

**US DEPARTMENT OF
DEFENSE (DoD) COMBINED
ACTIVE DUTY
EYE INJURY SUMMARY
CALENDAR YEAR 2016**

Approved for public release, distribution unlimited

2016



INTRODUCTION: In 2010 the Armed Forces Health Surveillance Center (AFHSC) and Tri-Service Vision Conservation and Readiness Program (TSVCRP) of the Army Public Health Center (APHC) began development of an Annual Active Duty Military Eye Injury Summary that would detail cause and type of injury along with demographics of eye injuries (Age, Gender, Rank, Occupational Group).

The first edition of the summary and annual summaries back through calendar year 2000, were produced in the spring of 2011. An analysis of years 2000-2010 was published in the May 2011 Medical Surveillance Monthly Report (MSMR). The AFHSC also developed a Case Definition for Eye Injuries that details the code set and methodology used to develop the summaries. Both the MSMR Article and Case Definition for Eye Injuries are available on the AFHSC website: <http://afhsc.army.mil/home>.

This summary contains detailed data, along with a set of summary tables detailing Ambulatory and Hospitalization rates (per 1000 person-years) for Injury Group, Cause of Injury and Occupational Group. Summary tables for Deployment-Associated Eye Injuries detailing frequency of Eye Injuries by Type of Injury and Occupational Group are also provided. Occupational Group data is for Enlisted members only. Deployment-Associated Eye Injuries are presented without regard to Ambulatory or Hospitalized status.

As one of the underlying goals of the summary is to make eye injury surveillance data accessible and useable, individual annual eye injury summaries for all years and all services (Combined DoD, Army, Navy, Air Force, Marine Corps and Coast Guard) are posted on the APHC public website.

For questions or additional information regarding the summaries please contact the TSVCRP:

By Email: usarmy.apg.medcom-phc.mbx.dcpm-tri-service-optometry@mail.mil

Telephone: 410-436-1002 FAX: 410-436-4117

Additional program information and educational materials can be found on the APHC Public Website at: <http://phc.amedd.army.mil/Pages/default.aspx>

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INJURY CODE GROUP DETAILS: The following code groupings were used to develop the summary. ICD-9 coding was replaced by ICD-10 in October and this report represents the combination of both. Additional details may be found in the AFHSC Case Definition available at: <http://afhsc.army.mil/home>.

