women never had a mammogram or clinical breast examination, however they are willing to have a breast work-up when needed.

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Prehospital Bio-event Detection: An Assessment of Syndromic Surveillance Systems in Australian Ambulance Services

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Study/Objective: The objective of this research is to assess disease surveillance methods, used by Australian ambulance services, and provide a current picture of Australia's prehospital disease surveillance capability.
Background: The threat of bio-events, such as disease or bioterrorism, requires innovative surveillance methods to rapidly recognize novel and obscure threats, permitting early implementation of measures to limit the spread of disease. Ambulance call and dispatch data are enticing, due to their immediacy, geographic specificity, and reach into the community. However, implementing the data into functioning surveillance systems has proven problematic, due to the broad, non-specific nature of ambulance call categorization.
Methods: Each of the eight emergency ambulance services in Australia were invited to participate in an interview to establish the history, utility, and learnings from the use of call data for disease surveillance. Qualitative analysis sought to identify common issues and themes across the country.
Results: One Australian ambulance service, the Ambulance Service of New South Wales, uses its data for background surveillance within a surveillance system run by the New South Wales Ministry of Health, which encompasses several different data sources. All ambulance services participating in this research have identified the ability to undertake active surveillance during known emergencies. However, many inconsistencies were noted as to whether screening should be implemented, which callers should be screened, and what questions should be asked.
Conclusion: The potential for real-time, ambulance-based disease surveillance in Australia exists. However, at this point in time, none of the Australian ambulance services involved in this research currently conduct real-time surveillance. With one exception, no services routinely perform surveillance at all; nor were any plans identified to start doing so. All services have the ability to undertake disease screening during known emergencies; but how can these be made more consistent and reliable as an "all-hazards" early warning system?

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The Burden of Matatu Bus Crashes in Kenya

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Study/Objective: To describe the burden of Matatu Crashes in Kenya using multi-site injury surveillance data.
Background: Road Traffic Crashes (RTCs) are estimated to cause 1.3 million deaths worldwide each year. In Kenya, this problem is particularly significant and matatus are thought to be frequently involved. Matatus are 14-seater mini-buses responsible for transporting 12 million commuters daily in Kenya.
Methods: Electronic-based trauma registries were established at five referral hospitals in Kenya: Kenyatta National, Thika Level 5, Naivasha District, Machakos Level 5 and Meru Level 5. Information on the mechanism of injury, injury severity, patient outcomes, and patterns of care (prehospital and hospital-based) was collected.
Results: The total number of presenting trauma patients was 24,014. Road traffic injuries accounted for 41.7% of all presenting trauma patients. Matatus accounted for 20.4% of all RTCs. Despite the high occurrence, the injury severity of matatu crash victims was significantly less than other road traffic injuries ($p < 0.001$). 68.7% of matatu crash victims were discharged directly from the Accident & Emergency Ward, which is significantly higher than the overall patient discharge rate ($p < 0.001$). Of admitted patients, 56.7% suffered from a lower extremity injury. Seat belt use was significantly lower among matatu crash victims, when compared to other RTCs where seatbelt use was possible ($p < 0.001$).
Conclusion: Matatus are already highly regulated and continue to be the focus of many road safety policies in Kenya. Accident & Emergency wards are burdened with minor injuries of matatu victims, predominantly involving lower extremities. Safe road practices among drivers and passengers can reduce this burden.

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Influenza-Like Illness and Gastrointestinal Illness: Surveillance Using a Novel Online Bio Surveillance System in Child Care Centers

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Study/Objective: To describe the capability of a novel, online, child care center bio surveillance system (*sickchildcare.org*) to report pediatric Influenza-Like Illness (ILI) and Gastrointestinal (GI) illness outbreaks compared to the state surveillance system.
Background: Bio surveillance is critical for early detection of disease outbreaks and resource mobilization. Children in child care centers are frequently sick and first to become ill. We created a free, web-based surveillance system (*sickchildcare.org* – SCC) for child care centers to report sick children. In comparison, the state's surveillance system (Michigan Care Improvement Registry (MCIR)) uses traditional grade school and hospital system reports. Data from *sickchildcare.org* has not been compared to the state's surveillance system.

