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U.S. Navy Injury Surveillance 2021 Summary

Prepared for the Defense Safety Oversight Council (DSOC)
Military Injuries Working Group (MIWG)
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Background

- This document provides a summary of injury medical encounter surveillance data for Active Duty Personnel in Calendar Year (CY) 2021.
- Rates and distribution of injuries are presented by leading injury types, injured body regions, injury mechanisms, activities and places.



Data Sources and Injury Definition

- Prepared for the Defense Safety Oversight Council (DSOC) Military Injuries Working Group (MIWG)
- Prepared by DCPH-A Injury Prevention, email: dha.apg.Pub-Health-A.mbx.injuryprevention@health.mil
- Data source: Defense Casualty Analysis System and Defense Medical Surveillance System (DMSS)
- Injuries defined and classified using the Taxonomy of Injuries¹

¹U.S. Army Public Health Center. 2017. Public Health Information Paper (PHIP) No. 12-01-0717, *A Taxonomy of Injuries for Public Health Monitoring & Reporting*. December 2017. <http://www.dtic.mil/docs/citations/AD1039481>



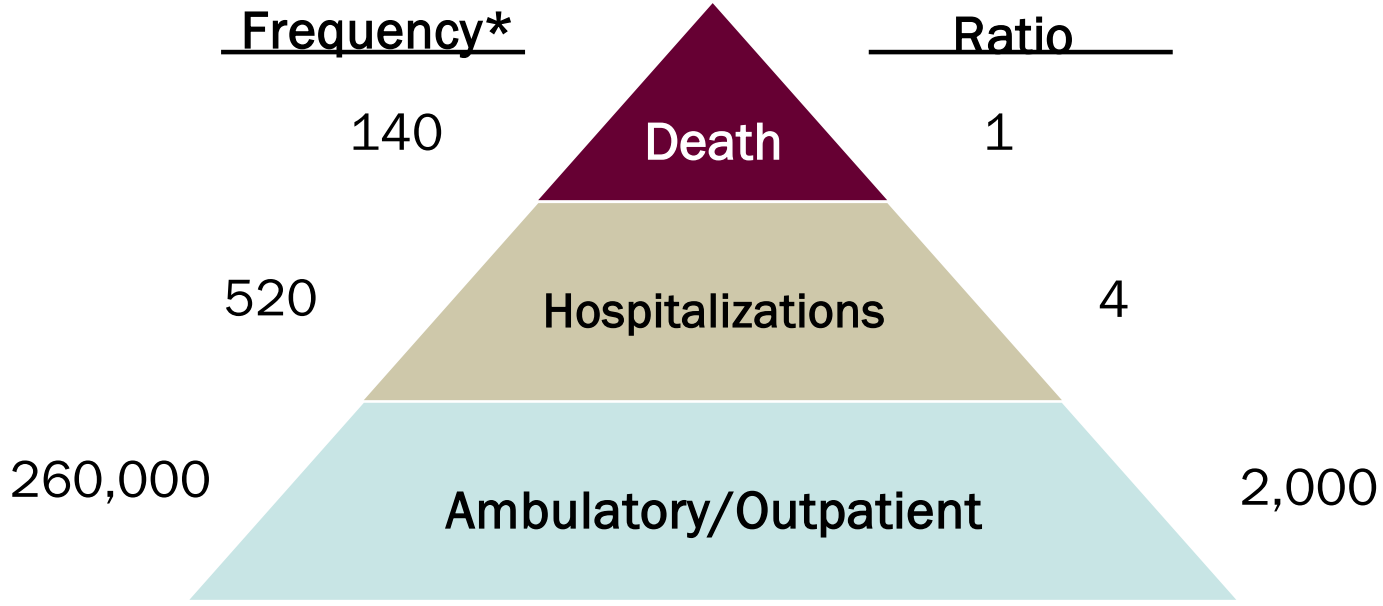
Data Summary, U.S. Navy Active Duty, 2021

- Injuries accounted for 31.1% of all medical encounters (n=818,803), 2.2 times more encounters than the second leading cause.
- Injuries affected 133,713 individuals (38.8%), 1.3 times more individuals than the second leading diagnosis group.
- A high proportion (66%) of new (incident) injury diagnoses were due to cumulative microtrauma to the musculoskeletal system.
- Most injuries were to the lower extremities (35.2%); followed by spine & back (29.4%).
- Among outpatient injury encounters with a cause code in 2021, leading injury mechanisms were falls (19.4%) and overexertion (16.6%).





