MASS GATHERING MEDICINE REGISTRY

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BACKGROUND

- Mass gatherings are becoming increasing in today's society. There has been a "new" movement throughout the international literature to standardize the definition of a mass gathering, the research data collection, terminology and reporting formats .

- The newest definition of a mass gathering describes a *"situation or event during which crowds gather and where there is the potential for a delayed response to emergencies because of limited access or other features of the environment and location".*

- Studies have attempted to identify significant risk factors at mass gathering events that increase the patient-presentation rate (PPR). Some of the identified factors have included:
  - *heat index, event duration, event type, attendance, mobile or seated audience, outdoor or indoor and alcohol and/or drug use*.

- As a way of standardizing medical care at mass gathering events in British Columbia, a prediction model for PPR utilizing identified risk factors would be pertinent. There is a need for a model that predicts the PPR and TTHR (transport to hospital rate) with greater accuracy.

- Planning for mass gathering events also includes predicting the number of medical staff required for best practice. Medical teams described in the literature are heterogeneous and include physicians, registered nurses, paramedics and crisis workers. Currently, no formal recommendations exist. Retrospective studies demonstrate on-site physicians reduce ambulance transports by 89%.

- There is also a paucity of literature to recommend medical equipment needs, medication needs and medical protocol.

- Validated, evidence-based recommendations for the medical staffing needs of mass gathering events would contribute to standardized and optimized medical care in British Columbia.

OBJECTIVE

- The MGM Interest Group intends to collate a data-set of patients who present to the temporary medical teams that have traditionally been assembled for these events.

- Through retrospective and prospective data capture, encoding, and uploading to a centralized, de-identified database, a more evidence-based approach to the medical needs for mass gathering events may be derived.

- It is our aim to be a resource to event organizers by eventually offering "best practice" guidelines for the organization of medical response to mass gathering events.
  - *We hypothesize that the patient presentation rate and medical transfer rate is significantly influenced by predictable event and patient variables.*
  - *We hypothesize that the number of medical staff, and composition of medical team members influences the medical transfer rate.*
  - *We hypothesize that the availability of equipment, medications and protocols at mass gathering events is highly variable, currently not standardized and influences the medical transfer rate.*
  - *We hypothesize that current prediction models in the literature are inadequate to predict the patient presentation rate, medical transfer rate, staffing needs, and supply needs for mass gathering events in British Columbia.*

PRELIMINARY RESULTS

Figure 1. Incident distribution between Downtown and Yaletown Sites by dates.
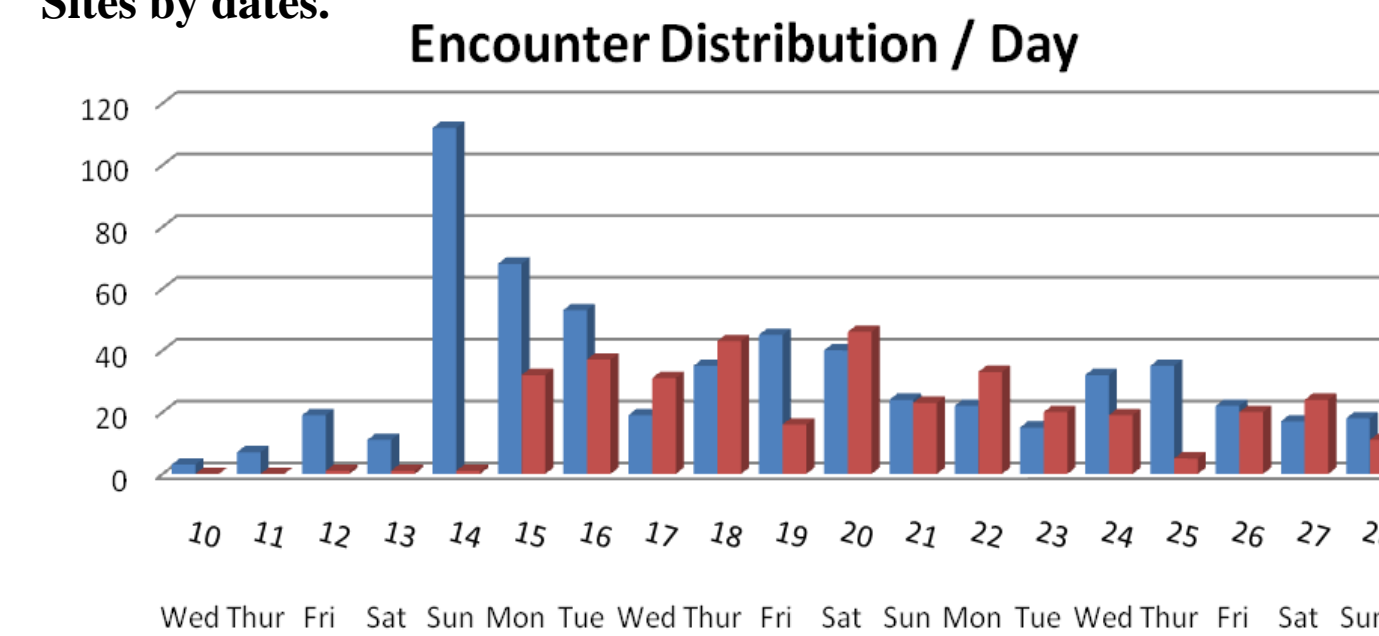

