A biomarker sub-stream will include ~1,000 participants who provide a hair and saliva sample for cortisol and epigenetic analysis.

Results: N/A

Conclusion: There is an urgent need for detailed individual-level data to analyze the nature of the association between disaster exposure and chronic disease. In 2020 alone, 16.8 million Australians were exposed to disasters. The frequency and severity of disasters are only expected to grow due to climate change. As the first prospective cohort study to longitudinally track individual-level disaster exposure and chronic disease outcomes, RECOVER will fill a critical evidence gap.

The Knowledge and Training Needs of Disaster Medicine among Healthcare Professionals and Medical Students in Makkah City: A cross-sectional study

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Introduction: Disaster medicine aims to prevent and respond to devastating events. Health professionals need to understand their role in disaster management to effectively respond when disasters occur. The aim of the study is to assess the knowledge level, preparedness, and the training gaps regarding disaster medicine among health professionals and medical students/interns in Makkah (Mecca) city.

Method: This is an online-based cross-sectional study design conducted in Makkah City. Physicians, nurses, and medical students/interns were included. Continuous variables were reported as means and confidence intervals. While categorical variables were reported as frequencies and percentages. Data were analyzed by Chi-square and Anova test as appropriate.

Results: Of the 651 participants, the mean age was 27.69 (95% CI 28.13 to 27.24) with 360 (55.30%) participants being males. The mean average score of disaster medicine knowledge was 7.90 (95% CI 8.29-7.51) for medical students/interns, 8.12 (95% CI 8.77-7.47) for nurses, and 4.85 (95% CI 5.21-4.49) for physicians (P <0.0001). The majority of participants selected first-aid skills and triage and evacuation as crucial aspects to be covered in learning disaster medicine, 406 (62.4%) and 373 (57.3%) respectively.

Conclusion: In this study, the level of knowledge regarding disaster management is average among the healthcare population. Certain aspects of disaster medicine are needed to be focused on such as first-aid skills and triage and evacuation. Incorporating disaster medicine as part of training programs is a demand.

The Most Vulnerable Populations: Exploring the FEMA National Risk Index by Racial/Ethnic Group

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Introduction: The US Federal Emergency Management Agency (FEMA) has created a publicly available National Risk Index (NRI) using natural disaster and community risk factor data to provide numeric and visual representations of communities' disaster risk. Of particular interest is the index's use of the social vulnerability and community resilience variables. This study's purpose was to identify and explore differences in vulnerability and resilience based on racial demographic data at the census tract level. By identifying communities at the highest risk, we can address modifiable risk factors to improve natural disaster outcomes for vulnerable populations.

Method: This project used merged data from the US Census Bureau's 2019 American Community Survey and source data for the FEMA NRI. Using Microsoft Excel, we created scatter plots of the social vulnerability and community resilience variables by census tract and predominant racial group, and calculated the mean, standard deviation, and statistical difference between those variables by race.

Results: In census tracts where Native Americans made up ≥50% of the population:

1) There was a positive linear association between percent of Native Americans and increased social vulnerability.

2) The average social vulnerability score (ASV) was significantly higher (ASV = 55.74) than for predominantly White tracts (ASV = 31.43) ($p < 0.001$).

3) The average risk score (ARS) was significantly higher (ARS = 30.18) compared to predominantly White tracts (ARS = 16.98) ($p < 0.001$).

4) The average resilience index score (ARIS) was significantly lower (ARIS = 51.83) than predominantly White tracts (ARIS = 55.08) ($p < 0.001$).

Conclusion: Results show that census tracts with predominantly Native American populations face significantly higher natural disaster risk and social vulnerability, and have significantly lower resilience scores compared to predominantly White tracts. Using modifiable factors to improve community resilience and decrease social vulnerability, the US can better protect communities at high natural disaster risk.