Injury Pyramid U.S. Navy Active Duty, 2021

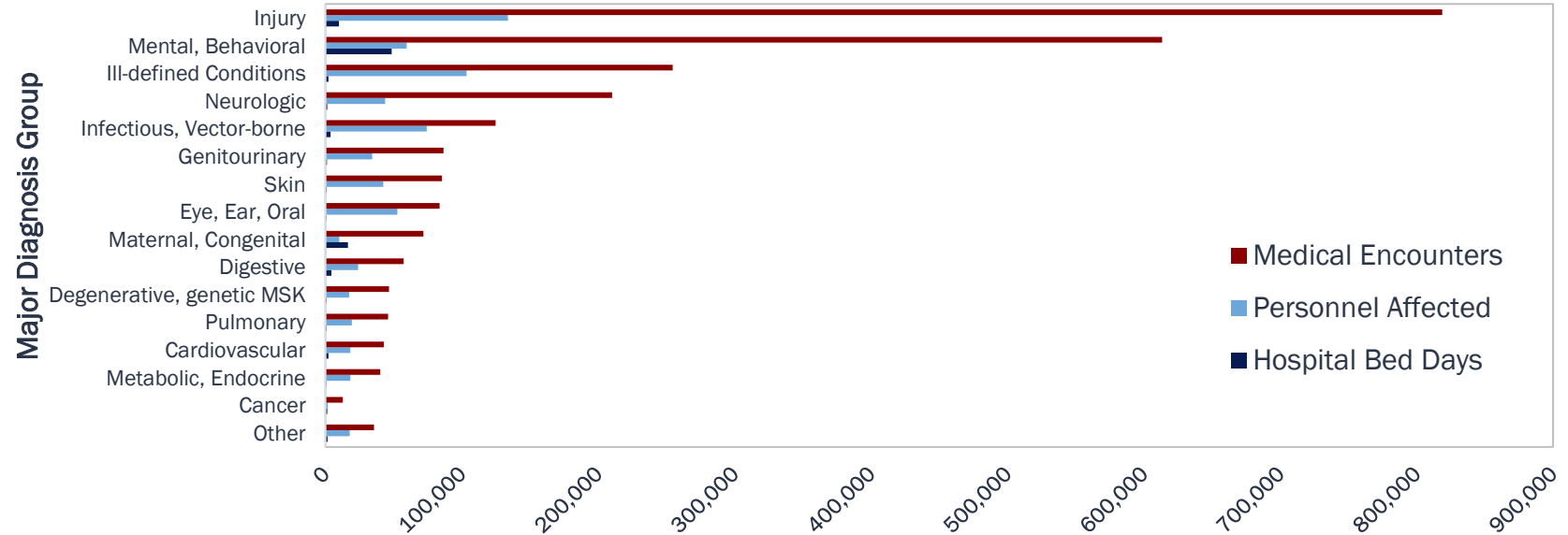


*Frequencies are rounded and represent incident injury encounters



Relative Burden of Illnesses and Injuries

U.S. Navy Active Duty, 2021



MSK = damage to tissue(s) of the musculoskeletal system (i.e., bone, cartilage, muscle, tendon, fascia, joint, ligament, bursa, or synovium). Diagnosis group “Other” includes adverse effects of drugs, blood disorders, and other neoplasms (not cancer).