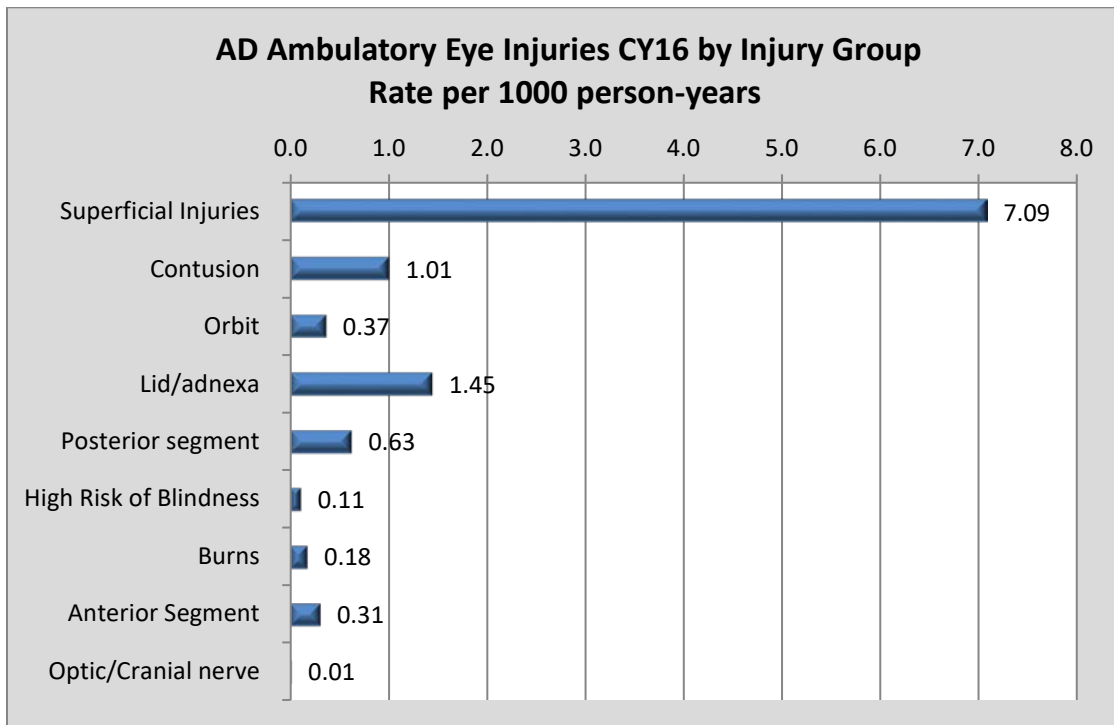
- 1) **Superficial:** ICD-9: all 918 series codes (superficial injury of eye and adnexa) and all 930 series codes (foreign body on external eye). ICD-10: S00.2xx series codes (abrasions, blisters, bites, and injury to the conjunctiva, eyelid, or periorcular area)
- 2) **Contusion:** ICD-9: all 921 series codes (contusion of eye and adnexa). ICD-10: S00.1xx series codes (contusion of the eyelids) and S05.1xx series (contusion of the eyeball and orbital tissues)
- 3) **Orbit:** ICD-9: All 802 series codes (fracture of face bones), 870.3 and 870.4 (penetrating wound of orbit without and with foreign body) and 376.32 (orbital hemorrhage). ICD-10: S02.3xx/S02.9xx series codes (fracture of orbital floor) and S05.4xx series (penetrating wound of orbit)
- 4) **Lid/adnexa:** ICD-9: all 870 series codes (open wound of ocular adnexa) with the exception of 870.3 and 870.4 (see orbit above). ICD-10: S01.1xx series codes (laceration, puncture, and bite of the eyelid or periorcular area)
- 5) **Posterior segment:** ICD-9: 362.81 (retinal hemorrhage), all 361.0x series codes (retinal detachment with retinal defect), 363.61 (choroidal hemorrhage, unspecified), 363.63 (choroidal rupture), 379.23 (vitreous hemorrhage), 360.00 and 360.01 (purulent and acute endophthalmitis). ICD-10: H31.3xx series codes (choroidal hemorrhage/rupture), H33.0xx series (retinal detachments), H35.6x series (retinal hemorrhage), H43.1x series (vitreous hemorrhage), H44.00x series (purulent enophthalmitis)
- 6) **High risk of blindness:** ICD-9: all 871 series codes (open wound of eyeball). ICD-10: S05.xxx series codes (ocular laceration, penetrating wound, and avulsion of the eye)
- 7) **Burns:** ICD-9: all 940 series codes (burn confined to eye and adnexa) as well as all 940.x2 codes (burns to eye with other parts of face, head and neck). ICD-10: S05.xxx series codes (ocular laceration, penetrating wound, and avulsion of the eye)
- 8) **Anterior segment:** ICD-9: 364.41 (hyphema), 366.21 and 366.22 (localized and total traumatic cataract), and 364.76 (iridodialysis). ICD-10: H21.xxx series codes (hyphema and iridodialysis) and H26.1xx series (traumatic cataract)
- 9) **Optic/cranial nerve:** ICD-9: 950.0 (optic nerve injury), 950.1 (injury to optic chiasm), 950.9 (injury to optic nerve and pathways, unspecified), 951.0 (injury to oculomotor nerve), 951.1 (injury to trochlear nerve) and 951.3 (injury to abducens nerve). ICD-10: S04.xxx series codes (injury of the optic, oculomotor, trochlear, and abducent nerves)

DETAILS FOR TOTAL NUMBERS: Because patients may have been coded with more than one injury group or cause of injury, the sum of cases by injury group and the sum of cases by causes of injury will be greater than the total number of patients.