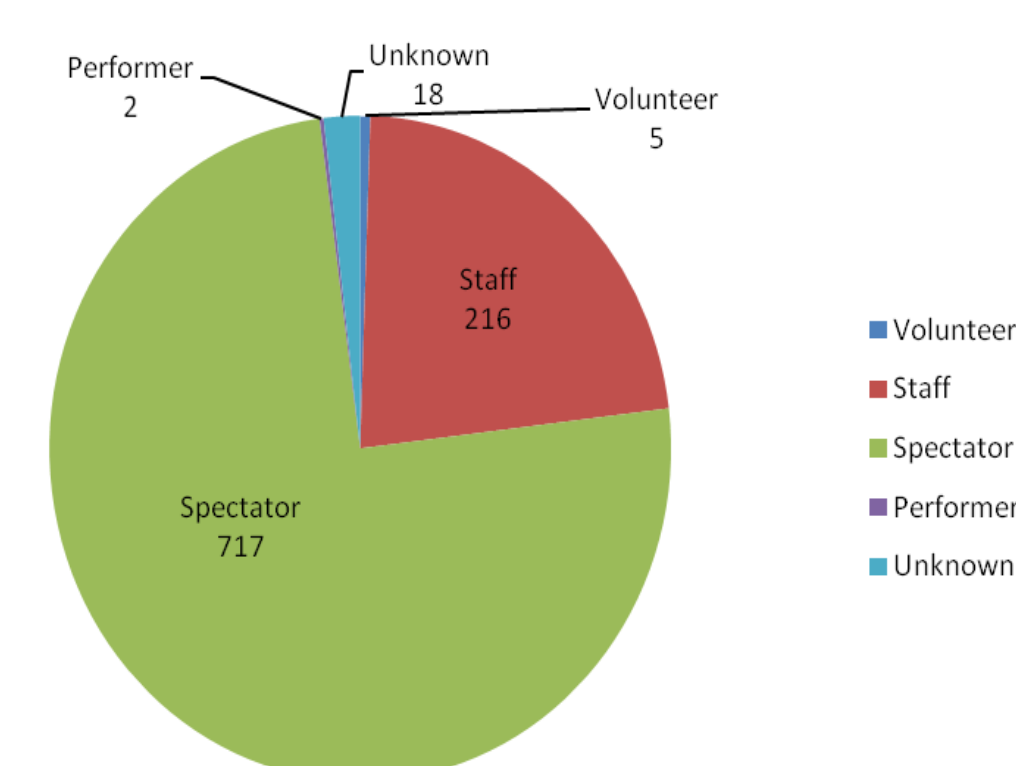Encounter Distribution / Day

Figure 2. Patient Types
