

**ACTIVE DUTY – U.S. ARMY
NOISE-INDUCED
HEARING INJURY
QUARTERLY SURVEILLANCE
Q1 2010 thru Q2 2012**

Approved for public release, distribution unlimited

2014



Active Duty-U.S. Army Noise Induced Hearing Injury Quarterly Surveillance Q1 2010 thru Q2 2012

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**ACTIVE DUTY- U.S. ARMY
NOISE INDUCED HEARING INJURY
QUARTERLY SURVEILLANCE
Q1 2010 THRU Q2 2012**

EXECUTIVE SUMMARY

PURPOSE:

The Department of Defense (DOD) Hearing Conservation Working Group, the U.S. Army Public Health Command, the Armed Forces Health Surveillance Center and the Hearing Center of Excellence collaborated to develop new DOD and individual Services' Noise-Induced Hearing Injury (NIHI) surveillance data. The purposes of these NIHI data summaries are as follows:

- To present and summarize available Army medical surveillance data for use in NIHI prevention program and policy planning, including—
 - Defining the relative impact of NIHI among U.S. Army Active Duty personnel in the total Army and at individual Army installations.
 - Providing Army injury rates and trends from Q1 2010 thru Q2 2012.
 - Identifying demographics most closely associated with NIHI incidence.
- To monitor progress-based metrics for reducing the NIHI morbidity burden over time.

The first NIHI data summary established a baseline against which future years' data can be compared for assessment of NIHI trends as prevention performance indicators.

CONCLUSIONS:

The Army NIHI quarterly surveillance summary for calendar years Q1 2010 thru Q2 2012 shows incident case rates for sensorineural hearing loss, significant threshold shift, tinnitus, and Noise-Induced Hearing Loss.

RECOMMENDATIONS:

Commanders and Preventive Medicine assets at multiple levels should use NIHI data summaries trends to maintain situational awareness of the progress of NIHI prevention operations.

**Active Duty-U.S. Army
Noise Induced Hearing Injury
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Q1 2010 thru Q2 2012**

REFERENCES:

References are listed in Appendix A.

AUTHORITY:

Under Army Regulation (AR) 40-5, Section 2-19, the U.S. Army Public Health Command (USAPHC) is responsible for providing support for Army Preventive Medicine (PVNTMED) assets to include review and interpretation of surveillance data and identification and characterization of health problems as a foundation for injury prevention planning and policy efforts.

Under Department of Defense Instruction (DODI) 6055.12 Hearing Conservation Program, Enclosure 2, Section 3 requires the heads of the DOD components to annually evaluate the effectiveness of their Hearing Conservation Programs (HCPs).

Under Department of Defense Directive (DODD) 6490-02E Comprehensive Health Surveillance, 2012; Section 1 paragraph c establishes the Armed Forces Health Surveillance Center (AFHSC) as the single source for DOD-level health surveillance information.

Under DODD 6200.04 Force Health Protection, Section 4.3.1.2 requires DOD components to promote and improve the health of the force through programs on injury prevention.

BACKGROUND:

Background details can be found in the annual Summary for CY 2007-2011.

Quarterly data time series will be updated semi-annually to provide a 10 quarter “moving window” of finer grained details compared to annual summaries.

METHODS:

Methods details can be found in the annual Summary for CY 2007-2011. The quarterly summary data are reported as is without statistical analysis.

Source: Defense Medical Surveillance System (DMSS).
Prepared by Armed Forces Health Surveillance Center (AFHSC).

RESULTS:

Results are shown in Appendix C.

SUMMARY AND CONCLUSIONS:

AFHSC and the Army Institute of Public Health will continue to provide annual and quarterly data summaries to support NIHI prevention coordination and planning by Army PVNTMED assets and unit commanders at multiple levels. The counts and rates of NIHI "incident cases" are the principle prevention performance metrics. Incident cases are important because they represent cases that might have been prevented if prevention strategies planning and operations were effective.