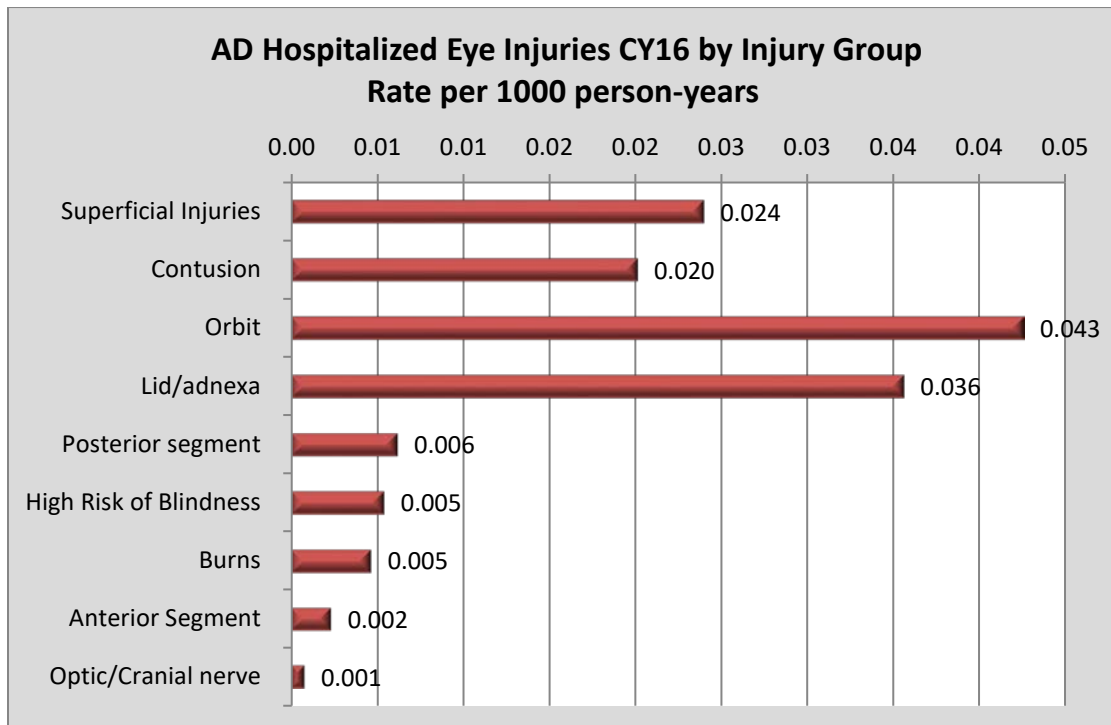
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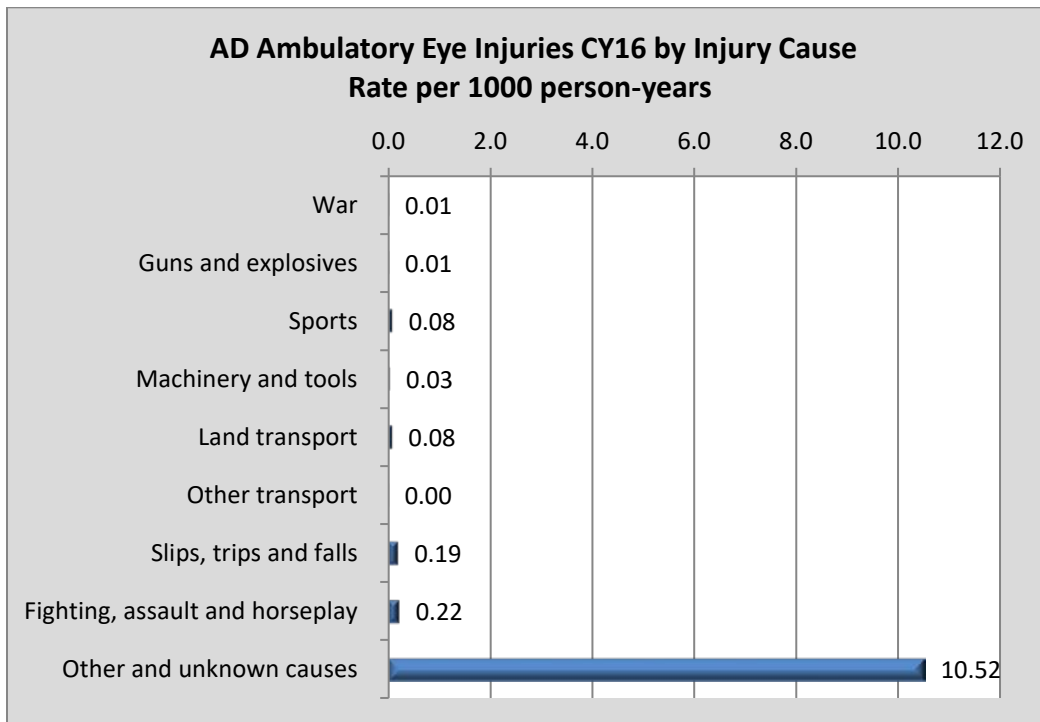
Please note the difference in scale between Ambulatory and Hospitalized graphs



