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Conflict of interest None declared.

Funding None declared.

4 REVISING EMS DISPATCH PROCEDURES TO MANAGE GROWING DEMAND IN VICTORIA, AUSTRALIA

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Aim The Advanced Medical Priority Dispatch (AMPDS) system is used to triage emergency medical calls in Victoria, Australia. However, the level of response assigned to each AMPDS Event Type (ET), which may include triage away from an emergency medical service (EMS) attendance, is determined by Ambulance Victoria. This study aimed to increase the proportion of low-acuity calls diverted to secondary triage and onto an alternative service provider (ASP), ultimately reducing EMS demand.

Methods A review of the level of EMS response assigned to AMPDS ET was conducted using research, audit and clinical expertise. Existing 'time-critical' and 'acute but not time-critical' ETs were assessed for suitability against the assigned level of EMS response and existing dispatch rules. An analysis of events occurring pre-reform (8 Feb–8 May 2016) and post-reform (9 May–8 Aug 2016) was conducted.

Results A total of 105 'time-critical' ETs were assessed as suitable for downgrade to an 'acute' response, while 221 'acute' and 'time-critical' ETs were deemed suitable for diversion to secondary triage. The changes were implemented using staged approach, commencing in October 2015. The proportion of cases receiving a 'time-critical' EMS response decreased from 55.1% pre-reform to 48.9% post-reform ($p<0.001$). The proportion of emergency calls avoiding EMS dispatch increased from 8.8% pre-reform to 14.1% post-reform ($p<0.001$). Of the cases diverted to secondary triage post-reform, 32.4% were referred to an ASP, 30.2% were referred to a non-emergency transport service and 41.8% were returned for EMS dispatch.

Conclusion This study provides a sound methodological approach for revising EMS dispatch protocols. Ongoing monitoring of the dispatch changes aims to identify areas that may benefit from further optimisation.

Conflict of interest None declared.

Funding None declared.

5 MENTAL HEALTH-RELATED PRESENTATIONS TO EMERGENCY MEDICAL SERVICES IN VICTORIA, AUSTRALIA

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Aim Recent increases in demand for mental health services have not been matched with community resources, resulting in increased demand on emergency medical services (EMS). We sought to describe the clinical profile, demand patterns and

care provided to mental health patients accessing EMS in Victoria, Australia.

Methods We conducted a retrospective observational study of cases occurring between January and December 2015. Computer Aided Dispatch and electronic patient care record data were extracted from the Ambulance Victoria data warehouse. Characteristics of mental health presentations were described using descriptive statistics.

Results Of the total 504,676 EMS attendances, 48 041 (9.5%) were mental health-related. Additionally, 4708 mental health-related secondary triages were included, representing 6.6% of the Victorian secondary triage caseload. Emergency mental health patients were younger and more often female than other patients attended by EMS ($p<0.001$). Most mental health patients were transported to hospital (74.4%), however paramedics provided treatment to significantly fewer mental health patients than other emergency patients (12.4% vs. 50.3%, $p<0.001$). In mental health patients ≤ 15 years, the most common presentations involved social/emotional issues, while for patients aged ≥ 65 years, the most common presentation was anxiety. In patients undergoing secondary triage, 52.5% were frequent callers or anxiety presentations. A total of 27.7% of triaged patients were referred to an alternative service, while 24.6% were managed as per a care plan.

Conclusion For mental health-related cases, EMS were predominantly utilised as a transport mechanism rather than for active medical intervention. The role of alternative services in provision of care for mental health patients requires further investigation.

Conflict of interest None declared.

Funding None declared.

6 CHARACTERISTICS OF THUNDERSTORM ASTHMA EMS ATTENDANCES IN VICTORIA, AUSTRALIA

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Aim Thunderstorm Asthma (TA) occurs when a dangerous mix of pollen and severe weather trigger acute respiratory distress symptoms in people with allergic rhinitis and asthma. We sought to describe the characteristics of patients attended by emergency medical services (EMS) during the largest global epidemic of TA which occurred in Melbourne on 21/11/2016.

Methods A retrospective observational study of electronic EMS patient care records was conducted for all cases occurring during TA, between 1800hrs on 21/11/2016 and 2359 hours on 22/11/2016 (30 hours). Results were compared with a standard comparator period defined as the seven days prior to the event (14/11/2016 to 20/11/2016).