APPENDIX A

REFERENCES

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Active Duty- U.S. Army
NIHL Quarterly Surveillance Q1 2010 - Q2 2012
APPENDIX B

**INJURY DIAGNOSIS CODES (ICD-9-CM CODES)
CATEGORIZATION BY DIAGNOSTIC GROUPS,
CURRENT PROCEDURE TERMINOLOGY (CPT) CODES
AND DOD OCCUPATION CODES
USED IN THESE DATA SUMMARIES**

ICD-9 Codes

	<u>Category</u>	<u>Code</u>	<u>Code Description</u>
SNHL	Sensorineural hearing loss	38910	SENSORINEURAL HEARING LOSS UNSPECIFIED
SNHL	Sensorineural hearing loss	38911	SENSORY HEARING LOSS
SNHL	Sensorineural hearing loss	38915	SENSORINEURAL HEARING LOSS, UNILATERAL
SNHL	Sensorineural hearing loss	38916	SENSORINEURAL HEARING LOSS, ASYMMETRICAL
SNHL	Sensorineural hearing loss	38917	SENSORY HEARING LOSS, UNILATERAL
SNHL	Sensorineural hearing loss	38918	SENSORINEURAL HEARING LOSS, BILATERAL
<hr/>			
NIHL	Noise-induced hearing loss	38810	NOISE EFFECTS ON INNER EAR UNSPECIFIED
NIHL	Noise-induced hearing loss	38811	ACOUSTIC TRAUMA (EXPLOSIVE) TO EAR
NIHL	Noise-induced hearing loss	38812	NOISE-INDUCED HEARING LOSS
<hr/>			
SHIFT	Significant threshold shift	79415	NONSPECIFIC ABNORMAL AUDITORY FUNCTION STUDIES
<hr/>			
TINN	Tinnitus	38830	TINNITUS UNSPECIFIED
TINN	Tinnitus	38831	SUBJECTIVE TINNITUS
TINN	Tinnitus	38832	OBJECTIVE TINNITUS

CPT Codes Used in the Data Summaries

AUDIO	CPT codes	92552	PURE TONE AUDIOMETRY (THRESHOLD); AIR ONLY
AUDIO	CPT codes	92555	SPEECH AUDIOMETRY THRESHOLD;
AUDIO	CPT codes	92556	SPEECH AUDIOMETRY THRESHOLD; WITH SPEECH RECOGNITION
AUDIO	CPT codes	92557	COMPREHENSIVE AUDIOMETRY THRESHOLD EVALUATION AND SPEECH RECOGNITION
AUDIO	CPT codes	92559	AUDIOMETRIC TESTING OF GROUPS

DOD Occupation Codes used in the data summary

NEW DOD Code	DOD CODE TITLE
10	<i>Infantry, Gun Crew, and Seaman</i>
11	<i>Electronic Equipment Repairers</i>
12	<i>Communications and Intelligence Specialists</i>
13	<i>Health Care Specialists</i>
14	<i>Other Technical and Allied Specialists</i>
15	<i>Functional Support and Admin</i>
16	<i>Electrical/Mechanical Equipment Repairers</i>
17	<i>Craftwork & Construction</i>
18	<i>Service, Transport & Supply</i>
19	<i>Students & Trainees (Enlisted)</i>
21	<i>General/Flag. Officers & Executives</i>
22	<i>Tactical Operations Officers</i>
23	<i>Intelligence Officers</i>
24	<i>Engineering & Maintenance Officers</i>
25	<i>Scientists & Professionals</i>
26	<i>Health Care Officers</i>
27	<i>Administrators</i>
28	<i>Supply & Logistics Officers</i>
29	<i>Students, Trainees & Other Officers</i>

APPENDIX C

TOTAL ARMY QUARTERLY DATA DETAILS

Active Duty- U.S. Army
NIHI Quarterly Surveillance Q1 2010 - Q2 2012

US Army Noise-Induced Hearing Injuries, by diagnosis, Q1 2010 - Q2 2012

	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012		
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	
Count (Rate¹)																					
Sensorineural hearing loss	2,001	15.50	2,087	15.88	1,840	13.75	1,910	14.27	2,039	15.54	2,195	16.52	1,874	14.04	1,907	14.45	2,164	16.71	2,281	17.76	
Significant threshold shift	2,028	15.54	2,093	15.77	1,997	14.78	2,612	19.35	3,027	22.92	2,825	21.16	3,210	23.97	2,343	17.74	2,324	17.93	2,742	21.35	
Noise-induced hearing loss	413	3.08	356	2.60	239	1.71	233	1.67	291	2.12	316	2.28	306	2.19	319	2.31	346	2.55	284	2.10	
Tinnitus	2,008	15.23	1,666	12.42	1,337	9.78	1,649	12.05	2,027	15.11	2,040	15.03	2,047	15.01	1,890	14.02	2,351	17.77	2,308	17.60	

US Armed Forces (DoD) Noise-Induced Hearing Injuries, Active Component, by diagnosis, Q1 2010 - Q2 2012

