

Does a “Blush” on CT following Blunt Abdominal Injury Necessitate an Invasive Intervention?

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Children'sSM
Healthcare of Atlanta



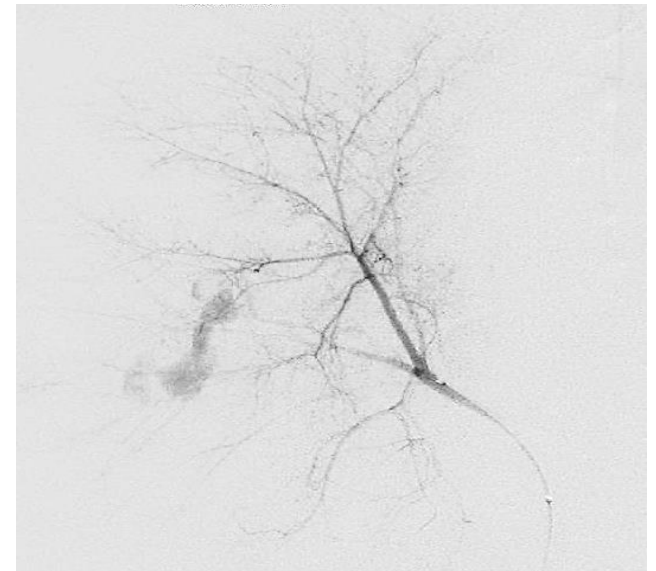
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Financial Disclosures

- None

Background

- Debate: Does blush on CT dictate automatic intervention in children?
- Varying clinical outcomes
- Lack of Standardized Protocols for intervention in patients with blush after blunt abdominal trauma



Methods

- Retrospective Review of an Institutional Trauma Registry (2008-2014)

Variables:

- Injured Organ
- Injury Grade/Severity
- Operative vs. Non-operative Management
- Angio/Embolization

Outcomes:

- Overall Mortality
- Need for Intervention
- Admission to ICU
- Blood Transfusion
- Length of Stay