Taxonomy Distribution of Injuries

U.S. Navy Active Duty, 2021

Incident Injuries, N = 262,527

Mechanical Energy Injuries

n=250,243 (95%)

Acute Trauma
n=59,940
(23%)

Cumulative Microtrauma
n=190,303
(72%)

MSK
n=31,490
(12%)

MSK
n=172,241
(66%)

Non-MSK
n=28,450
(11%)

Non-MSK
n=18,062
(7%)

Non-Mechanical Energy Injuries

n=5,851 (2%)

Environmental
n=743 (<1%)

Heat & Sun
n=581 (<1%)

Cold
n=42 (<1%)

**Altitude/
Pressure**
n=120 (<1%)

Lightning
n=0 (<1%)

Poisons
n=4,210 (2%)

Drugs
n=743 (<1%)

Toxins
n=402 (<1%)

Chemicals
n= 3,065 (1%)

**Non-
Environmental**
n=898 (<1%)

Thermal burns
n=661 (<1%)

Electrical
n=233 (<1%)

**Nuclear
radiation**
n=4 (<1%)

Other/Unspecified Injuries

n=6,433 (2%)

**Medical
Complications**
n=2,783 (1%)

**Other reaction
to external
cause**
n=954 (<1%)

Foreign Body
n=227 (<1%)

**Medical
Accidents**
n=16 (<1%)

**Abuse/
Intentional**
n=532 (<1%)

**Unspecified/
multiple injuries**
n=1,851 (<1%)

**Lack of essential
element**
n=70 (<1%)



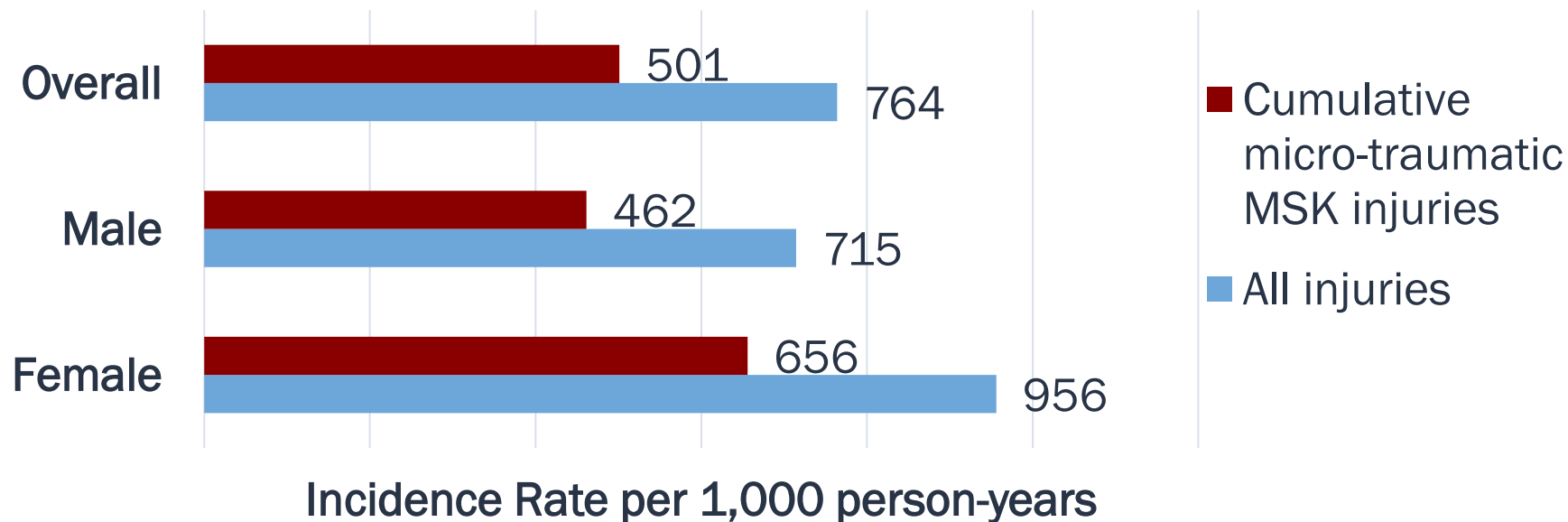


Incident Injury Encounter Rates by Sex

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All Injury and Cumulative Micro-traumatic Musculoskeletal (MSK)

U.S. Navy Active Duty, 2021



Rates for all injuries and cumulative micro-traumatic MSK injuries were both significantly higher among females ($p < 0.001$).