Methods: ILI and GI cases were collected from SCC and MCIR. The proportion of ILI and GI cases by week, across all three study years, were calculated, and epidemic curves for ILI and GI illness were compared: Year 1: (12/2013 – 9/2014 - four centers); Year 2: (10/2014 – 9/2015 – 10 centers); Year 3: (10/2015 – 8/2016 – 11 centers). Data were summarized using descriptive statistics.

Results: In three years, 5,737 cases (2,104 of ILI and 1,486 of GI illness) were reported to SCC. Epidemiologic curves comparing SCC and MCIR data by year for GI illness: (Figures 1,2,3) and ILI: (Figures 4,5,6). For GI illness, SCC and MCIR rates peaked at the same time in Years 1 and 2. In Year 3, SCC GI cases preceded peak MCIR GI cases by approximately one week. For ILI, SCC rates peaked one to two weeks before MCIR rates in Years 2 and 3, but not in Year 1.

Conclusion: Web-based bio surveillance in child care centers is a feasible method for identification of ILI and GI outbreaks, and has potential for earlier identification when compared to traditional state surveillance reporting.

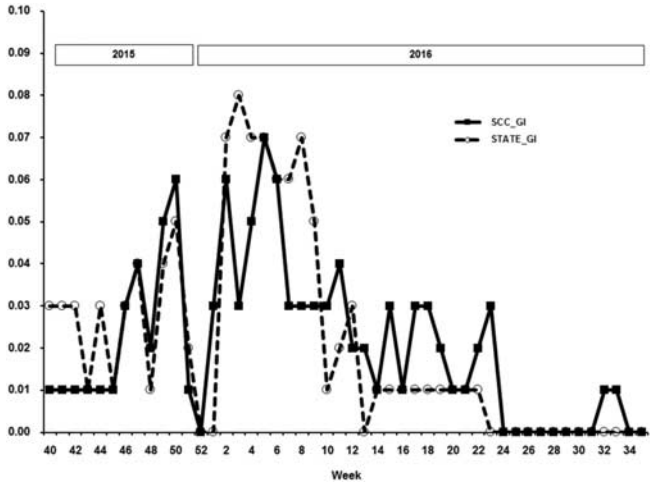

Figure 3. Epidemic Curves for Proportion of GI Cases for State of Michigan and Sick Child Care: Year 3, 2015-2016.

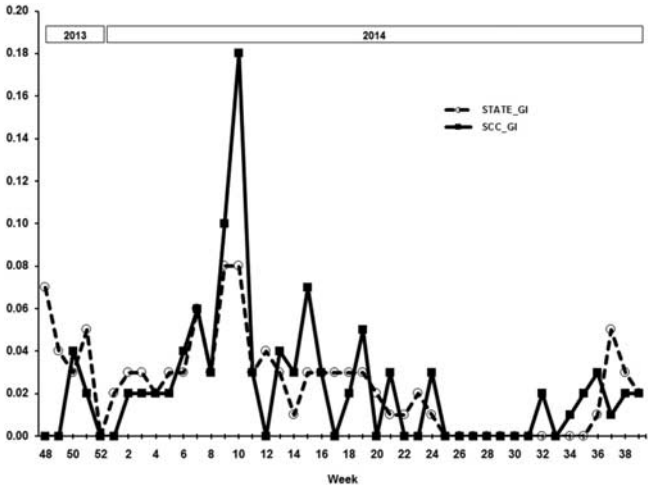

Figure 1. Epidemic Curves for Proportion of GI Cases for State of Michigan and Sick Child Care: Year 1, 2013-2014.

