

Background

The American College of Surgeons (ACS) – Clarification Document under the Resources for Optimal Care of the Injured Patient, Chapter 11 *Collaborative Clinical Services*, quotes “In Level I and Level II trauma centers, qualified radiologists must be available within 30 minutes to perform complex imaging studies or interventional procedures. The clock starts when the call is made requesting the service.

The University Hospital Trauma Performance Improvement team, aimed to assess the time from activation (Code Angio) to intervention (Stick Time) in the Hybrid Room, in order to not only meet the requirements set forth by the ACS but to exceed it. University Hospital set its goal for 30 minutes from activation to actual intervention start time.



Objectives

In April 2014, University Hospital in San Antonio, Texas, had a Capital Improvement Project (CIP), which led to a more sophisticated and modernized redesign of the trauma resuscitation areas and operating rooms. The trauma faculty requested a dedicated room to treat and manage life-threatening injuries. This specialized room is called the Hybrid Room, which is equipped with the capability of embolization and coiling of bleeding vessels without the need for an open procedure. If needed, the Hybrid Room can be easily transformed to accommodate the trauma faculty in the conversion to an open procedure within the same location. Our desire is to demonstrate that with these specialized resources, we can provide timely emergent interventions for the critically injured patient.

Design

A focused performance improvement (PI) project was established and a specific audit filter was developed called “Code Angio Activation”. We defined Code Angio as: Angiography “Stick Time” within 30 minutes of activation. All adult Code Angio’s were reviewed the next day at morning report with the entire trauma team. Times of 30-60 minutes were discussed for causality and reviewed primarily by the Trauma Medical Director. In addition to Trauma Medical Director review, times greater than 60 minutes were discussed at the weekly Trauma Morbidity and Mortality conference. Lastly, average times were discussed at the monthly Multi-disciplinary Peer Review committee. The trauma team worked collaboratively with the Interventional Radiology (IR) team as well as operative services for this focused PI review.

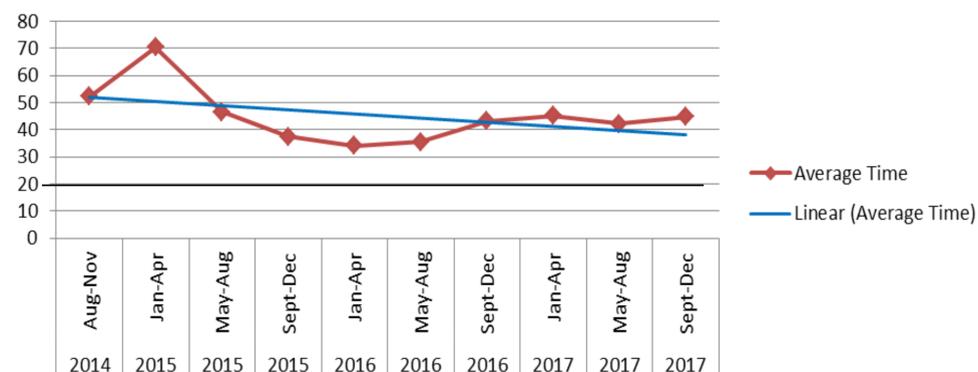
Sample

This is a prospective review of 242 adult trauma patients 18 years of age and older at University Hospital with a Code Angio activation. University Hospital is an ACS verified Level I Adult Trauma Center. Activation for a Code Angio is based on CT evidence of extravasation, indicating possible need of angiography.

Results

We continue to work towards a consistent time that is not only achievable but beneficial to the patient. Working collaboratively with radiology and operative services, we reviewed and analyzed our Code Angio Activation audit filter from August 2014 - December 2014 and our average Code Angio time was 51.25 minutes, with the mainstay of 51 minutes for the entire year of 2015. In 2016, our time was decreased to 37.5 minutes from activation to intervention start time. Finally, for 2017, our average Code Angio Time is 44 minutes, highlighting the months of June and September 2017 which had 29.5 and 28 minutes to intervention.

Average Time



TQIP REPORT FALL 2017, IX, Processes of Care: Hemorrhagic Shock with in the First 24 hours
 Table 29: Hemorrhagic Shock Management

Group	PATIENTS N	ANGIOGRAPHY		TIME TO ANGIOGRAPHY (HOURS)			MISSING TIME TO ANGIOGRAPHY	
		N	%	Median	25 th Percentile	75 th Percentile	N	N
All Hospitals	6,321	1,088	17.4	3.0	1.6	5.2	32	2.9
Your Hospital	38	7	18.4	0.7	0.4	0.8	0	0.0

Discussion

Due to limited publications, comparison of actual Interventional Radiology consultations to intervention start time with other trauma centers was not available. With the goal of meeting expectations set forth by the ACS, a performance improvement project was set up with the result of the design and implementation of the Hybrid Room in 2014.

We have been able to exceed the ACS criteria due to visionary trauma faculty in proposing this unique room dedicated toward the management of critical trauma patients. Committed clinical services such as interventional radiologists, operative and anesthesia teams have helped the Trauma Service at University Hospital meet and exceed ACS expectations and provide the highest level of care to the injured patients of South Texas.

Looking to the Future

Our use of the term Code Angio has been extremely broad, capturing anyone with extravasation on CT scan. We would like to drill down and specifically define the term based on clinical parameters and hemodynamic instability.

It is our goal to review the rate of failed angiography, including patients with a need to return for additional IR interventions or operative procedures.

References

- ACS TQIP Benchmark Report, (Fall 2017)
- American College of Surgeons, Committee on Trauma, (2014) Resources for Optimal Care of the Injured Patient, (11), p. 79.

Special Recognition

Thank you to our UT Health Trauma Service faculty, Interventional Radiologists and Anesthesia Faculty for their contribution and support of this initiative.