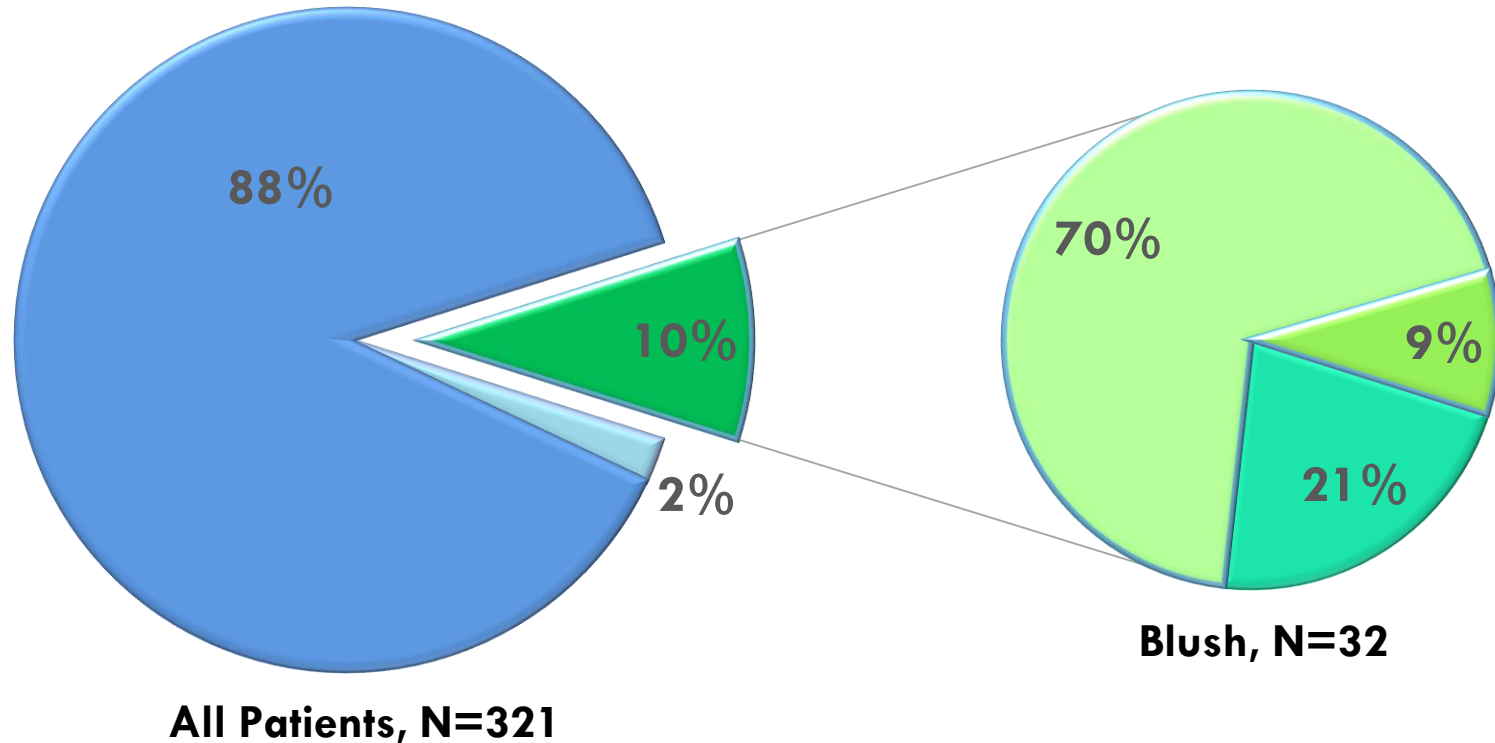
Demographics

Patient Characteristics	CT Blush (N=32)	No CT Blush (N=289)	p-value
Age (years), median (IQR)	11 (5 – 14)	9 (6 – 13)	0.083
Gender			
Male	7 (21.9%)	104 (36.0%)	0.111
Female	25 (64.0%)	185 (64.0%)	
Injury			
Spleen	20 (62.5%)	150 (51.9%)	0.255
Liver	23 (71.9%)	167 (57.8%)	0.124
Seatbelt Sign	2 (6.3%)	23 (8.0%)	0.762
Grade of injury, median (IQR)	4 (3 – 4)	3 (2 – 4)	<0.001
0	0 (0.0%)	3 (1.0%)	0.002
1	1 (3.1%)	51 (17.7%)	
2	2 (6.3%)	57 (19.7%)	
3	7 (21.9%)	95 (32.9%)	
4	16 (50.0%)	66 (22.8%)	
5	6 (18.8%)	17 (5.9%)	

