CAN PLANNED TRAFFIC PATTERNS IMPROVE SURVIVAL AMONG THE INJURED DURING MASS CASUALTY MOTORCYCLE RALLIES?

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University of South Carolina

Presenter: Cecily E. DuPree, DO
Discussant: Allan B. Peetz, MD, Vanderbilt

Objectives: The objective of this study was to determine whether the implementation of a scheduled controlled "traffic loop" could improve overall mortality and impact patient outcomes during the city's high volume motorcycle rally.

Methods: All motorcycle-related injuries during the city’s May “Bike Week” were retrospectively reviewed over a 4-year period. Comparative analysis was completed between “non-traffic loop” Memorial Day weekends of 2013 through 2016 and the city's scheduled 23-mile 3-day “traffic loop” (10pm to 2am) during years 2015 and 2016. The two groups were compared for age, gender, injuries, ISS, GCS, length of stay (LOS), ventilator free days, and mortality. The primary outcome was mortality.

Results: 139 injured patients were reviewed. Non-traffic loop group included 120 patients and 19 patients in the traffic loop group. Mean age was 36.1±11.2 years, 72.1% male. Helmet use observed in 11.5% and 27% were legally intoxicated. Comparison groups were equivalent in age, gender, ISS, and GCS; however, traffic loop patients required longer ICU LOS (17.0 vs 5.2 days, p=0.047) and ventilator days (29.5 vs 6.0 days, p=0.024). Traffic loop injury patterns were significantly more likely to involve abdominal trauma (p=0.002). A 7% decrease in helmet use and a 15% increase in head injuries was seen during traffic loop hours but not statistically significant. All patients were equally as likely to experience chest, extremity, and craniofacial injuries. Although no statistical difference was observed in mortality rates of comparison groups, no deaths occurred during traffic loop hours (0% vs 5%).

Conclusions: The implementation of a controlled traffic loop improved motorcyclist survival with no reported mortalities and suggest planned control traffic patterns during high city volume events can be successful however follow up study over a prolonged period is warranted to confirm our early findings.
### Demographics and Outcomes

<table>
<thead>
<tr>
<th>Demographic &amp; Outcomes</th>
<th>Non-Traffic Loop</th>
<th>Traffic Loop</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years [Mean (SD)]</td>
<td>36.5 (11.1)</td>
<td>34.0 (11.9)</td>
<td>0.376</td>
</tr>
<tr>
<td>Male [n (%)]</td>
<td>83 (69.2)</td>
<td>15 (78.9)</td>
<td>0.589</td>
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<tr>
<td>ICU admission [n (%)]</td>
<td>14 (11.7)</td>
<td>3 (15.8)</td>
<td>0.705</td>
</tr>
<tr>
<td>Loss Control [n (%)]</td>
<td>54 (45.0)</td>
<td>7 (36.8)</td>
<td>0.506</td>
</tr>
<tr>
<td>Collision with vehicle [n (%)]</td>
<td>61 (50.8)</td>
<td>10 (52.6)</td>
<td>0.114</td>
</tr>
<tr>
<td>ETOH ≥ legal limit [n (%)]</td>
<td>30 (25.0)</td>
<td>7 (36.8)</td>
<td>0.278</td>
</tr>
<tr>
<td>LOS, days [Mean (SD)]</td>
<td>3.1 (7.7)</td>
<td>5.6 (16.6)</td>
<td>0.291</td>
</tr>
<tr>
<td>ICU LOS, days [Mean (SD)]</td>
<td>5.2 (5.2)</td>
<td>17.0 (22.0)</td>
<td>0.047</td>
</tr>
<tr>
<td>Vent days [Mean (SD)]</td>
<td>6.0 (4.8)</td>
<td>29.5 (27.6)</td>
<td>0.024</td>
</tr>
<tr>
<td>Abdominal injury [n (%)]</td>
<td>4 (3.3)</td>
<td>4 (21.1)</td>
<td>0.002</td>
</tr>
<tr>
<td>Mortality [n (%)]</td>
<td>6 (5.0)</td>
<td>0 (0%)</td>
<td>0.319</td>
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</table>

**23-mile Traffic loop**
MAPPING AREAS WITH CONCENTRATED RISK OF TRAUMA MORTALITY: A FIRST STEP TOWARD MITIGATING DISPARITIES IN TRAUMA

Molly P. Jarman, PhD, MPH, Elliott R. Haut, MD, PhD, FACS*, Frank Curriero, Renan Castillo
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Presenter: Molly P. Jarman, PhD, MPH

Discussant: Mayur Narayan, MD, MPH, MBA, MPHE, Weil Cornell Medicine/NY Presbyterian Hospital

Objectives: Many rural, minority, and low-income communities face geographic barriers to trauma care, which may contribute to health disparities in injury. The built and social environment at the injury scene may also contribute to these disparities, and may compound risk from individual patient demographic and injury characteristics. The objectives of this study were to classify injury events based on features of the injury scene, and to examine patient demographic, injury characteristic, and mortality patterns by location class.