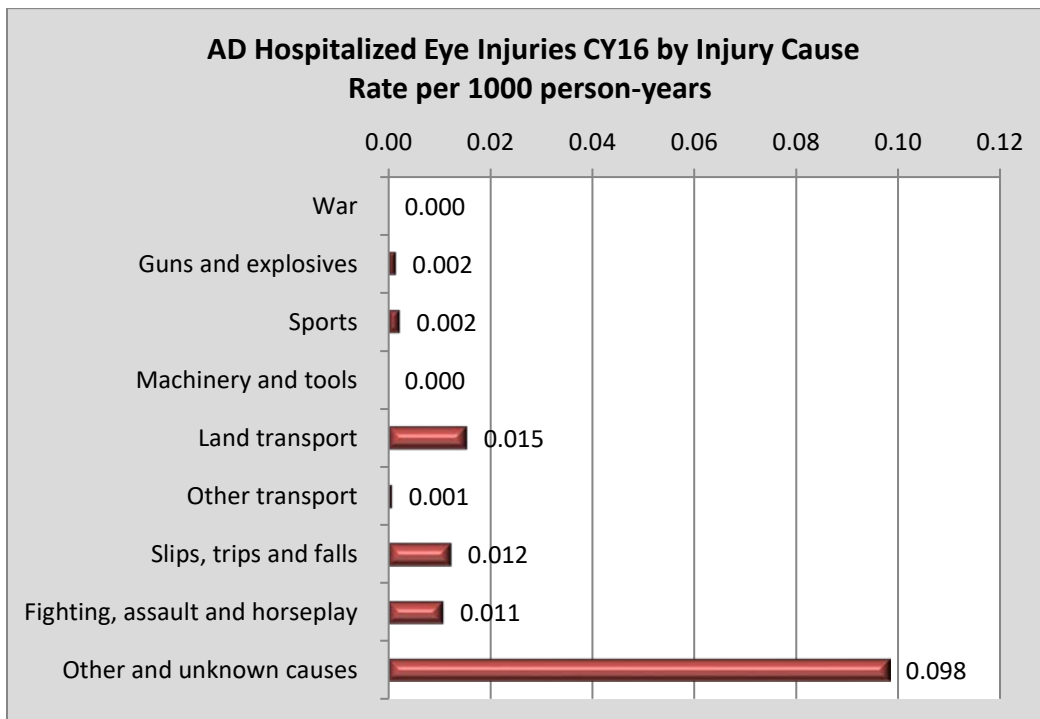
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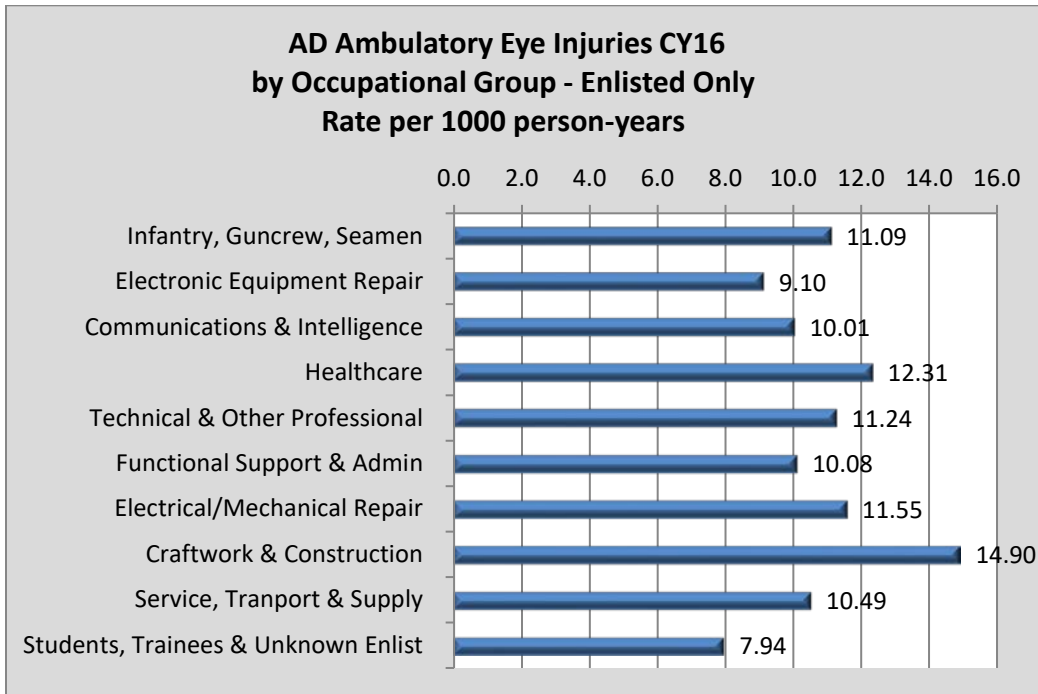
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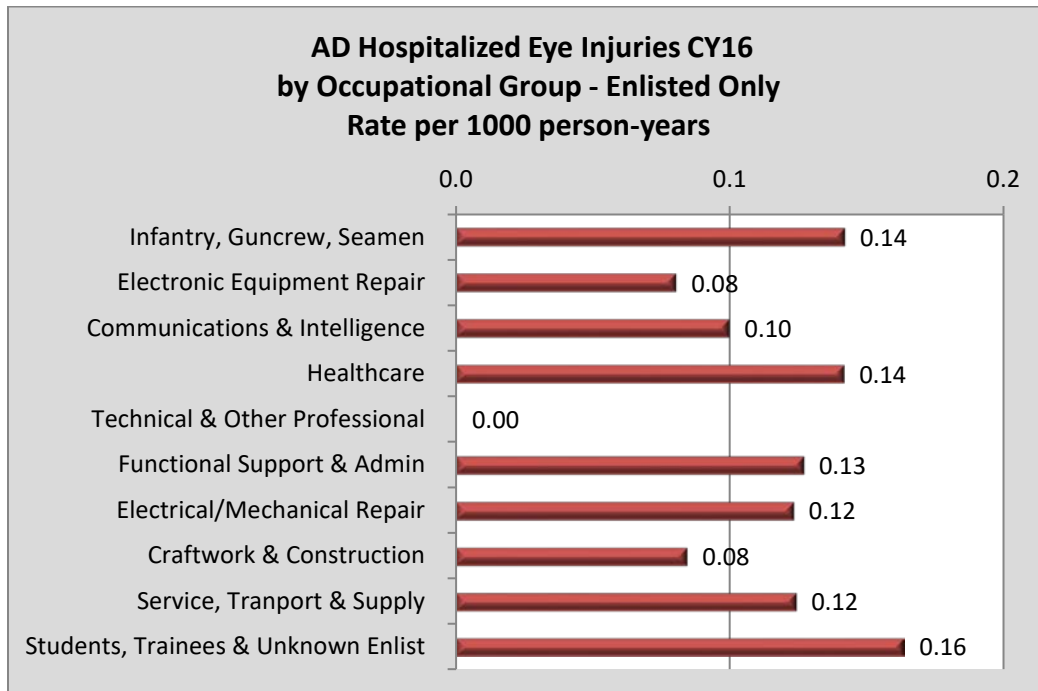
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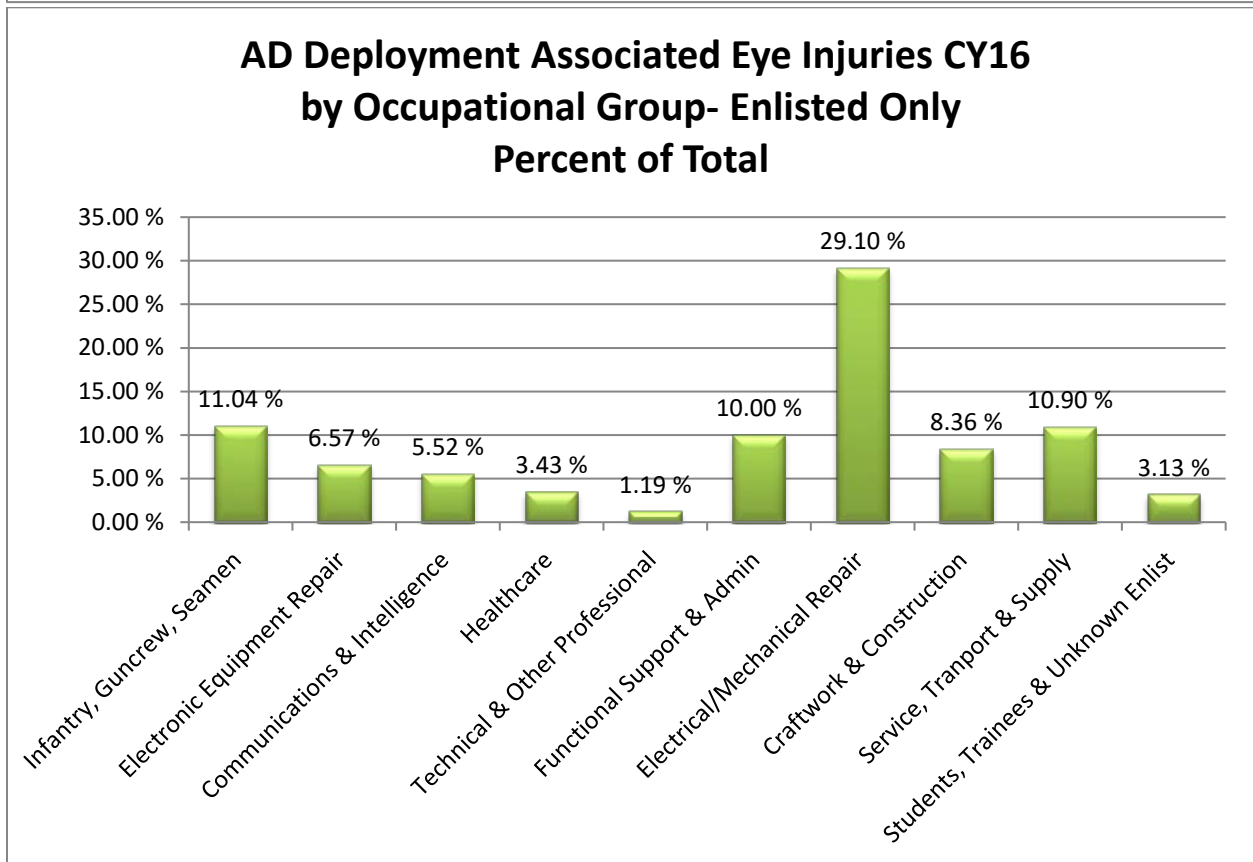
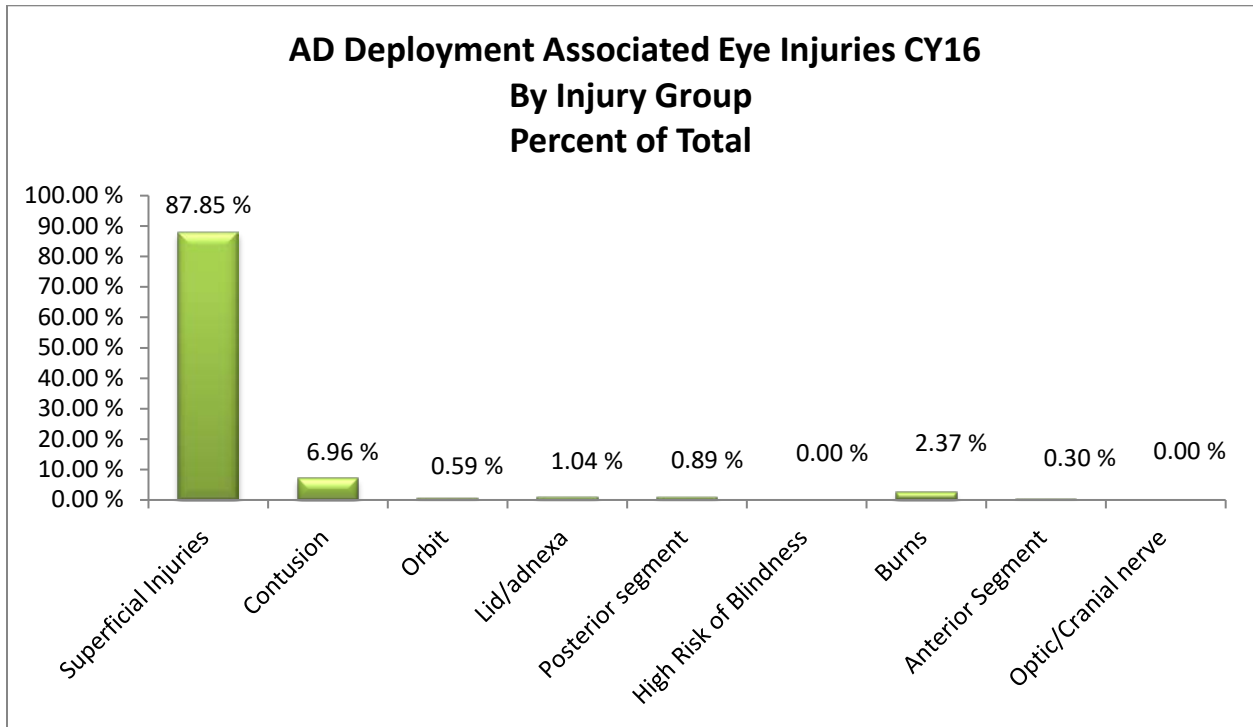
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	2016													
	Ambulatory MTF Visits				Deployment-Associated Healthcare				Hospitalizations					
	Primary		All Diagnoses		Primary		All Diagnoses		Primary		All Diagnoses			
	Count	Rate ¹	Count	Rate	Count	% total ¹	Count	% total ¹	Count	Rate	Count	Rate		
ALL ACTIVE COMPONENT	Total	11,428	8.85	13,666	10.59	647	100.00	670	100.00	37	0.03	142	0.11	
	Superficial Injuries	8,248	6.39	9,151	7.09	578	88.79	593	87.85	4	0.00	31	0.02	
	Contusion	945	0.73	1,298	1.01	43	6.61	47	6.96	6	0.00	26	0.02	
	Orbit	374	0.29	475	0.37	4	0.61	4	0.59	28	0.02	55	0.04	
	Lid/adnexa	1,574	1.22	1,867	1.45	4	0.61	7	1.04	10	0.01	46	0.04	
	Posterior segment	412	0.32	810	0.63	4	0.61	6	0.89	7	0.01	8	0.01	