	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012	
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹
Sensorineural hearing loss	3,566	10.67	3,797	11.21	3,382	9.87	3,514	10.27	3,838	11.46	4,082	12.07	3,570	10.47	3,682	10.89	4,146	12.46	4,449	13.45
Significant threshold shift	2,349	6.88	2,428	7.02	2,374	6.78	3,024	8.66	3,561	10.43	3,647	10.58	4,094	11.80	3,230	9.39	3,651	10.80	3,855	11.47
Noise-induced hearing loss	621	1.81	553	1.59	409	1.16	398	1.13	464	1.35	514	1.48	484	1.38	507	1.45	595	1.73	529	1.55
Tinnitus	3,963	11.68	3,521	10.24	2,905	8.35	3,418	9.84	4,241	12.47	4,319	12.58	4,087	11.81	4,160	12.13	5,011	14.85	5,147	15.35

1. A person can be counted in more than one diagnosis type, but only once (life-time) for each. Rate is provided per 1,000 person-years.
2. Includes only data through the last available full quarter

Source: Defense Medical Surveillance System (DMSS) as of 21-NOV-2014
Prepared by Armed Forces Health Surveillance Center (AFHSC) as of 04-DEC-2014

Active Duty- U.S. Army
NIHI Quarterly Surveillance Q1 2010 - Q2 2012

US Army Noise-Induced Hearing Injuries, Q1 2010 - Q2 2012

	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012		
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	
Occupation (Army)																					
<i>Infantry, Gun Crew, and Seaman</i>	1,173	46.24	1,119	42.77	1,151	43.23	1,459	54.87	1,592	61.16	1,497	56.97	1,446	54.80	1,378	53.35	1,518	60.25	1,547	62.12	
<i>Electronic Equipment Repairers</i>	142	22.28	229	24.85	136	20.52	181	27.41	207	32.16	173	26.51	199	30.73	173	27.39	183	29.98	178	29.99	
<i>Communications and Intelligence Specialists</i>	424	36.95	338	31.65	329	27.39	415	34.52	495	41.60	454	37.53	519	42.65	414	34.02	405	33.25	474	39.05	
<i>Health Care Specialists</i>	216	26.27	281	26.82	163	19.41	184	21.83	212	25.77	250	30.15	294	35.47	241	29.03	257	31.06	262	31.51	
<i>Other Technical and Allied Specialists</i>	124	32.34	118	28.14	107	26.85	115	28.72	153	38.99	162	41.24	149	37.60	120	30.46	136	35.41	128	34.07	
<i>Functional Support and Admin</i>	356	23.96	373	25.28	318	21.08	357	23.79	443	30.48	443	30.46	451	31.26	379	26.80	395	28.58	401	29.20	
<i>Electrical/Mechanical Equip. Repairers</i>	424	31.63	347	31.19	369	26.70	388	27.95	450	33.07	462	33.50	495	35.58	449	32.65	465	34.69	555	42.08	
<i>Craftwork & Construction</i>	123	43.85	94	36.00	91	31.17	88	30.38	110	38.70	147	50.99	157	54.75	99	35.02	104	37.90	115	42.64	
<i>Service, Transport & Supply</i>	477	31.59	452	32.79	480	31.37	450	29.67	560	37.94	607	41.25	596	41.10	480	34.18	500	37.08	604	46.39	
<i>Students & Trainees</i>	50	57.30	29	36.03	24	29.01	22	27.44	23	27.98	13	17.72	8	12.21	12	18.98	24	35.08	15	26.43	
<i>General/Flag, Off. & Executives</i>	1	20.78	6	124.04	6	121.02	4	83.71	8	174.10	2	43.55	3	63.09	5	106.53	3	64.54	4	84.58	
<i>Tactical Operations Officers</i>	181	27.76	233	34.72	201	29.13	204	29.67	197	30.31	221	32.06	221	31.35	190	27.28	201	29.34	191	27.40	
<i>Intelligence Officers</i>	34	24.09	43	29.53	36	23.99	41	27.18	54	38.85	49	32.32	59	38.13	29	18.92	29	19.04	49	32.00	