Hypothermia Progression Time Course for Evacuation Planning

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Introduction: Accidental hypothermia occurs very rarely. Japan experienced hypothermic victims in the 2011 earthquake and tsunami disaster. In northern Japan, where the largest class of earthquakes and tsunamis are estimated, study for countermeasures has been advanced. The progression of hypothermia varies significantly by individual differences and environmental factors, and it is considered to be challenging to assess its damage. We present the findings that can be the basis for damage estimation from the data of hypothermia victims experienced in mountain rescue.

Method: From 2002 to 2020, we examined ten fatal cases of hypothermic witnessed respiratory arrest (HWRA) by companions, which led to subsequent cardiac arrest among 164 cases from mountain rescue. We collected the time course of the deceased from rescue records and calculated the time from cold exposure to symptom, exposure to incapable, and exposure to HWRA. Temperature and wind speed data were extrapolated from nearby AMEDAS and upper-air weather records, and the wind chill index (WCI) was calculated.

Results: We obtained the time course data in seven cases of ten, five males and two females between 21 and 67 years old. The weather conditions where the seven cases were placed were -5 to -30°C of WCI. The shortest time from cold exposure to incapacity was 65 minutes, 42.9% (3/7) within 180 minutes, and the fastest time to HWRA was 90 minutes, with 57.1% (4/7) between 10 and 12 and half hours.

Conclusion: For disaster evacuation measures, both evacuees and rescuers need specific indicators to refer to. From very little but valuable data, we consider that rescue within 10 hours is necessary for lifesaving in similar conditions. Additionally, increasing the number of cases that become incapacitated within 1-3 hours can be valuable information for considering the location of the evacuation shelter and evacuation plan.

Development of an Enhanced Surveillance and Epidemiology Program to Support the Birmingham 2022 Commonwealth Games in England: Outcomes and Lessons Learned

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Introduction: The 2022 Commonwealth Games (B2022) was hosted by Birmingham, United Kingdom (UK) from July, 28 2022 to August 8, 2022. As a major global sporting event and mass gathering, B2022 included over 4,500 athletes (from 72 countries and territories) and attracted 1.5 million spectators. Robust public health surveillance and support for health protection incidents was required from the UK Health Security Agency (UKHSA) to protect the health of both those directly involved in B2022, and the local population.

Method: UKHSA surveillance activities in the UK West Midlands region were enhanced, utilizing lessons learned from the response to the London 2012 Olympic and Paralympic Games and the 2021 G7 Summit (hosted in England).

Enhancements included: adaptation of existing and development of new methods for the identification of increased activity of a range of pathogens/diseases/conditions of particular concern to a mass gathering; standardized daily situation reporting to inform both public health action and the B2022 organizing committee. Three streams of routine UKHSA surveillance data were assessed each day: a UKHSA health protection/clinical management system, statutory laboratory reports of infection, and syndromic surveillance. Bespoke surveillance was also implemented using B2022 health data sources.

Results: Enhanced daily surveillance activities successfully met the need for next-day public health surveillance and reporting during B2022. No outbreaks or incidents of public health significance to the Games were identified. Syndromic surveillance reported an increased impact on local health services due to periods of extremely hot weather before and following the competition period, although these impacts were not unique to the Birmingham area.

Conclusion: Surveillance and epidemiology reporting for B2022 provided reassurance there were no incidents/outbreaks of public health significance to the Games. The enhancements made will inform future routine surveillance and reporting activities and will be employed for similar activities during future mass gathering events.

Required Functions of Information Gathering and Processing for Health, Medical, and Welfare Coordination Headquarters for Disasters in Japan

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Introduction: The Ministry of Health, Labor, and Welfare of Japan have suggested local governments establish Health, Medical, and Welfare Coordination Headquarters at the time of disaster. Gathering and processing information is one of the key functions of the headquarters. The study aims to clarify the required functions of information for the headquarters.

Method: A series of interview surveys and observations were conducted, including for local governments and experts in disaster response. The contents were analyzed and required standard functions and procedures had been extracted.

Results: The most important aspect of information gathering is its use in decision-making in matching needs and demands with resources. Needs and demands are based on damage and