Conclusions This study provides evidence for increasing admission to first rehabilitation of the elderly for TSCIs, which can in part be attributed to an increase in risk of TSCI with increasing age. Potential lifestyle changes among the youngest, especially for sports and leisure-related TSCIs, as well as the oldest, possibly due to increase in activity, could contribute to the observed increase in risk.

309 IMPLEMENTATION AND EVALUATION OF AN MHEALTH SYSTEM FOR ACUTE BURN INJURIES IN RESOURCE-CONSTRAINED SETTINGS

¹Marie Hasselberg, ²Lee Wallis, ³Hendry Sawe, ¹Lucie Laflamme. ¹Karolinska Institutet, Sweden; ²Stellenbosch University; ³Muhimbili University

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Background Burn injuries are a leading cause of premature death worldwide and are largely attributable to poor living conditions. Timely care is a prerequisite to reduce morbidity and mortality and it can be significantly improved by smartphone-based consultation systems. The overall aim of this project is to assess how an mHealth system for acute burn injury care can impact on the delivery of emergency care for burns victims in terms of clinical management.

Methods The clinical quality includes assessments of diagnostic accuracy and patient management. Bedside diagnosis or image based diagnosis by burns experts will be used as gold standard. Technology Usability Evaluation Model will be used to assess how the users experience the system.

Results A tele-consultation system for acute burn care is currently under implementation in the Western Cape, South Africa. An application (app) is installed on a smartphone located in each of the emergency services of 8 hospitals to transmit visual and textual information between emergency staff at point of care and a network of burns specialists. A stepwise implementation of the system will start in Tanzania in the beginning of 2016. The burn specialists already involved in South Africa will act as experts for Tanzania. The evaluation will build on an evaluation already started in South Africa. The first part of the evaluation will include the hospitals currently using the mHealth system in the Western Cape, South Africa and 2–3 hospitals in Tanzania. The mHealth system and results of the evaluation will be presented at the conference.

Conclusions Low cost and timely alternatives to burn injury control are a pressing need in many low- and middle-income settings and countries. This project is a determinant step in that direction and can lead to the implementation of a viable, inclusive, and environment friendly mHealth system.

310 COMMON MORTALITY MODELS FAIL TO USE ANATOMIC INJURY INFORMATION OPTIMALLY

¹Alan Cook, ²Turner Osler, ³Laurent Glance, ⁴Fiona Lecky, ⁵Omar Bouamra. ¹Chandler Regional Medical Centre, USA; ²University of Vermont, USA; ³University of Rochester, USA; ⁴University of Sheffield, UK; ⁵University of Manchester, UK

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Background Comparison of trauma centres requires accurate injury severity metrics. The Trauma Audit and Research Network (TARN) in the UK, and the Trauma Injury Severity Score (TRISS) provide such risk adjustment. These models incorporate the Injury Severity Score (ISS) as the measure of anatomic injury severity but categorise it differently. The Trauma Mortality

Prediction Model (TMPM) better predicts mortality than the ISS. We compared the anatomic injury components of TARN, and TRISS models to TMPM.

Methods Data from the National Trauma Data Bank for 2002–2012. Probability of death was estimated for TARN, and TRISS from ISS values according to each model's treatment and compared these to TMPM using measures of discrimination (area under ROC curves), proximity to the true model (Akaike Information Criterion (AIC)), and calibration (Hosmer-Lemeshow statistic (HL)). Confidence intervals (CI) were estimated by bootstrapping. ISS and TMPM values were estimated for the Abbreviated Injury Scale (AIS) and the International Classification of Diseases, 9th Revision (ICD-9) lexicons. Data are shown as medians and 95% CI.

Results N = 1,145,959

AIS	ROC		AIC		HL	
TMPM	0.8716	0.8695–0.8734	238130	236110–240201	226.5	168.5–289.7
TARN	0.8374	0.8351–0.8396	270017	267958–272213	668.5	586.0–745.4
TRISS	0.8368	0.8346–0.8389	275098	273058–277265	2335.3	2186.9–2516.4
ICD-9	ROC		AIC		HL	
TMPM	0.8475	0.8451–0.8498	211424	209531–213377	107.1	76.1–142.3
TRISS	0.8234	0.8211–0.8258	223081	221132–225128	1850.0	1702.9–1998.7
TARN	0.8131	0.8106–0.8153	227002	225115–228955	1033.1	929.0–1152.4

Conclusions TMPM better predicted mortality than did the anatomic injury component of TRISS, or TARN and this was true whether individual injuries were coded in the AIS lexicon or in the ICD-9. As trauma care evolves, so must models of mortality prediction that best capture injury severity.

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311 APPLICATION OF SPATIAL EPIDEMIOLOGICAL APPROACHES TO INJURY RESEARCH: A SYSTEMATIC REVIEW

Himalaya Singh, Lauren V Fortington, Caroline Finch. Federation University Australia

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Background Injuries are a leading cause of death and disability around the world. Previous studies have shown that certain populations are consistently at greater risk of injury. Spatial epidemiological approach provides a way to better understand injury patterns and their associated risk factors at a population level. The aim of this research is to provide a systematic review of spatial epidemiological methods applied to injury research.

Methods A search was conducted in three major electronic databases (PubMed, Web of Science and Science Direct), for papers published between 2000–2015 inclusive. Included were papers reporting unintentional injury outcomes, which used geospatial methods for spatial epidemiological analysis. Findings are reported using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.

