

Leveraging Emergency Medical Service Data to Inform Pre-Hospital Hemorrhage Control Practice and Policy

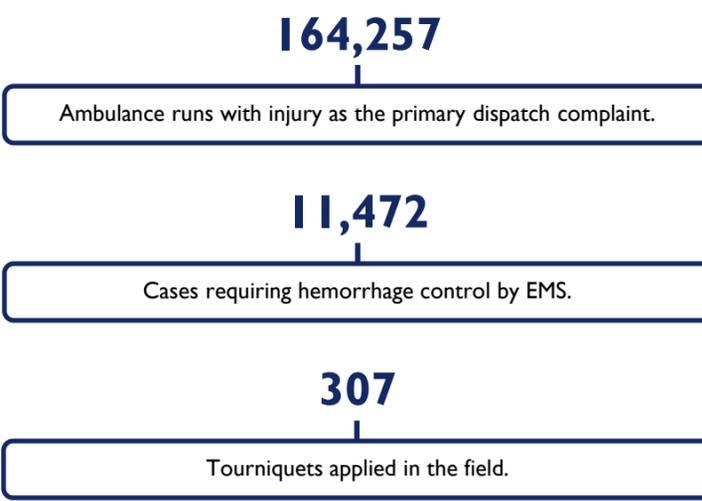
Wisconsin's efforts to evaluate and address life-threatening hemorrhage

Abstract

BACKGROUND:
The Wisconsin Trauma Program is utilizing data from the Wisconsin Ambulance Run Data System to track the care provided to patients with a potentially life-threatening hemorrhage and to inform key partners where to focus training and dissemination efforts.

METHODS:
All ambulance runs from January 2018 to March 2019 were pulled from the Wisconsin Ambulance Run Data System. Results were then filtered to include only ambulance runs that were the result of injury or that included bleeding or hemorrhage control as an attempted or successful procedure by Emergency Medical Services (EMS).

RESULTS:
Between January 01, 2018 and March 31, 2019, there were:

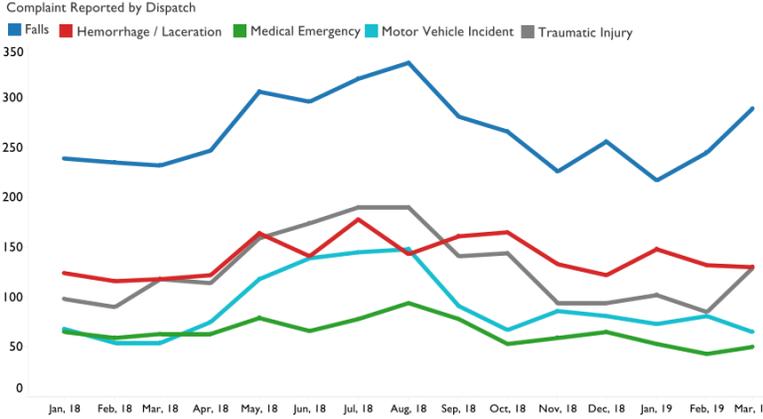


Objectives

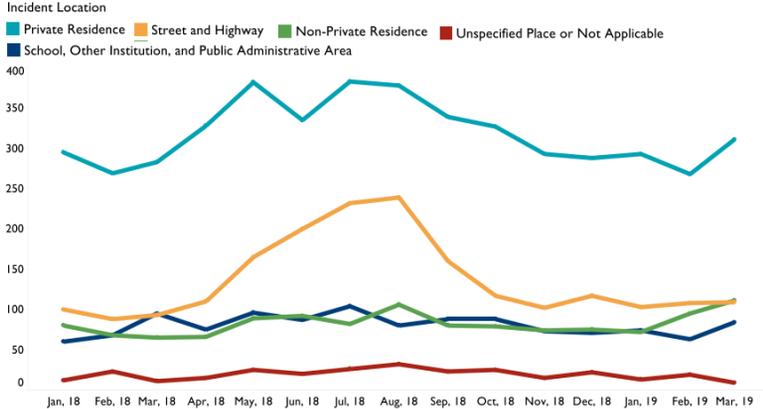
- To identify Wisconsin's traumatic hemorrhage patient population.
- To determine the most common causes of traumatic hemorrhage.
- To identify the procedures being used by EMS in Wisconsin to mitigate life-threatening hemorrhage.
- To determine next steps in the effective dissemination of hemorrhage control training in Wisconsin.

Hemorrhage Trends

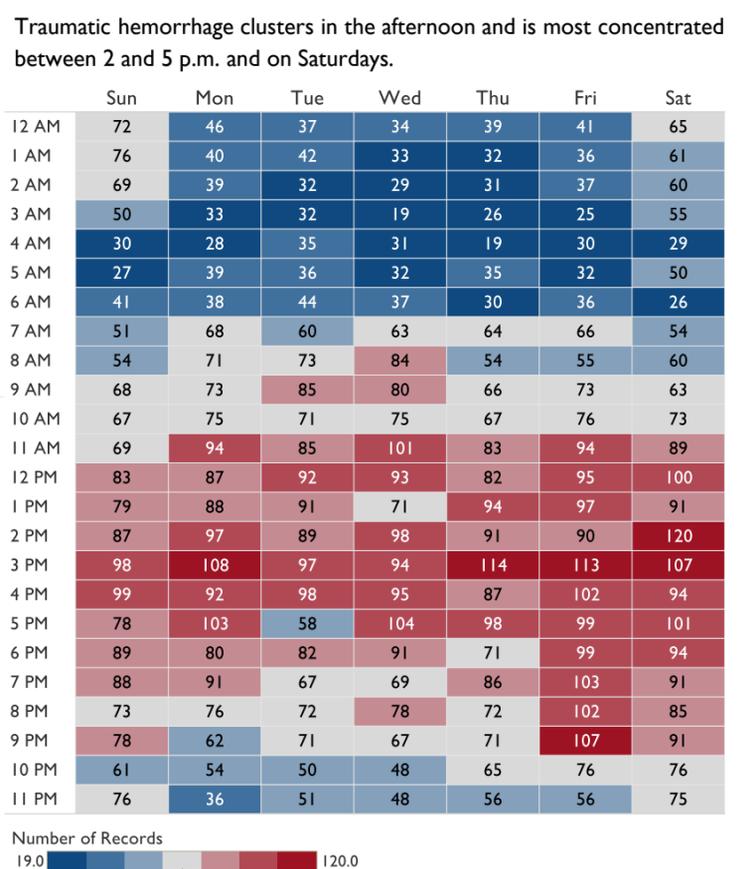
Top Five Injury Mechanisms Resulting in Hemorrhage by Event Date