Methods: Data from the 2015 Maryland Adult Trauma Registry and eMEDS pre-hospital Patient Care Reporting System (n = 16,082) were used in a latent class analysis of injury scene characteristics (trauma center distance, trauma center type, land use, community level income, and median age). Distributions of individual patient characteristics and outcomes were examined by location class. Odds of death by location class were estimated with logistic regression, with and without adjustment for demographic and injury characteristics.

Results: Eight classes were identified: rural, exurban, young middle suburb, aging middle suburb, inner suburb, urban fringe, high income urban core, and low income urban core. Patient demographic and injury characteristics varied across classes. Odds of death varied by class, with and without adjustment for individual patient characteristics, and were highest for rural, middle suburban, and low income urban locations. Individual characteristics appear to mask the relationship between location class and mortality.

Conclusions: Characteristics of injury scenes can be categorized into distinguishable classes, and odds of death vary significantly by location class. Identifying areas with highest risk of mortality and patterns of individual risk factors may guide targeted primary injury prevention and clinical treatment interventions.
Figure 1: Geographic Distribution of Latent Classes

Figure 2: Mortality Odds Ratios by Location Class. Inner Suburb is the reference class. Adjusted model included age, sex, race/ethnicity, insurance status, CCI, severity, mechanism, prehospital time, and mechanism/time interaction. R = Rural, YMS = Young Middle Suburb, AMS = Aging Middle Suburb, LIUC = Low Income Urban Core, E = Exurban, HIUC = High Income Urban Core, UF = Urban Fringe.
IMPLEMENTATION IS NOT ENOUGH: GRADUATED DRIVERS LICENSING BENEFITS FROM PUBLIC AWARENESS CAMPAIGNS

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Rutgers-New Jersey Medical School

Presenter: Stephanie Bonne, MD
Discussant: Linda Ding, MD, University of South Alabama

Objectives: Graduated Drivers License (GDLs) are required in most states. GDLs involve a staged approach to licensing teen drivers with a supervisory period followed by a restricted, then full license. Surveys suggest that parents have poor acceptance of restrictions imposed by GDLs and poor compliance. NJ initiated GDLs in 2002, however, fatal crash data showed minimal effect on teen-driver deaths until a subsequent public awareness and enforcement campaign was launched.

Methods: Data from 1998-2016 was obtained from New Jersey's Fatal Accident Investigation Unit. State Police data on total crash fatalities and teen passenger deaths were available after 2005. Data before and after GDL and implementation in 2006 and the state-wide awareness campaign in 2010 were evaluated. Paired t-tests were performed; p<0.001 considered significant.

Results: Initiation of GDL had minimal effect with no change in numbers of dead teen drivers or fatal crashes in the 4 years before and after the law (44 vs. 49 dead teen drivers, 117 vs.115 for fatal crashes, p>0.05). After a comprehensive public and law enforcement campaign in 2010, fatal crashes declined. Comparing the 7 years prior and after the campaign, decreases are seen in dead teenaged drivers (42 vs. 22, p<0.001) and total fatal teen crashes (107 vs. 61, p<0.001). Comparing 4 years before and 6 years after there were decreases in crash fatalities in teen drivers (112 vs 66, p<0.001) and in number of dead teen passengers in a vehicle operated by a teen (19 vs 11 p<0.001).

Conclusions: GDL laws are common, but implementation alone may be insufficient in decreasing teen MVC fatalities. A comprehensive, public-health based awareness campaign involving the public and law enforcement is needed to ensure compliance and educate about benefits of GDLs in decreasing deaths. Additional studies in other states are needed to assess the validity of these findings.
EVALUATING THE EFFECTIVENESS OF TRANSLATED A MATTER OF BALANCE FALL PREVENTION PROGRAM MATERIALS FOR NON-ENGLISH SPEAKING PARTICIPANTS

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Tufts Medical Center

Presenter: Elizabeth S. Wolfe, CAGS, ATC

Discussant: Cindy Blank-Reid, RN, MSN, CEN, Temple University Hospital

Objectives: A Matter of Balance (MOB) is an evidence-based fall prevention program shown to reduce fear of falling (FOF) in English speaking participants. The effectiveness of translated Chinese and Spanish MOB materials in reducing FOF is unknown. The purpose of this study was to evaluate if MOB reduced FOF in Chinese- and Spanish-speaking participants.