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Incident Mechanical Injuries by Body Region

U.S. Navy Active Duty, 2021

Body Region	Acute Traumatic n (%)	Cumulative Micro-traumatic (Overuse) n (%)	All n (%)
Lower Extremity	20,871 (8.3)	67,210 (26.9)	88,081 (35.2)
Spine & Back	3,410 (1.4)	70,174 (28.0)	73,584 (29.4)
Upper Extremity	19,701 (7.9)	37,732 (15.1)	57,433 (23.0)
Head, Face, & Neck	11,806 (4.7)	8,491 (3.4)	20,297 (8.1)
Torso	3,731 (1.5)	276 (<1.0)	4,007 (1.6)
Other	421 (<1.0)	6,420 (2.6)	6,841 (2.7)
Total	59,940 (24.0)	190,303 (76.0)	250,243 (100)

*In order of most frequently injured body region for All



Incident Mechanical Injury Diagnoses by Injury Type and Body Region, U.S. Navy Active Duty, 2021

Diagnosis	Head, Face, and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other		Total	Percent Total (%)
	Acute (ACT)*	Cumulative (CMT)*	ACT	CMT	ACT	CMT	ACT	CMT	ACT	CMT	ACT	CMT		
MSK Tissue Damage	12	197	367	63,616	108	1	1,745	33,918	2,833	65,349	77	6,351	174,574	69.8
Other Tissue Damage	4,431	8,287	401	0	931	0	1,800	0	922	0	309	0	17,081	6.8
Nerve	10	0	15	6,553	8	256	1,398	2,225	565	354	0	0	11,384	4.5
Sprain/Joint Damage	4	0	705	1	195	0	2,129	168	7,301	548	18	42	11,111	4.4
Strain/Tear	1,184	0	1,595	0	945	0	1,854	1,395	2,339	1	17	9	9,339	3.7
Contusion/Superficial	2,312	7	0	0	792	7	2,304	22	2,703	351	0	0	8,498	3.4
Open Wound	1,711	0	0	0	208	0	4,340	0	1,272	0	0	0	7,531	3
Fracture	464	0	264	4	263	12	2,998	4	2,544	607	0	18	7,178	2.9
Internal Organ and Blood Vessel	1,652	0	46	0	264	0	40	0	13	0	0	0	2,015	<1.0
Dislocation	24	0	17	0	12	0	816	0	278	0	0	0	1,147	<1.0
Crush	1	0	0	0	4	0	222	0	99	0	0	0	326	<1.0
Amputation	1	0	0	0	1	0	55	0	2	0	0	0	59	<1.0
Total	11,806	8,491	3,410	70,174	3,731	276	19,701	37,732	20,871	67,210	421	6,420	250,243	100.0
Percent Total (%)	4.7	3.4	1.4	28.0	1.5	<1.0	7.9	15.1	8.3	26.9	<1.0	2.6	100.0	