Results EMS responded to 3631 cases during the TA event, compared with an average of 2419 cases per 30 hours during the comparator period. During TA, the final paramedic diagnosis was acute respiratory distress in 28.3% of patients (Asthma=18.0%, Shortness of Breath=10.3%), compared with 3.6% of patients during the comparator period (Asthma=0.6%, Shortness of Breath=3.0%, $p<0.001$). Whilst there was an absolute increase in the number of time-critical cases, the proportion of acute respiratory illness patients considered time-critical after initial paramedic assessment remained stable between the two periods (42.0% vs. 43.5%, $p=0.6$).

However, a 50% increase in the rate of out-of-hospital cardiac arrest was observed during TA. In the cohort of Asthma patients, 74.9% reported a history of asthma during TA compared with 91.1% during the comparator period ($p=0.006$). The most common paramedic intervention for patients with acute respiratory distress was administration of salbutamol (72.5%) while 8.0% of patients received adrenaline.

Conclusion The TA event in Melbourne was associated with a significant increase in EMS attendances to patients with acute respiratory illnesses and cardiac arrest.

Conflict of interest None declared.

Funding None declared.

7 DISPATCH OF FIRE-FIGHTERS AND POLICE OFFICERS IN OUT-OF-HOSPITAL CARDIAC ARREST: A NATIONWIDE PROSPECTIVE COHORT TRIAL

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Aim Dual dispatch of cardiopulmonary resuscitation (CPR) - trained fire-fighters or police officers equipped with automated external defibrillators (AEDs) in addition to emergency medical services (EMS) in out-of-hospital cardiac arrest (OHCA) has in some minor cohort studies been associated with improved survival. The aim of this study was to evaluate the association between dual dispatch and survival in OHCA at a national level.

Methods This prospective, cohort study was conducted January 1st, 2012, to December 31st, 2014. OHCA victims in nine Swedish counties covered by dual dispatch and resuscitation by first responders and EMSs were compared with a propensity-matched contemporary control group of OHCA victims in 12 counties where only EMS were dispatched. The primary outcome was survival to 30 days.

Results 8698 OHCA were included of which 2786 in each group (intervention and control) were matched. The median time from emergency call to arrival of EMSs or first responder was nine minutes in the intervention group vs. ten minutes in the controls ($p<0.001$). The proportion of patients admitted alive to hospital was 31.4% in the intervention group versus 24.9% in the controls (adjusted OR 1.40, 95% CI 1.24–1.57). Thirty-day survival was 9.5% in the intervention group versus 7.7% in the controls (adjusted OR 1.27, 95% CI 1.05–1.54).

Conclusion Dual dispatch of first responders in addition to EMSs in OHCA was associated with a moderate but significant increase in 30 day survival.

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Conflict of interest None declared.

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8 GENUINE ILLNESS AND INJURY DURING EUROPE'S LARGEST EMERGENCY SERVICE MAJOR INCIDENT EXERCISE

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Aim Previous studies of patient presentation rates at mass gatherings have been limited to social events. None have assessed presentation rates in the context of a large-scale emergency service exercise where individuals (actors playing hypothetical casualties) are exposed to an environment containing many potential hazards.

Methods Exercise Unified Response was the largest multi-agency exercise ever held in Europe. It was a four-day major incident exercise in the UK, in which 2700 individuals acted as casualties. Clinical records completed by healthcare professionals providing on-site medical cover for the duration of the event were reviewed. Clinical records were included where the individual's role in the exercise was listed as 'actor'.

Results Thirty actors required medical attention, giving a patient presentation rate (PPR) of 11.1 per one thousand actors. Of these, 10% were conveyed to hospital with musculoskeletal ($n=2$) or head injuries ($n=1$); an ambulance transfer rate (ATR) of 1.11 per 1000. Just under half of all patients (40%, $n=12$) had a contributory factor to seeking medical help, where they had: not eaten on the day ($n=4$); a pre-existing condition exacerbated by the exercise, such as asthma ($n=3$); pre-existing symptoms of acute illness ($n=3$), or a pre-existing injury ($n=2$).

Conclusion Patient presentation rate was in line with previous research¹. However, we believe this is the first study to report similar data for a mass emergency service exercise. Our findings regarding the factors and pre-existing illnesses/conditions that contributed to individuals seeking medical help will be valuable in planning future large-scale exercises.

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9 AUDIT OF MORPHINE ADMINISTRATION BY EAST MIDLANDS AMBULANCE SERVICE (EMAS)

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Aim For pre-hospital administration of morphine, JRCALC guidelines recommend recorded pain scores (PS) out of ten before and after use, an anti-emetic adjunct and ENTONOX provision prior to analgesic effect. This audit aimed to gain insight into how rigorously these guidelines were being adhered to in practice