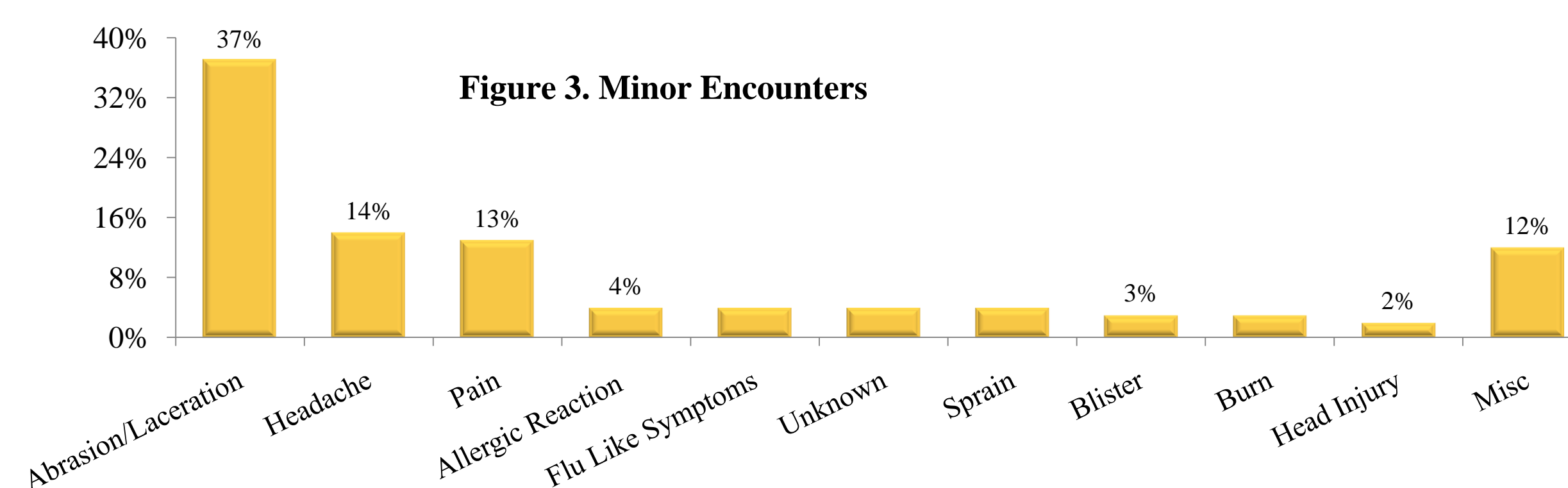

Figure 3. Minor Encounters
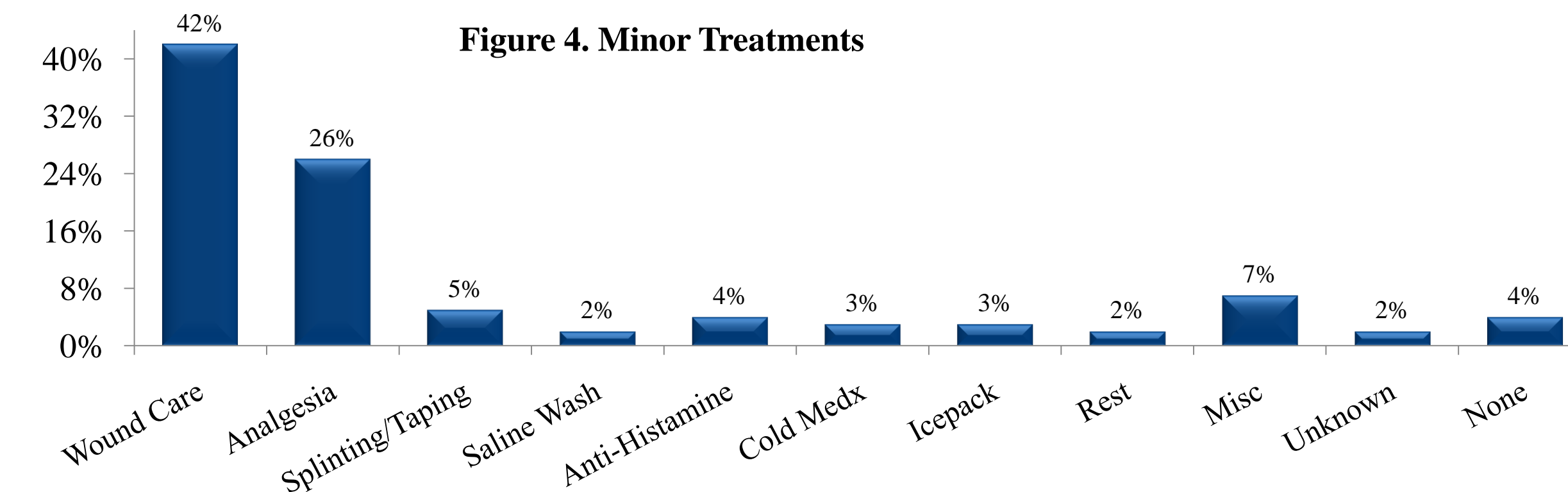