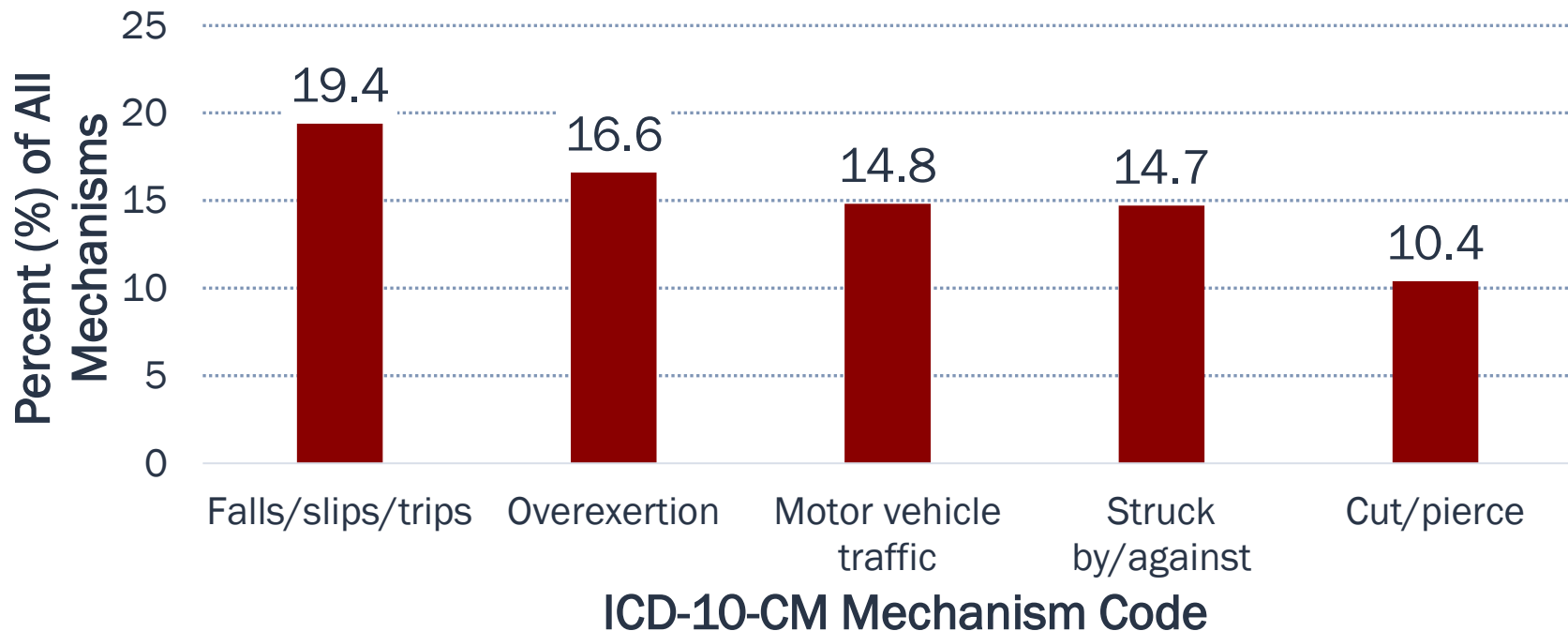
Legend: ACT = Acute trauma, CMT = Cumulative microtrauma



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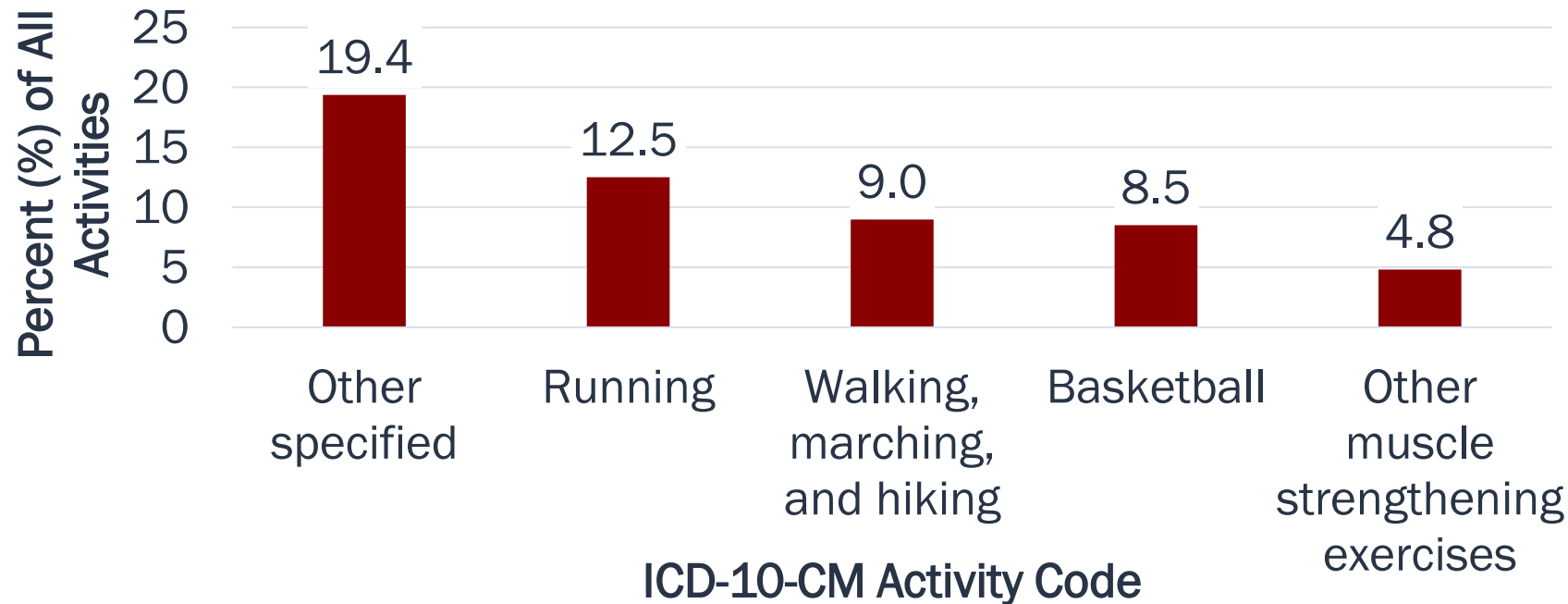
Leading Mechanisms of Unintentional Injury Outpatient Encounters U.S. Navy Active Duty, 2021