Top Five Locations for Hemorrhage Events by Event Date



Volume of Hemorrhage Events by Incident Day of Week and Hour



Patient Population

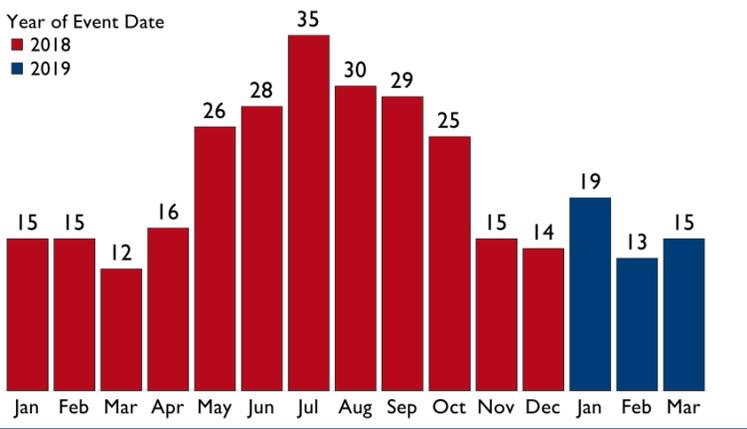
The rate of hemorrhage events is highest for patients aged 80+, specifically for females. Males have a higher rate of hemorrhage in all other age ranges.

Rate of Hemorrhage per 100,000

	Female	Male
0-4	3.73	5.53
5-9	2.91	4.60
10-14	4.43	7.92
15-19	13.22	19.16
20-29	24.81	46.82
30-39	20.85	40.01
40-49	17.70	36.34
50-59	26.55	47.93
60-69	29.12	48.28
70-79	39.31	52.24
80+	95.04	79.84

Tourniquet Use

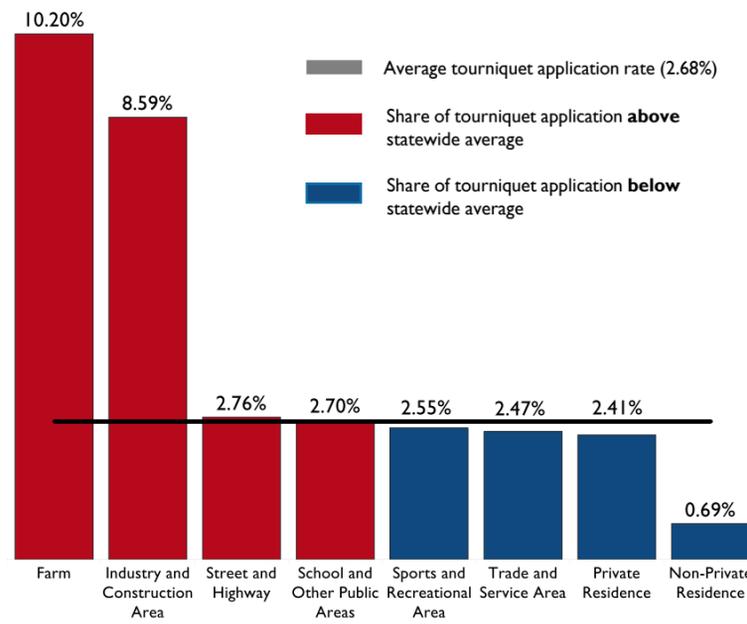
Male patients aged 30-39 saw the highest volume of tourniquet applications of any patient population. Consistent with the seasonality of hemorrhage, the application of these tourniquets saw its peak during the summer months.



Opportunities

Tourniquet application rate is **3.8 times higher** than average for injuries sustained at a farm.
Tourniquet application rate is **3.2 times higher** than average for injuries sustained at an industrial or construction area.

Share of Bleeding Control Procedures with Tourniquet Application by Incident Location



Conclusions

While most hemorrhage control training programs are associated with mass casualty incidents, Wisconsin has an everyday need for widely distributed hemorrhage control training.

Specific objectives to further Wisconsin's preparedness in the mitigation of hemorrhage control are:

- Continuing the emphasis on marketing and providing this training to members of the Wisconsin public.
- Emphasizing this training to those in the agricultural, industrial, and construction fields.
- Expanding existing regional and local collaboration with law enforcement.
- Engaging non-health care personnel in hemorrhage control training including school bus operators, snow plow operators, and coaches.
- Pursuing methods to simplify the documentation of tourniquet application.

Visit www.bleedingcontrol.org to find a Stop the Bleed course near you.

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