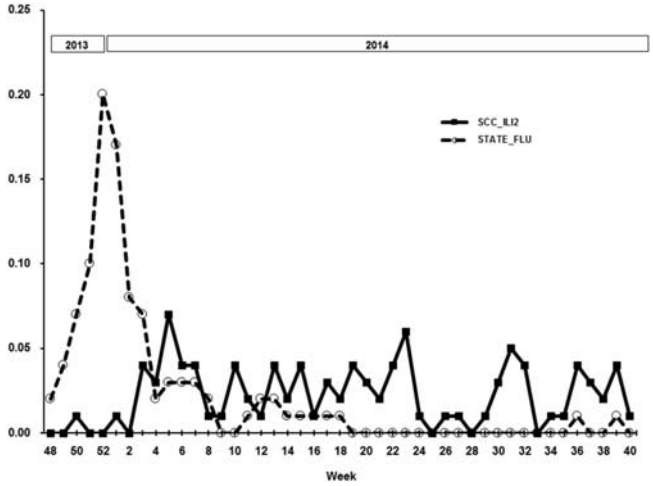

Figure 4. Epidemic Curves for Proportion of Flu Cases for State of Michigan and Sick Child Care: Year 1, 2013-2014.

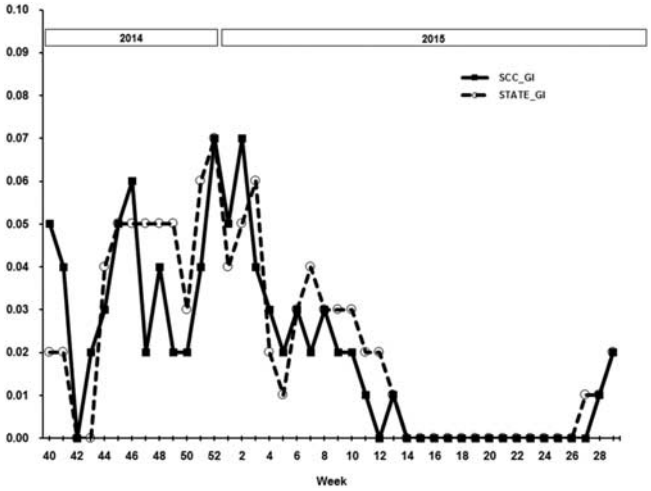

Figure 2. Epidemic Curves for Proportion of GI Cases for State of Michigan and Sick Child Care: Year 2, 2014-2015.

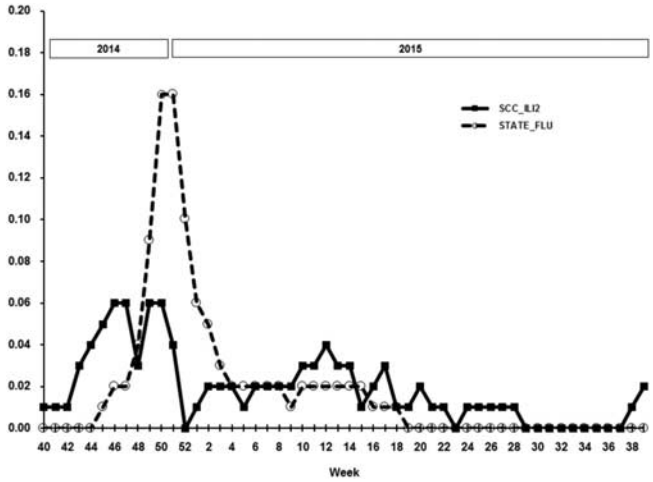

Figure 5. Epidemic Curves for Proportion of Flu Cases for State of Michigan and Sick Child Care: Year 2, 2014-2015.

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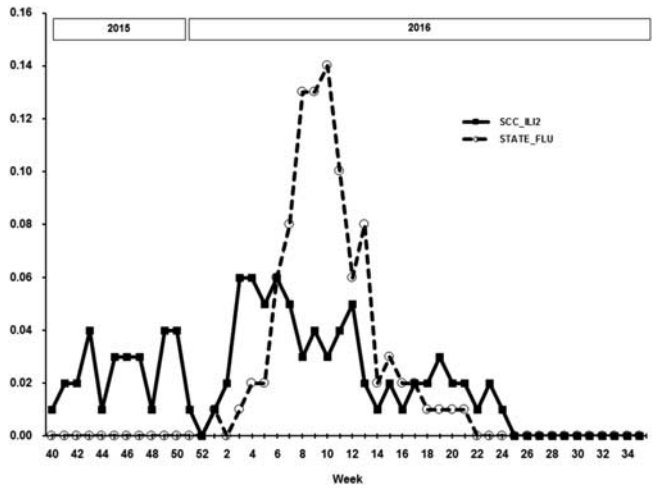