Total number of unintentional incident injury outpatient encounters with activity codes = 19,221 (7%); may not be representative of the distribution of mechanisms for all incident injuries.



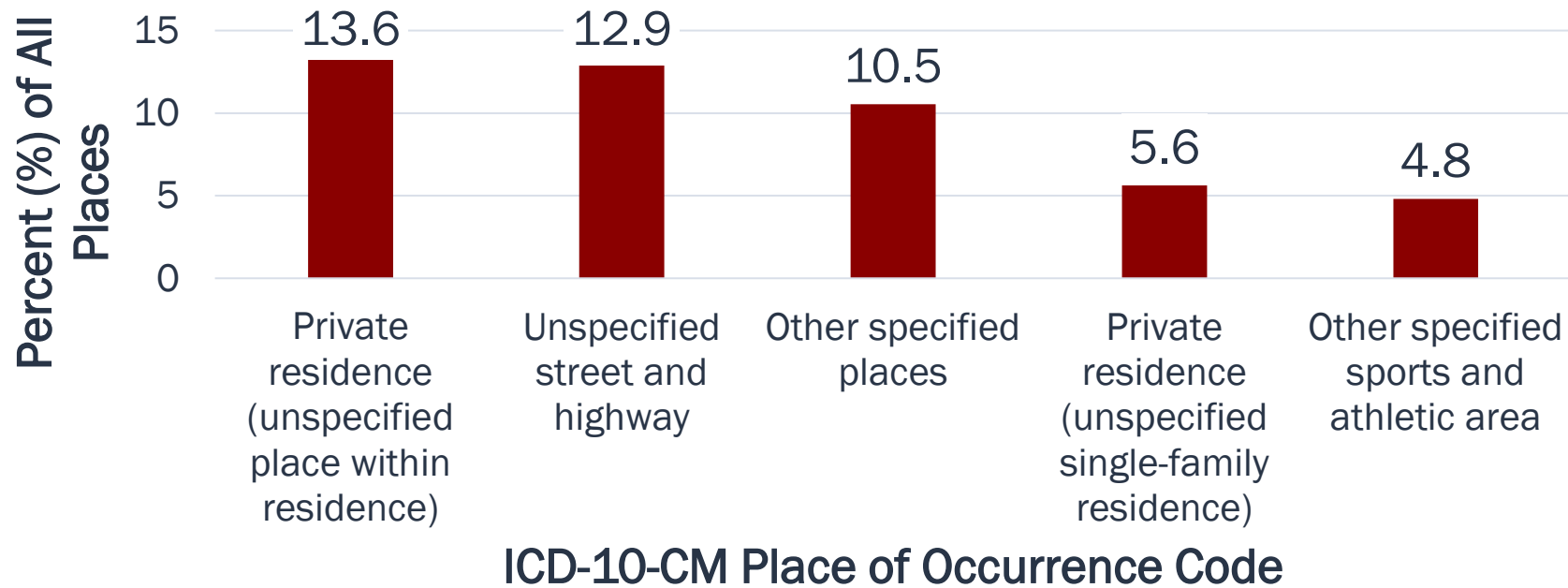
Leading Activities Associated with Unintentional Injury Outpatient Encounters, U.S. Navy Active Duty, 2021