	High Risk of Blindness	129	0.10	144	0.11	0	0.00	0	0.00	4	0.00	7	0.01	
	Burns	179	0.14	230	0.18	16	2.46	16	2.37	0	0.00	6	0.00	
	Anterior Segment	172	0.13	399	0.31	2	0.31	2	0.30	2	0.00	3	0.00	
	Optic/Cranial nerve	12	0.01	19	0.01	0	0.00	0	0.00	0	0.00	1	0.00	
	Male	9,644	8.87	11,510	10.59	536	82.84	554	82.69	35	0.03	120	0.11	
	Female	1,784	8.76	2,156	10.59	111	17.16	116	17.31	2	0.01	22	0.11	
	War	13	0.01	13	0.01	not assessed ²				0	0.00	0	0.000	
	Guns and explosives	12	0.01	16	0.01					2	0.00	2	0.002	
	Sports	89	0.07	102	0.08					2	0.00	3	0.002	
	Machinery and tools	37	0.03	41	0.03					0	0.00	0	0.000	
	Land transport	62	0.05	101	0.08					4	0.00	20	0.015	
	Other transport	4	0.00	4	0.00					0	0.00	1	0.001	
	Slips, trips and falls	175	0.14	247	0.19					5	0.00	16	0.012	
	Fighting, assault and horseplay	212	0.16	284	0.22					8	0.01	14	0.011	
	Other and unknown causes	11,441	8.86	13,585	10.52					40	0.03	127	0.098	
	ENLISTED (all diagnoses combined)	Enlisted	9,572	9.01	11,411					10.74	578	89.34	598	89.25
	<20	617	5.58	748	6.77	30	4.64	31	4.63	4	0.04	11	0.10	
	20-24	3,427	8.73	4,117	10.49	258	39.88	271	40.45	16	0.04	59	0.15	