Figure 4. Minor Treatments
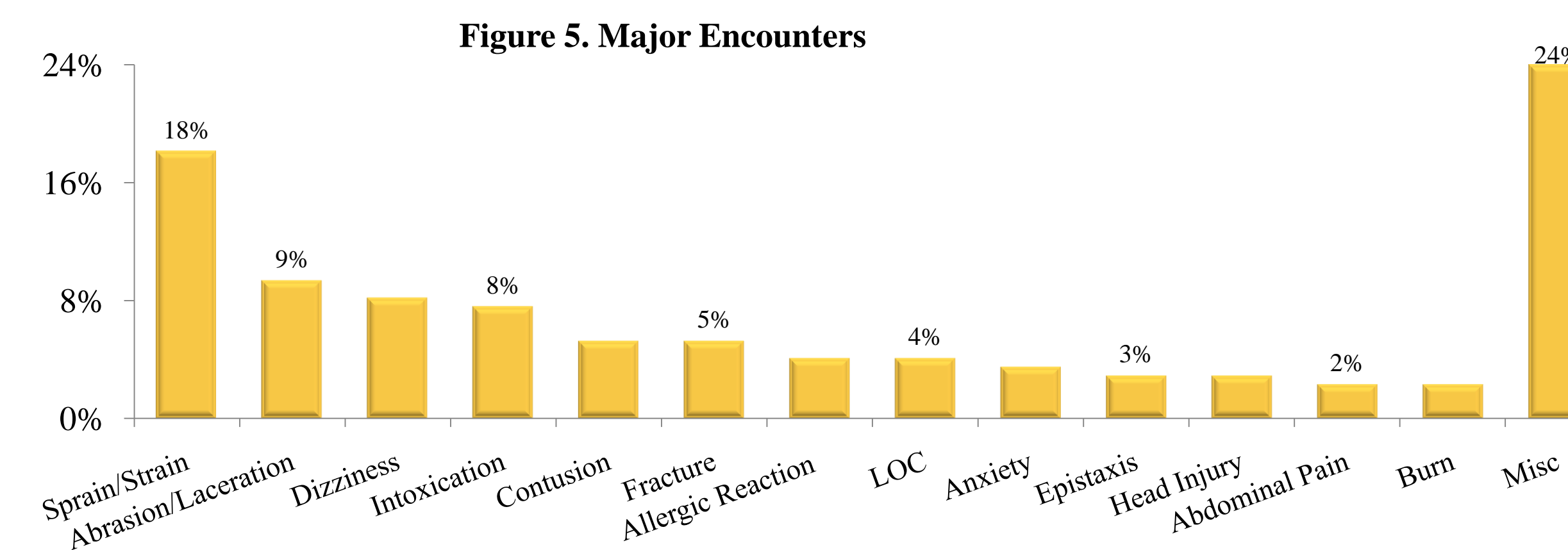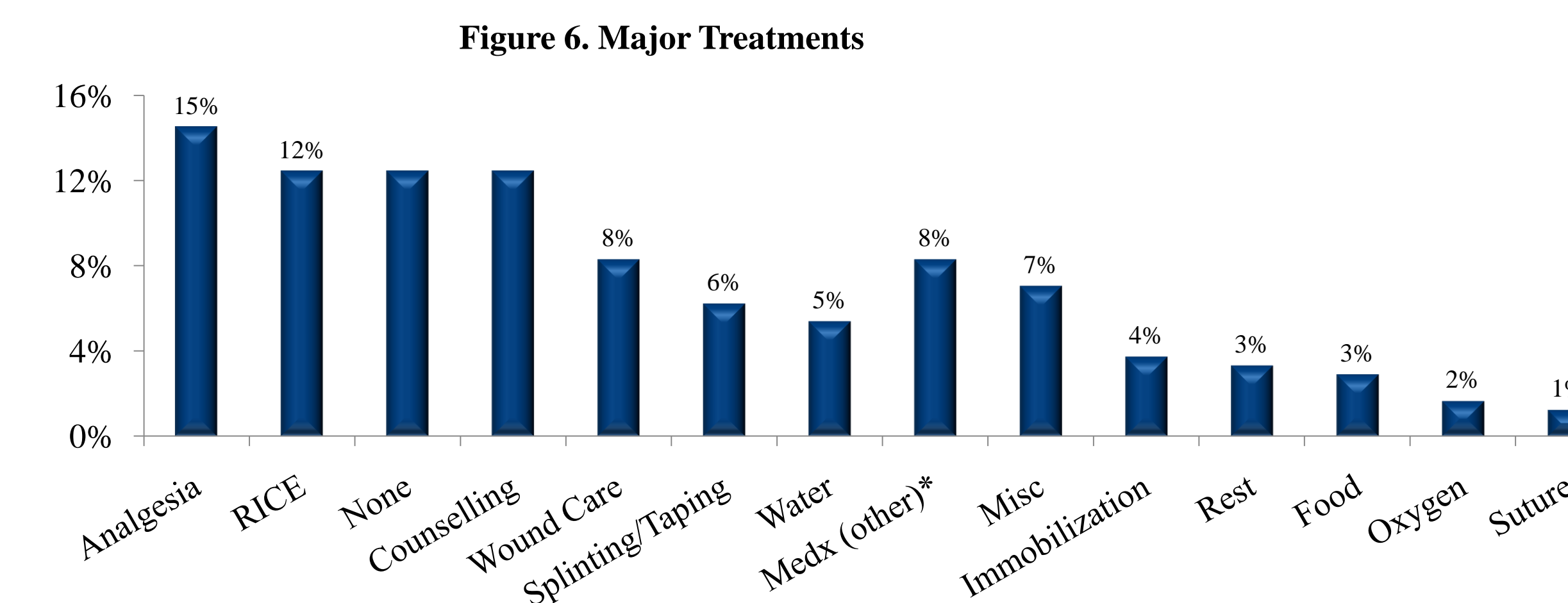