Total number of unintentional incident injury encounters with activity codes = 6,171 (2%); may not be representative of the distribution of activities for all incident injuries.



Leading Places Associated with Unintentional Injury Outpatient Encounters, U.S. Navy Active Duty, 2021



Total number of unintentional outpatient incident injury encounters with activity codes = 5,492 (2%); may not be representative of the distribution of places for all incident injuries.



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Website: <https://phc.amedd.Army.mil/topics/discond/ptsaip/Pages/default.aspx>

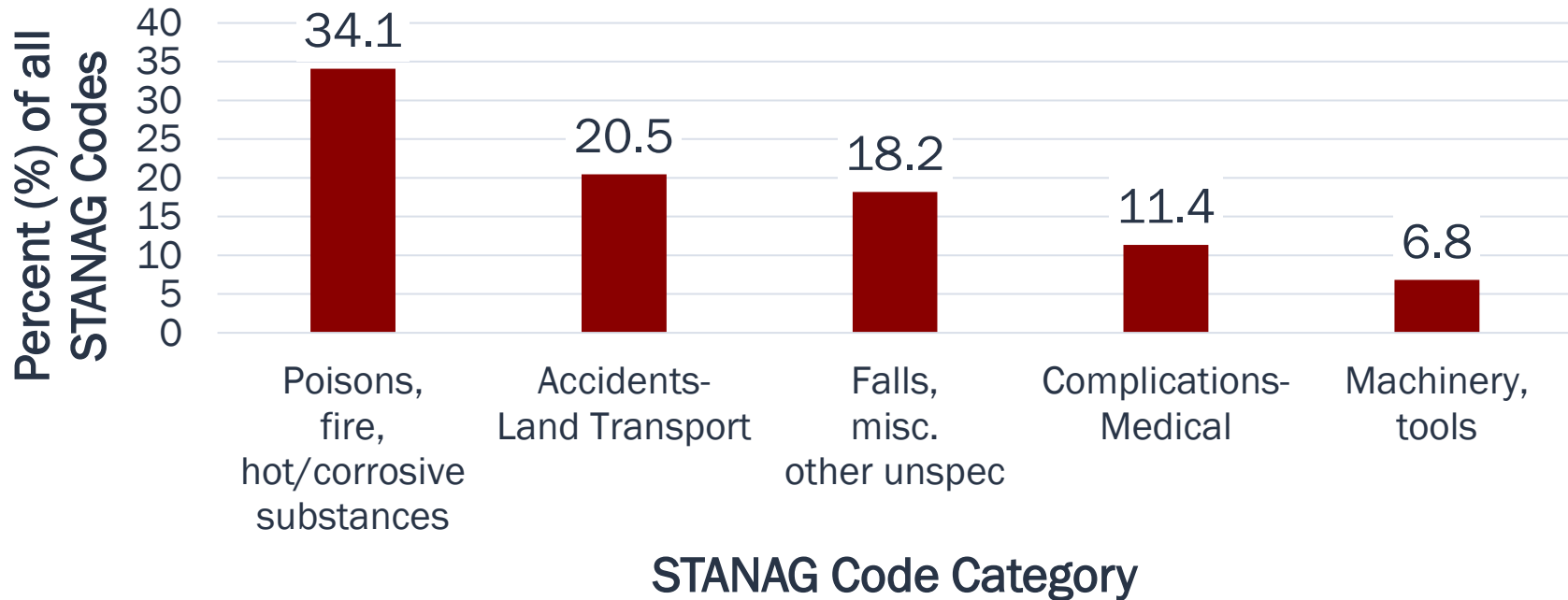
Email: dha.apg.Pub-Health-A.mbx.injuryprevention@health.mil