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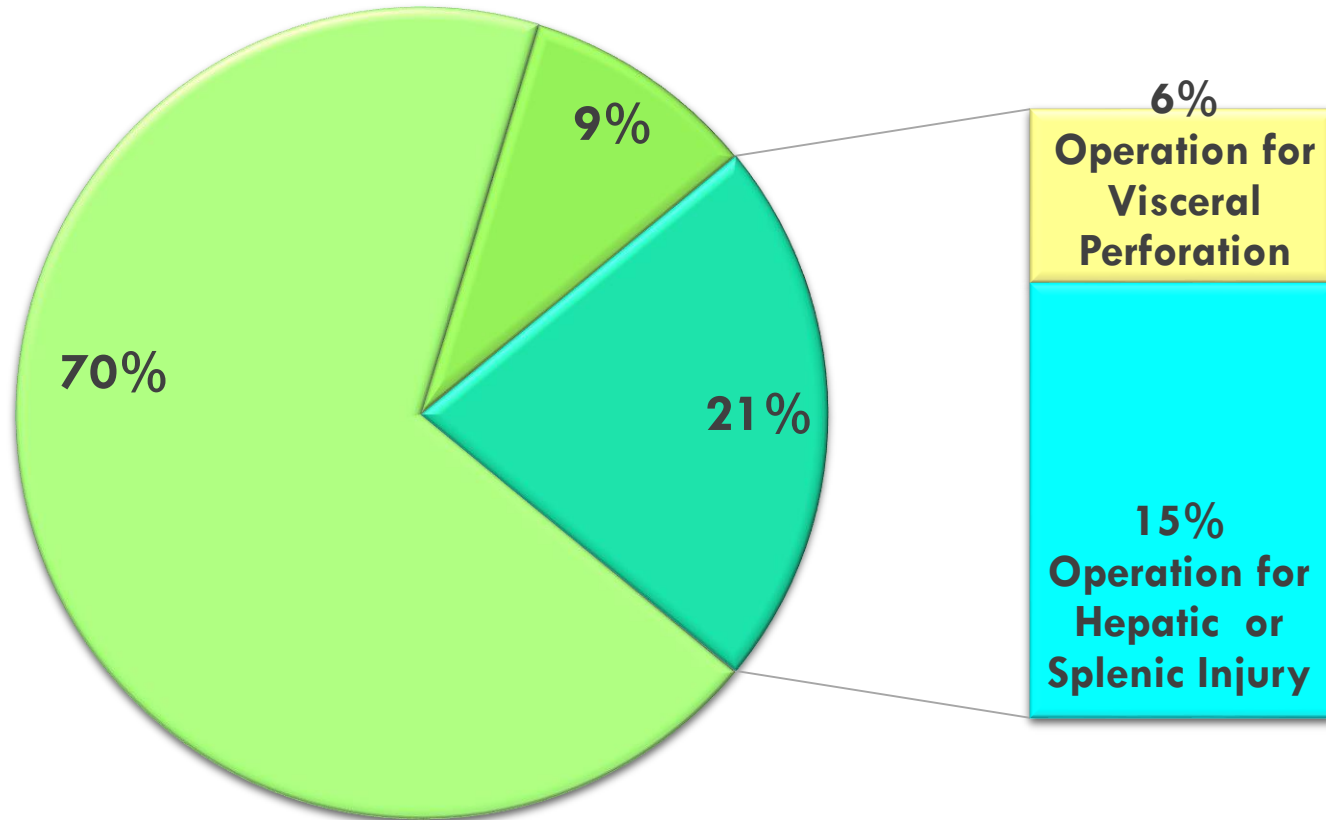
Blush and the Need for Intervention