Results From over 10,000 articles, 88 articles met all inclusion criteria. The major categories of injury data that have been reported with geospatial methods were road traffic (52%), falls (11%), burns (12%), drowning (5%), workplace injuries (2%)

and others (18%). Grouped by themes, mapping was the most frequently used method, with 74% of articles limited to this approach to investigate a spatial pattern of injuries. Cluster detection and ecological analysis methods were applied less commonly, being used in 26% and 3% of articles, respectively. The kernel density estimation for point data and local indicators of spatial autocorrelation for areal data were the most frequently used cluster detection methods.

Conclusion In the last two decades, many geospatial methods have been developed and applied in injury research, primarily to investigate road traffic injuries. The depth of investigations has been largely limited to basic mapping. Use of more advanced geospatial methods will help to better understand injury aetiology. Researchers should be encouraged to adopt these advanced methods in their future studies.

312 STATE VARIATIONS IN MORTALITY FROM UNSPECIFIED UNINTENTIONAL INJURY AMONG AMERICANS AGED 65 YEARS AND OLDER, 1999–2013

¹Xunjie Cheng, ²Jie Yao, ³David C Schwebel, ^{1*}Guoqing Hu. ¹Department of Epidemiology and Health Statistics, School of Public Health, Central South University; ²College of Basic Sciences and Humanities, Harbin Institute of Technology Shenzhen Graduate School; ³Department of Psychology, University of Alabama at Birmingham

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Background Recent changes in unspecified unintentional injury mortality for the elderly by state remain unreported. This study aims to examine state variations in mortality from unspecified unintentional injury among Americans aged 65+, 1999–2013.

Methods Using mortality rates from CDC's Web-based Injury Statistics Query and Reporting System (WISQARS™), we examined unspecified unintentional injury mortality for elderly individuals aged 65+ from 1999 to 2013 by state. The proportion of unspecified unintentional injury was calculated to quantify the cause specificity of data. Linear regression examined the statistical significance of changes in proportion of unspecified unintentional injury from 1999 to 2013.

Results Of the 36 states with stable mortality rates, over 8-fold differences were observed for both the mortality rates and the proportions of unspecified unintentional injury for Americans aged 65+ during 1999–2013. 29 of the 36 states showed reductions in the proportion of unspecified unintentional injury, with Oklahoma (–89%), Massachusetts (–86%) and Oregon (–81%) displaying the largest changes. The decrease in unspecified unintentional injury mortality was negatively correlated with the change in mortality from falls in 26 states and poisoning in 3 states, and positively correlated with mortality from suffocation in 15 states, motor vehicle traffic crashes in 12 states, and fire/burn in 8 states.

Conclusions The cause specificity of elderly unintentional injury has improved for many states in the United States during 1999–2013. The improved cause specificity should be considered in trends analysis at the state level and comparisons between states for cause-specific injury mortality.

313 RISK OF VIOLENCE-RELATED INJURY AND BURDEN TO SOCIETY IN THE LATIN AMERICAN AND CARIBBEAN REGION

¹Cheryl J Cherpitel, ¹Yu Ye, ²Maristela Monteiro. ¹Alcohol Research Group, Emeryville, CA, USA; ²Pan American Health Organisation, Washington DC, USA

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Background Violence-related injury has been an important harmful consequence of drinking in the Latin American and Caribbean (LAC) region, but the risk at which drinking places the individual for violence-related injury or the burden this places on the population is unknown.

Methods A probability sample of 969 emergency room (ER) patients reporting a violence-related injury and arriving within six hours was analysed from 12 ERs in 9 countries in the LAC region. Dose-response relative risk (RR) of violence-related injury based on volume of consumption prior to the event is examined using pair-matched case-crossover fractional polynomial analysis of mean volume and alcohol attributable fraction (AAF) calculated from the RR and prevalence of drinking prior to injury in each volume category.

Results A dose-response relationship was observed with a six-fold increase in risk (RR = 5.88) for less than two drinks prior to injury, increasing to a nine-fold increase (RR = 9.06) for those reporting more than 30 drinks. Risk was similar for males and females up to ten drinks, but higher for females over ten drinks. Risk was higher for those 30 and older compared to those younger at all volume levels, reaching a three-fold increase for 30 or more drinks (RR = 4.78 vs. 14.99). Among all injuries related to violence, 33.56% were attributable to alcohol (*population* AAF), and among those who reported drinking prior to injury, alcohol was an attributable factor in 87% (*exposed* AAF). AAF did not vary by age but was nearly three times larger for males (38.66%) than for females (13.52%), although exposed AAF did not differ.

Conclusions A dose-response relationship was found between the amount of alcohol consumed prior to the event and risk of violence-related injury, but risk was not uniform across gender or age. While females were at greater risk of injury than males at higher volume levels, lower prevalence of women drinking at higher levels contributed to overall lower AAF for women.

314 INJURY RECIDIVISTS IN A DEFINED POPULATION. OCCURRENCE AND CHARACTERISTICS

¹Borge Ytterstad, ²Thomas Gressnes. ¹University of Tromsø, Norway; ²Harstad University College, Norway

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Background Studies on injury recidivism in Pubmed are mainly based solely on admissions to emergency departments for certain injury types. For tailoring prevention programs, such studies may aid identification of target groups for interventions. To our knowledge, population based studies on the full spectre of injury recidivism in a community have not been published so far.

Methods The Harstad Injury Prevention Studies have relied on data from a continuously recorded injury data base (IDB) since 1985. Coding was done in the Nordic system. From 2010 a unique identifier variable (ID = 11 digit person number) was added to the IDB after permission from the data inspectorate. The present work is based on injuries treated at Harstad Hospital (admitted and outpatient) containing this ID. Some person