Additional Injury Hospitalization Cause Information



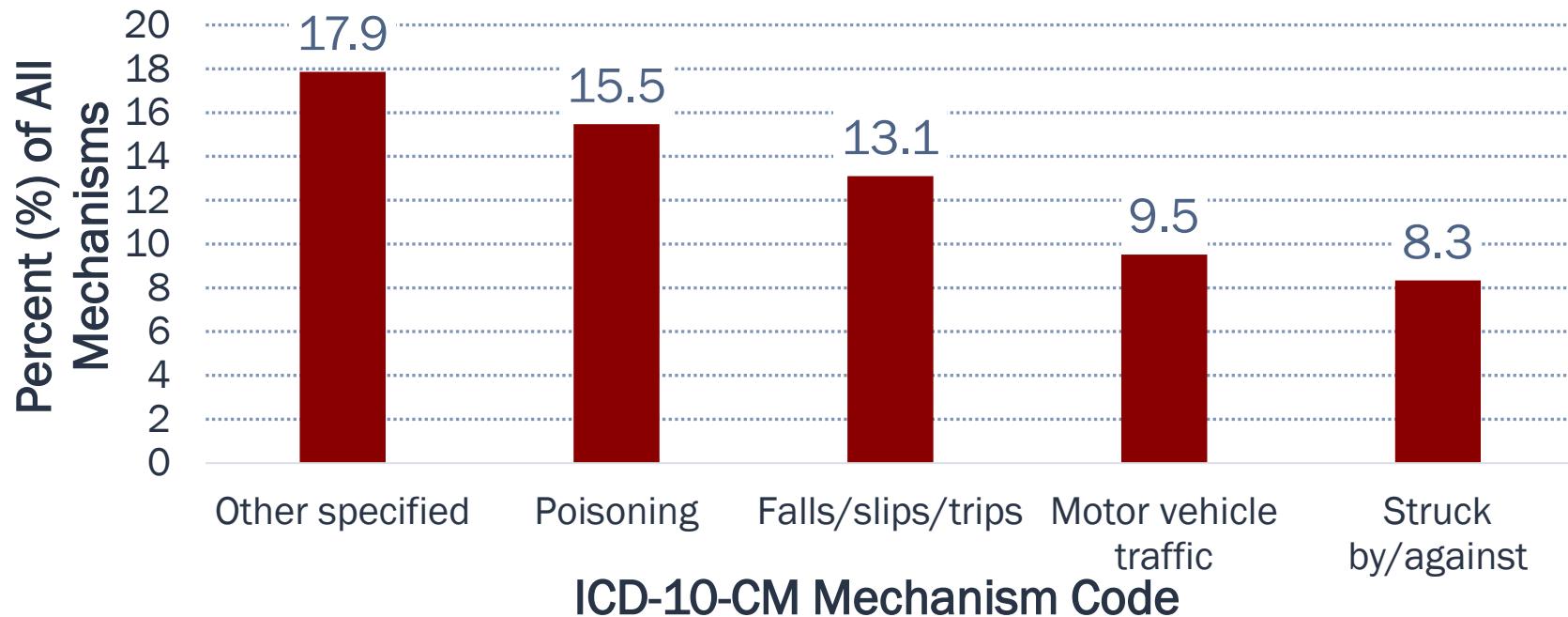
Leading Standardized Agreement (STANAG) Cause Codes for Injury Hospitalizations, U.S. Navy Active-Duty, 2021



Total number of STANAG-coded injury hospitalizations = 44 (8.5%); may not be representative of the distribution of causes for all incident injury hospitalizations.



Leading Mechanisms of Unintentional Injury Hospitalizations, U.S. Navy Active Duty, 2021



Total number of cause-coded unintentional injury hospitalizations = 84 (16%); may not be representative of the distribution of causes for all incident injury hospitalizations.