- No Blush, Intervention
- Blush, Operation
- Blush, Angio/Embolization

- No Blush, No Intervention
- Blush, No Intervention

Blush and the Need for Intervention



Blush, N= 32

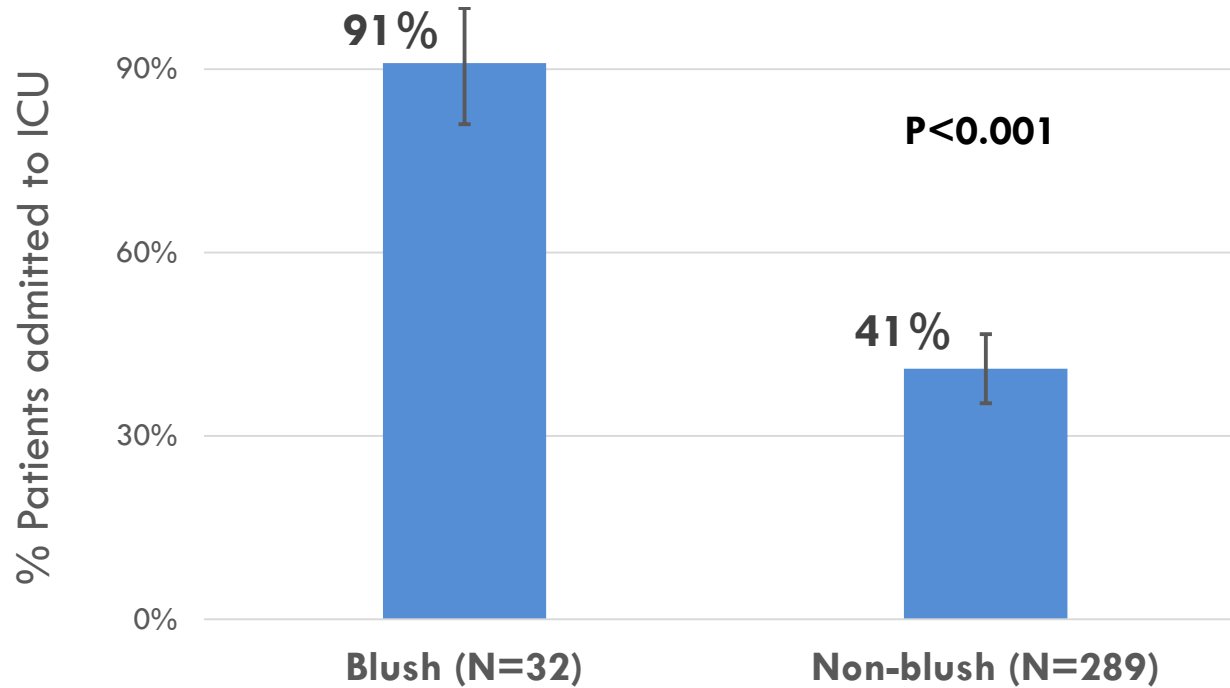
■ Blush, Non-operative Management

■ Blush, Operative Management

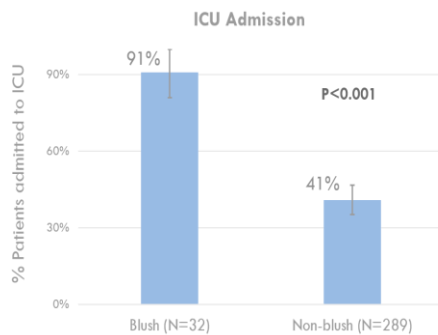
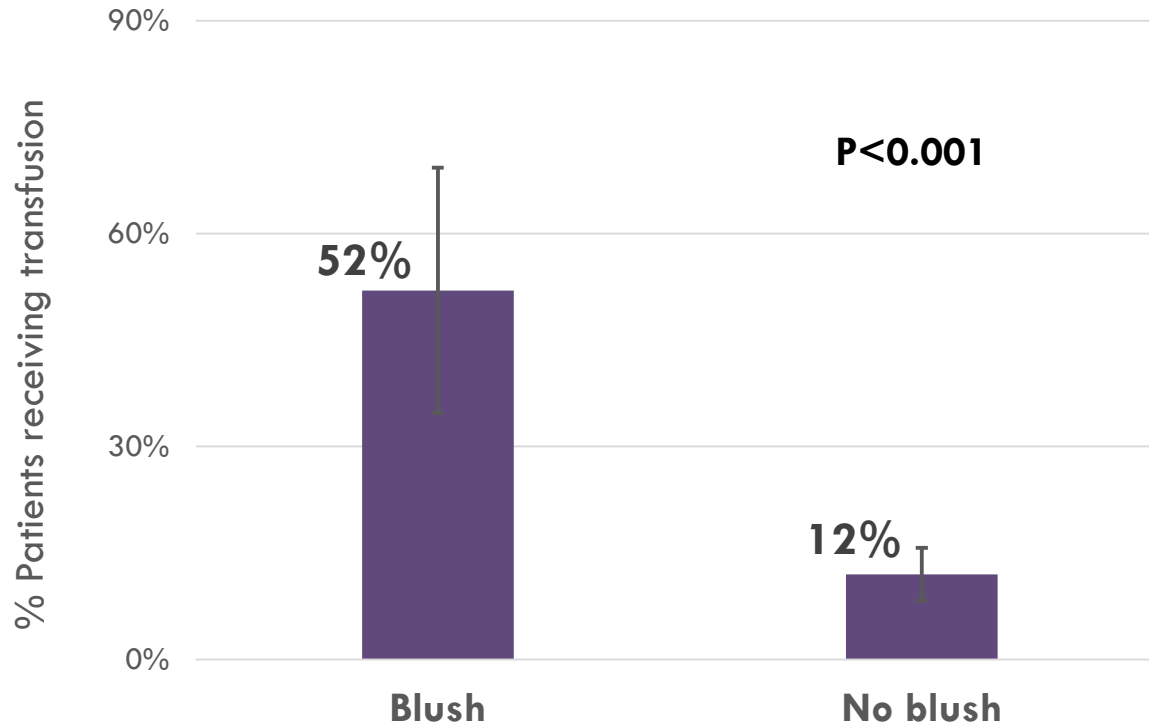
■ Blush, Op (Visceral perforation)

