The Outreach Priority Score:
A Novel Method for Objectively Focusing Trauma Center Outreach

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BACKGROUND

- Trauma centers must conduct outreach to partners:
  - referring hospitals
  - transport agencies
- Large tertiary hospitals may have many partners yet have limited resources.
- Prioritizing outreach efforts based upon volume of referrals or transfers alone fails to address the role of patient acuity and injury severity on needs for outreach.
- No objective method for prioritizing a trauma center's outreach has been developed.

STUDY DESIGN

Aim: A novel **Outreach Priority Score (OPS)** is proposed, combining injury frequency and severity in a statistically relevant manner.

Setting: a tertiary American College of Surgeons-verified Level I Pediatric Trauma Center (PTC) with a large state-wide referral area.

Design: A retrospective review PTC's registry data was conducted.

Sample: All patient referrals and transports within the state during a **four-year period** were analyzed. There were **3317** patients transferred during this period from **88** different referring hospitals within the state. There were also **7074** patients transported by **85** different emergency transport agencies.

METHODS

- Trauma patients transferred or transported to the trauma center between January 1, 2017, and December 31, 2020, were included for analysis.
- An OPS was calculated for each referring hospital and transporting agency during this period, first for the total four-year period and then for each year individually for comparison and validation.
- The OPS is calculated by standardizing the frequency and the injury severity score (ISS) of patients from each referring hospital and transporting agency during the study period.
- Population means and standard deviations were used to determine z-scores.
- Then the standardized z-scores are combined into a single t-score, the OPS, for comparison and prioritization. The result is an Outreach Priority Score for each referring hospital or transport agency based upon the combined frequency and acuity of patient transfers during a given time period.

Z-score (mean=0, sd=1)

T-score (mean=50, sd=10)

- A higher OPS suggests a higher relative frequency and acuity of patient transfers and may suggest a priority for future outreach efforts.

RESULTS

- Scores ranged from 30 to 95. Hospitals and transport agencies were ranked according to their OPS and the top 10 hospitals and agencies were identified for each given time period (Table 1).
- An overall threshold score of **>=60** identified between 7 and 10 of 88 possible referring hospitals and between 5 and 10 of 85 possible emergency transport agencies for focused outreach activities, accounting for both high frequencies and high acuities.

Table 1: Outreach Priority Score for the Top 10 Partners

Partner (code)	OPS	Volume Rank (n)	ISS Rank (mean)
Referring Hospital			
Hospital "A"	82.90	1 (238)	35 (6.83)
Hospital "CC"	81.67	79 (1)	1 (29.00)
Hospital "CB"	78.26	80 (1)	2 (27.00)
Hospital "B"	73.87	2 (182)	33 (6.94)
Hospital "C"	72.81	3 (174)	29 (7.09)
Hospital "D"	70.59	4 (152)	20 (7.91)
Hospital "X"	67.59	24 (55)	4 (15.53)
Hospital "E"	66.49	5 (122)	14 (8.41)
Hospital "BZ"	62.22	76 (2)	3 (17.50)
Hospital "F"	60.47	6 (104)	38 (6.62)
Transport Agency			
Agency "A"	94.73	1 (1775)	34 (5.05)
Agency "B"	83.91	2 (1330)	24 (5.69)
Agency "BE"	74.93	57 (2)	1 (19.50)
Agency "BH"	70.04	58 (2)	2 (17.00)
Agency "CC"	70.01	68 (1)	3 (17.00)
Agency "C"	69.75	3 (820)	25 (5.52)
Agency "F"	65.39	6 (254)	7 (11.13)
Agency "E"	63.70	5 (296)	10 (9.69)
Agency "M"	63.33	13 (95)	4 (12.29)
Agency "AG"	60.50	33 (16)	6 (11.93)

CONCLUSIONS

- The OPS provides a valid objective methodology for prioritizing trauma center outreach activities.
- The OPS can be used to rank referring hospitals and transport agencies based upon previous year's data and available outreach resources.
- **OPS values of >=60** may serve as a useful threshold to prioritize outreach activities for hospitals with large referral areas.
- Subjective methods for prioritizing outreach activities exist and may provide a stronger basis for these activities than data alone. However, combining objective and subjective methods may be ideal.
- The OPS is the only statistical method for prioritizing outreach activities currently available.

REFERENCES

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