	25-29	2,464	10.17	2,858	11.80	147	22.72	149	22.24	9	0.04	23	0.09	
	30-34	1,552	9.96	1,849	11.87	66	10.20	67	10.00	5	0.03	20	0.13	
	35-39	917	9.16	1,099	10.98	59	9.12	62	9.25	0	0.00	6	0.06	
	>=40	595	9.71	740	12.08	18	2.78	18	2.69	0	0.00	7	0.11	
	E0-E4	4,994	8.85	6,000	10.64	336	51.93	348	51.94	27	0.05	79	0.14	
	E5-E9	4,578	9.19	5,411	10.86	242	37.40	250	37.31	7	0.01	47	0.09	
	Infantry, Guncrew, Seamen	1,548	9.14	1,878	11.09	72	11.13	74	11.04	5	0.03	24	0.14	
	Electronic Equipment Repair	745	7.46	909	9.10	41	6.34	44	6.57	1	0.01	8	0.08	
	Communications & Intelligence	921	8.33	1,106	10.01	36	5.56	37	5.52	1	0.01	11	0.10	
	Healthcare	805	10.35	957	12.31	23	3.55	23	3.43	3	0.04	11	0.14	
	Technical & Other Professional	308	9.73	356	11.24	8	1.24	8	1.19	0	0.00	0	0.00	
	Functional Support & Admin	1,201	8.46	1,432	10.08	63	9.74	67	10.00	6	0.04	18	0.13	
	Electrical/Mechanical Repair	2,150	9.80	2,535	11.55	189	29.21	195	29.10	9	0.04	27	0.12	
	Craftwork & Construction	463	12.99	531	14.90	54	8.35	56	8.36	1	0.03	3	0.08	
	Service, Transport & Supply	1,058	8.74	1,270	10.49	71	10.97	73	10.90	5	0.04	15	0.12	