Figure 5. Major Encounters

Figure 6. Major Treatments

*This included anti-emetics, (7), anti-histamine (6), antacid (4), ASA (1), antibiotics (1) and adenosine. (1).

METHODS

- Confidential, de-identified patient registry for mass gatherings established
- Retrospective and prospective data collection over next 3-5 years
- Patient Data: standardized encounter forms
- Event Data: web-based survey tools, semi-structured interviews
- By cross referencing characteristics of different types of events (musical, athletic, multi-day, etc.) against the patterns of injuries and illnesses reported, recommendations for planning of facilities, personnel, equipment and policies may be derived. These recommendations will guide development of evidence based planning tools that can be applied consistently and with confidence to mass gatherings and special events, nationally and internationally.

Analysis:
   Units of analysis:
   1. individual patient encounters
   2. mass gathering events
   Patient Presentation Rate (PPR)
   Medical Transfer Rate (MTR)
   Ambulance Transfer Rate (ATR)

Goal:
   Develop a prediction model for PPR, MTR, ATR for any MGM event

RESULTS

18 day event: February 11-28th Medical provisions for both Yaletown/Downtown Sites. In total, 958 patient encounters were documented
Total Numbers:
   Yaletown: 160,000 (~9000/day)
   Downtown: 45,000 (~2500/day)

PPR Yaletown: 597/160,000 = 3.7/1000
PPR Downtown: 361/45,000 = 8.0/1000
ATR LiveCity: 15/205,000 = 0.07/1000

CONCLUSION

- MGM registry will allow calculation and comparison of PPR, MTR, ATR
- Collection of **event** and **patient** characteristics will allow for analysis of registry and derivation of prediction rules
- The eventual development of evidence-based planning and decision tools will potentially improve the quality and consistency of care provided at mass gathering events, and increase the medical and medicolegal safety for patients, volunteers, staff, performers, athletes, event planners, sponsors, and governing bodies.