arkansas, Oklahoma, Tennessee)
2. Fees on non-cigarette tobacco products (Oklahoma, Tennessee)
3. Drug convictions (Oklahoma, Virginia)
4. Marijuana (Oregon)
5. Alcohol related convictions (Texas)

Hospital

1. Hospital licensure fees (Minnesota)
2. Fee for not participating in trauma system (Mississippi)

Other

1. Casino gaming funds (Arizona)
2. Medicaid match (Texas, Washington)
3. 911 equalization surcharges (Texas)

References:

1. Produced by: the Statistics, Programming & Economics Branch, National Center for Injury Prevention & Control, CDC. Data Sources: NCHS National Vital Statistics System for numbers of deaths; US Census Bureau for population estimates. 2008-2014.
2. Maxson T, Mabry CD, Sutherland MJ, Robertson RD, Booker JO, Collins T, Spencer HJ, Rinker CF, Sanddal TL, Sanddal ND. Does the Institution of a Statewide Trauma System Reduce Preventable Mortality and Yield a Positive Return on Investment for Taxpayers? *J Am Coll Surg*. 2017 Apr;224(4):489-499. doi: 10.1016/j.jamcollsurg.2016.12.042. Epub 2017 Mar 8. PMID: 28284471.
3. Ashley DW, Mullins RF, Dente CJ, Johns TJ, Garlow LE, Medeiros RS, Atkins EV, Solomon G, Abston D, Ferdinand CH; Georgia Research Institute for Trauma Study Group. How much green does it take to be orange? Determining the cost associated with trauma center readiness. *J Trauma Acute Care Surg*. 2019 May;86(5):765-773. doi: 10.1097/TA.0000000000002213. PMID: 30768564.
4. Atkins EV, Vaughn KA, Medeiros RS, Patterson GK, Register AR, Ashley DW. Assessing trauma readiness costs in level III and level IV trauma centers. *J Trauma Acute Care Surg*. 2023 Feb 1;94(2):258-263. doi: 10.1097/TA.0000000000003842. Epub 2022 Nov 14. PMID: 36372925.