	Students, Trainees & Unknown Enlist	373	6.77	437	7.94	21	3.25	21	3.13	3	0.05	9	0.16	
	Army	3,853	10.17	4,655	12.28	145	22.41	152	22.69	13	0.03	50	0.13	
	Navy	1,941	7.21	2,312	8.59	294	45.44	301	44.93	10	0.04	32	0.12	
	Air Force	2,314	9.22	2,686	10.71	121	18.70	125	18.66	6	0.02	23	0.09	
	Marine Corps	1,464	8.96	1,758	10.76	18	2.78	20	2.99	5	0.03	21	0.13	
	OFFICER (all diagnoses combined)	Officer	1,856	8.13	2,255	9.87	69	10.66	72	10.75	3	0.01	16	0.07
	<20	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	
	20-24	167	6.87	197	8.10	5	0.77	5	0.75	1	0.04	1	0.04	
	25-29	413	7.89	488	9.32	22	3.40	22	3.28	1	0.02	5	0.10	
	30-34	382	7.81	450	9.21	12	1.85	13	1.94	0	0.00	5	0.10	
	35-39	348	8.39	419	10.10	12	1.85	13	1.94	1	0.02	2	0.05	
	>=40	546	8.90	701	11.42	18	2.78	19	2.84	0	0.00	3	0.05	
	O0-O3,W0-W3	1,143	7.99	1,351	9.45	43	6.65	45	6.72	3	0.02	12	0.08	
	O4-O10,W4-W5	713	8.34	904	10.58	26	4.02	27	4.03	0	0.00	4	0.05	
	General/Flag Ofc & Executives	16	9.11	21	11.95	0	0.00	0	0.00	0	0.00	0	0.00	
	Tactical Operations Off.	617	7.48	743	9.01	27	4.17	29	4.33	0	0.00	7	0.08	
	Intelligence Off.	125	8.10	149	9.66	4	0.62	5	0.75	0	0.00	0	0.00	