■ Blush, Non-op + Angio/Embolization

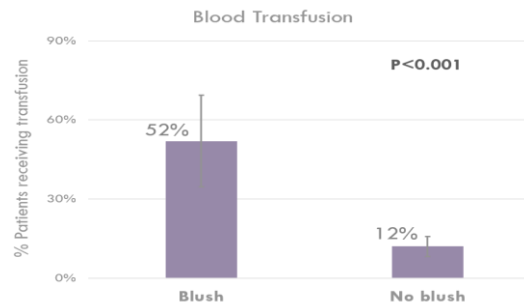
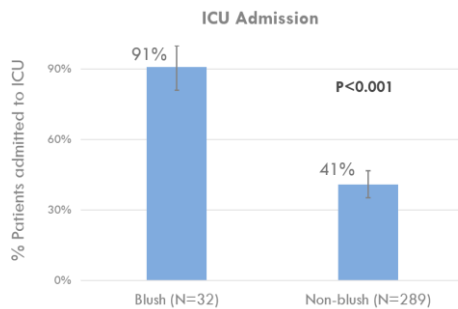
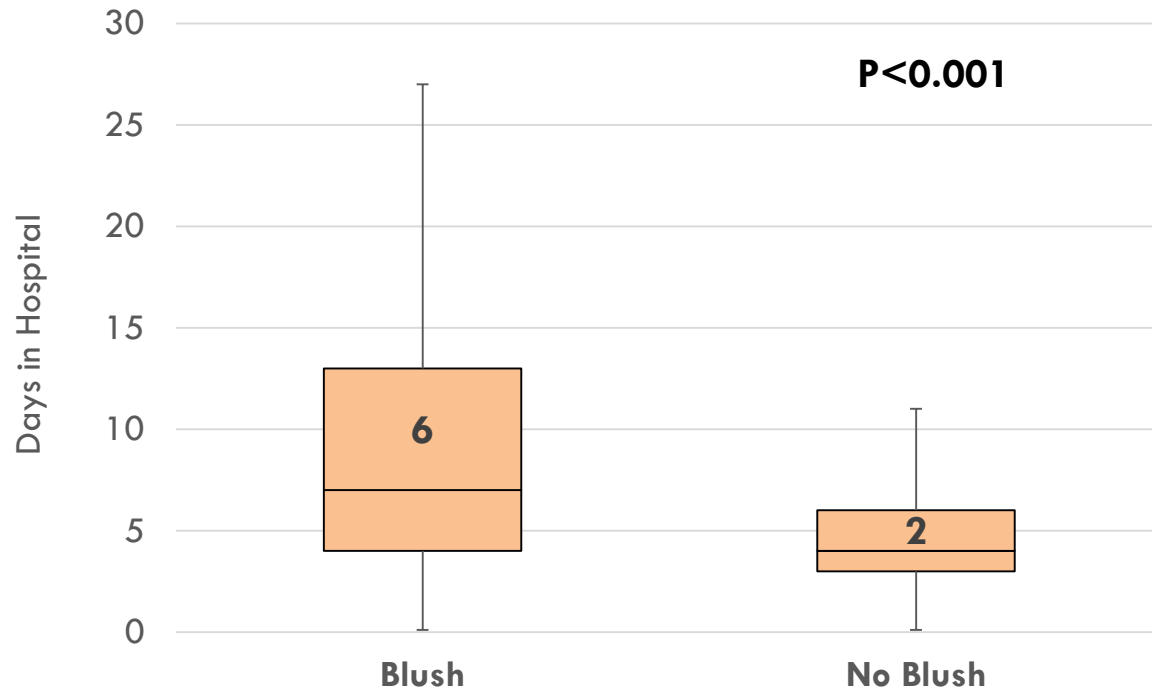
ICU Admission and Blush