Methods: This Institutional Review Board approved, prospective interventional study recruited participants from MOB classes in 2 northern states from November 2014 to October 2015. The Falls Efficacy Scale-International (FES-I) (16-64 point scale; 16= not concerned [about falling] to 64= very concerned) and a demographic questionnaire were used to survey participants at the first class (baseline), last class, and 6 months after the MOB course. FES-I means were compared across and within the language groups using ANOVAs or paired t-tests. Statistical significance was defined by p <0.05.

Results: Ninety participants enrolled, 77 (85.6%) completed the course (Chinese [n=37, 48%]; Spanish [n=19; 25%], English [n=21, 27%]), and 54 (60%) completed the 6-month survey (Chinese [n=33, 61%], English [n=21, 39%]). Most participants were female (n=77, 86%) and had a high school education or less (n=76, 84%, p=<0.0001) (Tables 1 &2). Baseline FES-I scores were higher in the Chinese (40.9±12.6) compared to Spanish (32.0±10.8) and English (28.9±10.0) (p=0.0001). Chinese FES-I scores significantly increased at the last class (+7.1, p=0.009) and 6 month survey (+6.7, p=0.0088). FES-I scores decreased in the Spanish (-6.6, p=0.016) and English groups (-2.7, p=0.14) at last class, and English 6 month FES-I scores were slightly lower than baseline (-0.4, p=0.8) (Table 2).

Conclusions: Chinese had higher FOF at the end the course and 6 months after MOB compared to baseline. The MOB did show promise in reducing FOF in both the Spanish and English groups.
### Table 1: Demographic Characteristics by Language among Matter of Balance (MOB) Participants

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<tbody>
<tr>
<td>Female Gender [n, %]</td>
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<tr>
<td>&lt;75</td>
<td>9 (25.0)</td>
<td>12 (42.3)</td>
<td>15 (55.2)</td>
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<td>75-79</td>
<td>14 (38.9)</td>
<td>10 (35.7)</td>
<td>4 (17.4)</td>
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<tr>
<td>&gt;79</td>
<td>13 (36.1)</td>
<td>6 (21.4)</td>
<td>4 (17.4)</td>
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<td>Countries of Origin [n]</td>
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<td>United States [27]</td>
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<tr>
<td>Cuba [1]</td>
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<tr>
<td>Mean Years in the US [SD]</td>
<td>27.5 (12.3)</td>
<td>22.3 (17.8)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*missing n=3

### Table 2: Survey Answers by Language for Participants Who Completed the MOB Course

<table>
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<tr>
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<tbody>
<tr>
<td>Education [n, %]</td>
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<tr>
<td>Less than high school</td>
<td>23 (64)</td>
<td>14 (54)</td>
<td>3 (11)</td>
<td>&lt;0.0001</td>
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<tr>
<td>High school</td>
<td>4 (11)</td>
<td>7 (27)</td>
<td>18 (64)</td>
<td></td>
</tr>
<tr>
<td>College and higher</td>
<td>9 (25)</td>
<td>0</td>
<td>5 (19)</td>
<td></td>
</tr>
<tr>
<td>Mean number of health problems (SD)**</td>
<td>1.5 (0.9)</td>
<td>1.3 (0.9)</td>
<td>1.5 (1.2)</td>
<td>0.8352</td>
</tr>
<tr>
<td>Use of an assistive device [n, %]***</td>
<td>13/33 (39)</td>
<td>13/22 (61)</td>
<td>11/23 (48)</td>
<td>0.1942</td>
</tr>
<tr>
<td>Baseline FES-I Mean (SD)</td>
<td>40.9 (12.6)</td>
<td>32.0 (10.8)</td>
<td>28.9 (10.0)</td>
<td>0.0003</td>
</tr>
<tr>
<td>Final FES-I Mean (SD)</td>
<td>48.0 (12.3)</td>
<td>27.5 (8.3)</td>
<td>25.0 (7.2)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Mean change from baseline (paired t-tests)</td>
<td>7.1 (15.6)</td>
<td>-6.6 (10.0)</td>
<td>-2.7 (7.9)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Completed 6-month follow-up FES-I [n, %]</td>
<td>32 (89)</td>
<td>21 (75)</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>6-month FES-I Mean (SD)</td>
<td>47.2 (14.3)</td>
<td>-</td>
<td>-</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Mean change from baseline to 6 month (paired t-tests)</td>
<td>6.7 (13.8)</td>
<td>-</td>
<td>-</td>
<td>0.0038</td>
</tr>
<tr>
<td>Completed 6-month [n, %]</td>
<td>10/33 (30.3)</td>
<td>3/21 (14.3)</td>
<td>0.18</td>
<td></td>
</tr>
</tbody>
</table>