	Engineering & Maintenance Off.	259	8.57	302	9.99	12	1.85	12	1.79	1	0.03	2	0.07	
	Healthcare Off.	339	9.09	430	11.54	9	1.39	9	1.34	1	0.03	3	0.08	
	Scientists & Professional Off.	121	8.91	156	11.48	4	0.62	4	0.60	0	0.00	0	0.00	
	Administrative Off.	118	8.16	144	9.96	4	0.62	4	0.60	0	0.00	2	0.14	
	Supply & Logistics Off.	161	8.56	192	10.21	7	1.08	7	1.04	0	0.00	1	0.05	
	Students, Trainees & Unknown Off.	100	6.91	118	8.16	2	0.31	2	0.30	1	0.07	1	0.07	
	Army	807	8.70	978	10.54	30	4.64	31	4.63	2	0.02	9	0.10	
	Navy	371	6.82	444	8.17	14	2.16	15	2.24	0	0.00	2	0.04	
	Air Force	531	8.79	658	10.89	21	3.25	22	3.28	0	0.00	2	0.03	
	Marine Corps	147	7.05	175	8.39	4	0.62	4	0.60	1	0.05	3	0.14	

1. Rates are per 1,000 person-years.
 2. Use of ICD-9-CM E-codes for "cause of injury" is largely incomplete for theater healthcare records and therefore omitted.
 3. Person-time is not available for deployers so the proportion of the total number of diagnoses is shown.

Source: Defense Medical Surveillance System (DMSS) as of 03-MAY-2017
 Prepared by the Armed Forces Health Surveillance Branch, Public Health Division, Defense Health Agency