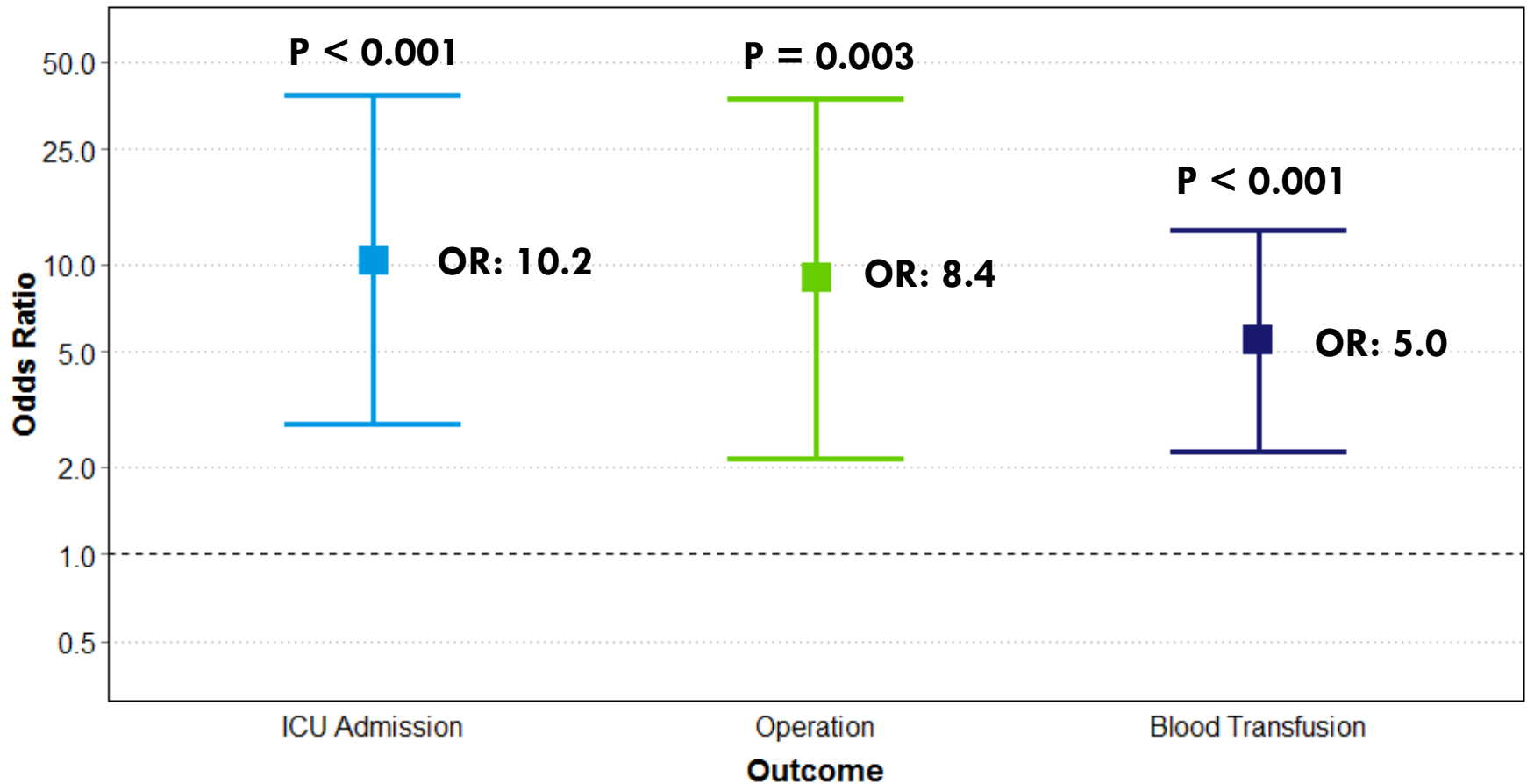
Blood Transfusion and Blush



Length of Stay and Blush

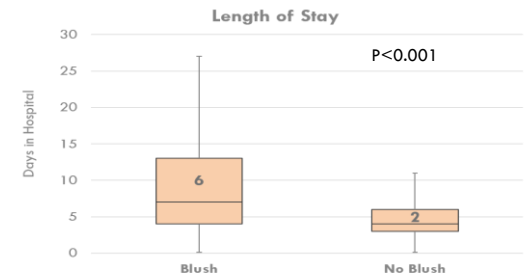
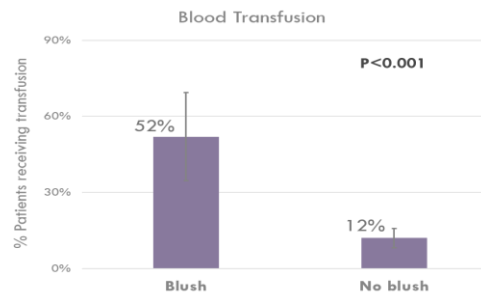
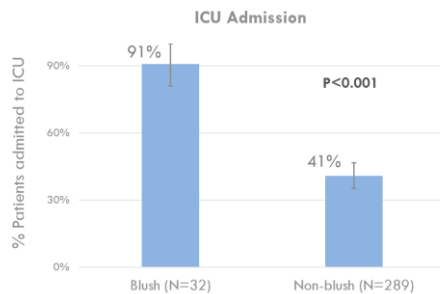
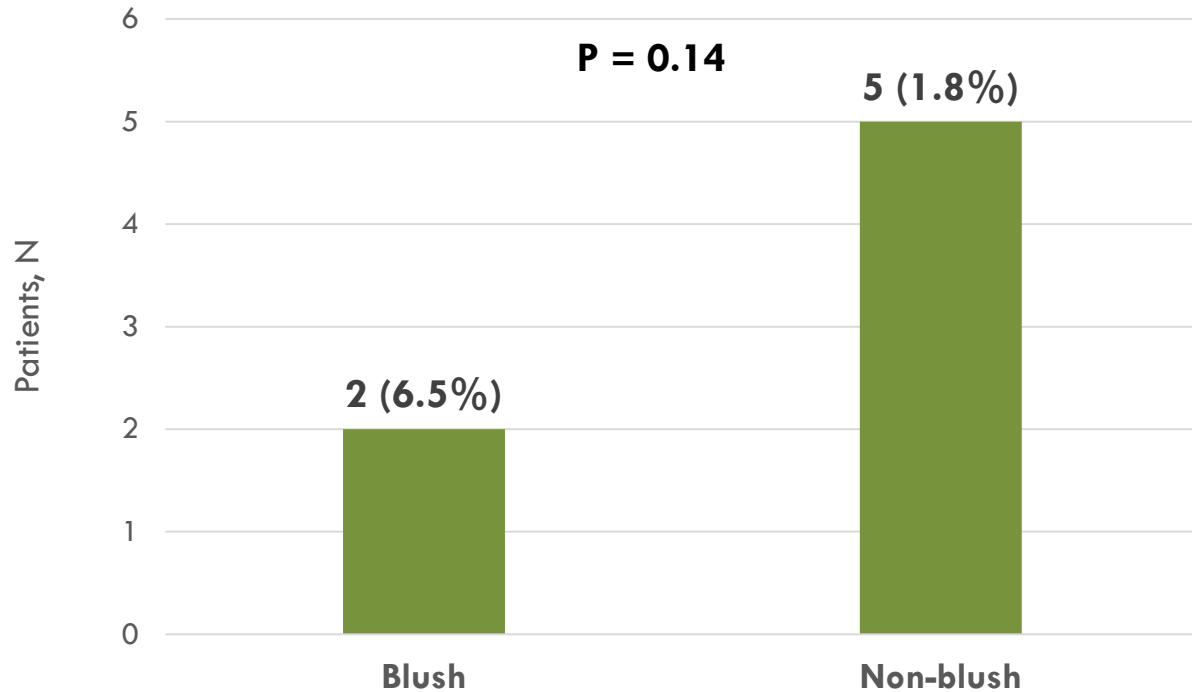


Adjusted Odds Ratio for Intervention*



*Adjusted for age, gender, injury (spleen vs liver), grade of injury

Mortality: Blush vs Non-Blush



Conclusions

- Patients with blush have higher grades of injury
- They are more likely to receive blood products, be admitted to the ICU, and be considered for invasive intervention
- **70% of patients with blush did not require any intervention**
 - **80% of isolated splenic or hepatic blush did not require intervention**
- The decision to move forward with intervention should be dictated by physiology and changes in overall clinical picture
- Future studies include identification of predictive factors for failure of NOM and cost/effectiveness studies

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- Dr. Sarah Hill
- Dr. Kurt Heiss
- Courtney McCracken, PhD and Curtis Travers, MPH
- Patients and Families of Children's Healthcare of Atlanta

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