*Six-month follow-up surveys were not available for Spanish-speaking MOB group
**Diabetes, hypertension, heart condition, neuropathy, lung condition, stroke, other
***Walker, cane, hearing device, vision device, other
MIAMI-DADE COUNTY YOUTH WEAPONS OFFENDER PROGRAM: A POTENTIAL MODEL TO REDUCE FIREARM CRIME RECIDIVISM NATION-WIDE

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University of Miami Miller School of Medicine

Presenter: Rene Gamboa, MS, LMHC
Discussant: Anthony Bottiggi, MD, University of Kentucky College of Medicine

Objectives: Objectives: Homicide is the third leading cause of death among youth aged 15 to 24 years in the United States. 86% of the deaths are due to firearms (CDC). The Juvenile Gun Court in Birmingham, Alabama reported a recidivism rate of 41% for its first 100 participants in 1995 and the Juvenile Gun Program in Minneapolis, MN reported 49% of its graduates had new criminal charges. The goal of this study is to evaluate and compare Miami Dade County's juvenile weapon offender program (JWOP) efficacy in preventing recidivism of high-risk youth.

Methods: Methods: This study is a retrospective analysis of 79 graduates surveyed by the MDC Juvenile Services Department (JSD) of GATE Program graduates over a ten-year period of 1999-2009. The GATE Program is an intervention based program conducted at Jackson Memorial Hospital/ Ryder Trauma Center for males ages 13 to 17 convicted of weapons possession charges or other non-violent weapon offenses. Experiential education and cognitive behavioral interventions are used to achieve the goal of deterring violence and future weapon use.

Results: Results: Re-arrest data from the MDC JSD demonstrated the lowest nation-wide recidivism re-arrest rate of 29% of GATE clients who graduated between 1999-2009.

Conclusions: Conclusion: The GATE Program exhibits the most promising recidivism rate of youth weapons offenders nation-wide. A more robust analysis of recent GATE graduates is underway to assure continued success of the program. If continued efficacy is identified, there is a need for expansion and adaptation of this program to inner city communities around the United States to reduce recidivism of youth weapons offenders and prevent potential death and disability.
INTIMATE PARTNER AND SEXUAL VIOLENCE: A FOCUS ON MALE PATIENTS

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Ryder Trauma Center, University of Miami Miller School of Medicine

Presenter: Tanya L. Zakrison, MD, MPH, FRCSC, FACS
Discussant: Carnell Cooper, MD, Prince George’s Hospital Center

Objectives: A recent EAST-supported, multicenter trial demonstrated a similar rate of intimate partner and sexual violence (IPSV) between male and female trauma patients, regardless of mechanism. Our objective was to perform a subgroup analysis of our affected male cohort as this remains an understudied group in the trauma literature.

Methods: We conducted a recent EAST-supported, cross-sectional, multicenter trial over one year (03/15-04/16) involving four Level I trauma centers throughout the United States. We performed universal screening of adult trauma patients using the validated HITS (Hurt, Insult, Threaten, Scream) and SAVE (sexual violence) screening surveys. Risk factors for male patients were identified. Chi-squared test compared categorical variables with significance at p<0.05. Parametric data is presented as mean +/- standard deviation.

Results: A total of 2034 trauma patients were screened, of which 1281 (63%) were men. Of this cohort, 119 men (9.3%) screened positive for IPSV, 10.4% for intimate partner violence and 6.5% for sexual violence. On categorical analysis of the HITS screen, the proportion of men that were physically hurt was 4.8% compared to 4.3% for women (p = 0.896). A total of 4.9% of men screened positive for both intimate partner and sexual violence.

Conclusions: One out of every twenty men that present to trauma centers are survivors of both intimate partner and sexual violence. They are at similar risk for physical abuse as women when this intimate partner violence occurs.