Figure 6. Epidemic Curves for Proportion of Flu Cases for State of Michigan and Sick Child Care: Year 3, 2015-2016.

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Vulnerable Population Study of Household Injuries: A Case Study in Hong Kong

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Study/Objective: This study is primarily aimed to investigate the relationship among different types of household injuries with socio-demographic attributes in Hong Kong (an urban Chinese setting).
Background: Injury is a major global disease burden for the 21st century. However, there is little research about unintentional household injury, especially in Asian urban areas.
Methods: A cross-sectional retrospective recall study was conducted in 2009 using a random telephone survey with a modified Chinese version of the World Health Organization Injury and Violence instrument. Ethics approval and participant's verbal consent were sought. The study samples included 6,570 non-institutionalized Cantonese-speaking Hong Kong residents of all ages and genders. Descriptive analysis and incidence rates were calculated for seven specific injuries, including dislocation and sprain, fracture, external injury, bruise, poisoning, burn and scald, and animal bites.
Results: In the previous 12 months upon the time of survey, 2,577 out of 6,570 respondents experienced household injuries. Among the seven types of injuries, bruise was reported with the highest incidence rate (25.3%). Moreover, the probability of household injuries generally decreases with the increasing age from 40 years old. Gender was also confirmed to have influence in the household injuries. Females have a 17.1% higher rate than males when household injuries occur. There were district disparities of the household injury occurrence pattern.
Conclusion: Age, gender, and geographical location had strong relation with the incidence rate of household injuries. Further studies with a prospective longitudinal design should include injuries that happen outside of a household setting.

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The Disaster Risk Landscape for Small Island Developing States (SIDS)

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Study/Objective: To examine disaster vulnerability of Small Island Developing States through a public health/socio-ecological lens.
Background: In contrast to continental nations, the world's 52 Small Island Developing States (SIDS) form a collective of countries that experience disproportionate challenges for sustainable development related their geography, small size, and physical isolation. SIDS also face elevated risks for disaster incidence and consequences, particularly in the realms of climate change, sea level rise, natural disasters (tropical cyclones, earthquakes, tsunamis, volcanoes), and marine hazardous materials spills. Cyclone Winston's impact on Fiji in 2016 and Cyclone Pam's landfall over Vanuatu in 2015 illustrate the special vulnerabilities of the SIDS.
Methods: The novel Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM); challenges faced by SIDS were reviewed in light of United Nations guidance, the Sendai Framework, and the Sustainable Development Goals.
Results: For SIDS, the disaster risk landscape is shaped by several unique features: 1) small size and correspondingly limited resources; 2) elevated disaster frequency and severity based on geography (tropical latitude/longitude), geophysics (seismicity, volcanic activity, proximity to tectonic plate boundaries), and topography (sea level elevation, 360° coastal perimeter, steep terrain on some islands); and 3) physical isolation from other nations - precisely because SIDS are individual islands or clusters of islands. For SIDS, the trifecta of natural disaster vulnerability, climate change, and rising ocean levels act synergistically to exacerbate disaster risks.
Conclusion: Dispersed broadly throughout the oceans of the world, the SIDS act inadvertently as an early warning network for detecting the initial signs of insidious global threats. Given these realities, DRR and DRM strategies must be tailored to the unique constellation of disaster hazards, and vulnerabilities that characterize the SIDS. The ability of SIDS to form robust alliances among counterpart island nations, is an urgent imperative as is the need for infusion of international support to enhance disaster resilience.

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Reducing Non-communicable Disease Exacerbation after a Disaster

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