CONCLUSION: Strong stewardship by the government and coordinated effort of multiple stakeholders is required to standardize care at these facilities and officially designate them as Karachi's trauma care network.

Negative Correlation Between Neonatal and Pediatric Extracorporeal Membrane Oxygenation Circuit Changes and Patient Outcomes

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INTRODUCTION: Extracorporeal membrane oxygenation (ECMO) is an advanced life support modality used for reversible heart and/or lung failure in children and neonates. Some require this external circuit to be changed during the run due to coagulopathy or mechanical failure. Circuit change(s) can result in massive fluid shifts, weight gain, and hemodynamic instability, with negative implications for the patient. Predictors for undergoing circuit changes and its impact on outcomes remain unclear. We hypothesized that circuit changes during ECMO support would correlate with increased morbidity and mortality.

METHODS: Patients with one ECMO run lasting 30 days or less at a tertiary children's hospital between 2010-2017 were retrospectively reviewed. LASSO logistic regression models were built to identify independent predictors for undergoing a circuit change. Bivariate regression analysis was used to compare outcomes in patients undergoing a circuit change to those who did not. Primary outcome of interest was mortality on ECMO; secondary outcomes included major bleeding, neurologic, and infectious morbidities; $p<0.05$ was significant.

RESULTS: One hundred ninety-one patients were included; 144 (75%) had no circuit change, while 47 (25%) had one or more circuit change(s). Lower gestational age at birth ($p=0.04$), higher WBC ($p=0.03$), higher platelet transfusion during ECMO ($p<0.001$) were independent risk factors for undergoing a circuit change. Compared to those who did not undergo a circuit change, patients who did had longer median ECMO duration ($p<0.001$), higher rates of bleeding complications ($p=0.02$), and higher mortality ($p=0.03$).

CONCLUSION: Changing the circuit while on ECMO support was associated with longer ECMO duration, higher mortality, and higher bleeding complications.

Optimality of Re-triage of Under-triaged Severely Injured Patients in California

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INTRODUCTION: Re-triage is a complex process where non-trauma centers (NTC) transfer under-triaged severely injured patients to high-level trauma centers (TC). The process requires calling multiple high-level centers to accept the patient, coordinating transport and providing comprehensive hand-off. This study sought to quantify the optimality re-triage between NTC and TC in California.

METHODS: We conducted an observational cohort study utilizing 2016 California Office of Statewide Health and Planning Data of severely injured adults. Network analysis based on the ground transportation and air ambulance data was employed to estimate the total distance and time from NTC to TC for each transfer. The optimality of re-triages was estimated at Trauma System level (percent of transfers to closest high-level TC) and at center level (percent of NTCs that re-triages to closest high-level TC for $\geq$90% of transfers).

RESULTS: In the CA Trauma System 81.2% of re-triages were to the closest high-level TC. However, at the individual center level, only four NTCs (1.8%) re-triaged $\geq$90% of transfers to the closest high-level TC. When there was $<$50 miles of driving distance between NTC and TC, 74% of 1,216 non-optimal ground transfers could have reduced transfer times between 1-61 minutes had they re-triaged to the closest high-level TC. When there was $\geq$50 miles, 99% of non-optimal transfers could have been reduced by 1-324 minutes by driving or flying to the nearest high-level TC.

CONCLUSION: The CA trauma system had satisfactory optimality in 2016. Optimization of re-triage to closest TC could improve performance of CA trauma system.

Outcomes in Trauma Population of Nonagenarians Admitted to a Surgical Service vs Non-surgical: Experience at a Level I Trauma Center

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INTRODUCTION: As the population ages, the number of patient over 90 years of age is increasing. This creates many challenges in providing care for the most vulnerable segment of the population. The aim of the study is to characterize and to compare outcomes of nonagenarians admitted to surgical service (trauma or orthopedic) vs non-surgical service (hospitalist).

METHODS: A retrospective review of trauma patients 90 years and older who were admitted from March 2014 to December 2020. The patients were divided into two groups: those admitted to a surgical service (trauma or orthopedic) and those admitted to a non-surgical service (hospitalist). A total of 888 patients were found.

RESULTS: The ISS score is statistically higher for patients admitted to trauma or orthopedic service than to the hospitalists. The length of stay (LOS) is statistically insignificant for those admitted to trauma or orthopedic compared to the hospitalist. No differences are found among trauma level activations. Trauma