<i>Engineering & Maintenance Officers</i>	79	26.08	87	26.78	96	31.19	127	40.14	96	32.09	100	31.05	103	31.42	93	28.85	88	27.43	87	26.77	
<i>Scientists & Professionals</i>	40	29.12	41	31.61	43	30.04	37	26.10	35	29.99	53	37.93	43	30.73	41	29.21	39	27.65	45	31.91	
<i>Health Care Officers</i>	90	26.54	102	29.47	89	24.92	71	19.93	79	22.71	101	28.48	108	29.66	86	23.80	77	21.56	106	29.51	
<i>Administrators</i>	45	29.49	56	35.75	40	25.35	53	33.21	49	33.73	41	25.08	62	37.45	49	29.85	48	29.39	61	37.49	
<i>Supply & Logistics Officers</i>	54	26.35	90	42.92	76	35.46	80	36.89	69	33.86	71	32.99	89	40.46	61	28.00	67	31.19	73	33.95	
<i>Students, Trainees & Other Officers</i>	15	28.87	14	27.00	15	25.48	14	26.18	35	25.67	14	26.80	13	26.10	5	9.16	7	14.59	10	20.97	
By Diagnosis																					
<i>DoD - SNHL</i>	2,371	7.36	2,574	7.88	2,429	7.35	2,449	7.43	2,568	7.97	2,703	8.32	2,350	7.18	2,429	7.50	2,692	8.46	2,897	9.17	
<i>DoD - STS</i>	1,948	6.04	2,055	6.29	2,025	6.13	2,605	7.91	3,026	9.39	3,147	9.68	3,594	10.99	2,825	8.72	3,175	9.98	3,327	10.53	
<i>DoD - NIHL</i>	332	1.03	314	0.96	249	0.75	219	0.66	233	0.72	265	0.82	267	0.82	290	0.90	313	0.98	276	0.87	
<i>DoD - TINN</i>	2,393	7.42	2,180	6.68	1,845	5.59	1,972	5.99	2,438	7.57	2,486	7.65	2,332	7.13	2,419	7.47	2,956	9.29	2,897	9.17	
<i>Army - SNHL</i>	1,265	10.35	1,324	10.66	1,262	9.98	1,244	9.85	1,255	10.16	1,309	10.50	1,089	8.71	1,132	9.20	1,258	10.43	1,366	11.45	
<i>Army - STS</i>	1,677	13.73	1,772	14.27	1,709	13.52	2,251	17.83	2,586	20.94	2,445	19.60	2,808	22.47	2,063	16.76	2,001	16.59	2,353	19.72	
<i>Army - NIHL</i>	203	1.66	190	1.53	128	1.01	114	0.90	128	1.04	163	1.31	167	1.34	187	1.52	181	1.50	137	1.15	
<i>Army - TINN</i>	903	7.39	766	6.17	671	5.31	681	5.39	898	7.27	943	7.56	951	7.61	922	7.49	1,106	9.17	1,049	8.79	
Sex (Army)																					
<i>Male</i>	3,711	35.42	3,723	34.93	3,474	32.02	3,981	36.78	4,466	42.20	4,442	41.58	4,563	42.65	3,949	37.49	4,180	40.50	4,483	43.90	
<i>Female</i>	337	19.37	329	18.67	296	16.48	309	17.12	401	22.67	418	23.37	452	25.15	355	19.98	366	21.05	422	24.56	
Age (Army)																					
<i><20</i>	121	13.98	148	17.27	127	13.24	123	13.05	175	19.36	209	23.44	219	23.71	151	17.34	157	18.93	154	19.56	
<i>20-24</i>	1,182	29.33	1,123	27.42	1,081	26.24	1,320	32.13	1,562	38.80	1,408	34.40	1,461	36.07	1,329	33.50	1,451	37.34	1,544	39.98	
<i>25-29</i>	927	30.53	921	29.71	902	28.75	1,063	33.85	1,151	37.38	1,148	36.92	1,121	35.90	1,036	33.55	1,078	35.59	1,181	39.55	
<i>30-34</i>	508	28.35	557	30.34	522	28.01	537	28.68	671	36.37	671	35.87	737	39.04	565	29.84	609	32.49	682	36.47	
<i>35-39</i>	547	39.07	539	38.09	470	33.18	508	36.17	525	38.53	541	39.77	645	47.80	509	38.24	493	37.97	502	39.29	
<i>>=40</i>	763	69.66	764	68.36	668	58.17	739	63.71	783	68.97	883	77.06	832	71.59	714	61.58	758	66.29	842	73.32	
Deployment Association² (Army)																					
COUNTS ONLY																					
<i>OIF-associated</i>	884	N/A	617	N/A	800	N/A	781	N/A	659	N/A	523	N/A	415	N/A	554	N/A	316	N/A	213	N/A	
<i>OEF-associated</i>	286	N/A	371	N/A	386	N/A	720	N/A	501	N/A	539	N/A	774	N/A	506	N/A	666	N/A	998	N/A	
<i>Not Deployment Associated</i>	2,878	N/A	3,064	N/A	2,584	N/A	2,789	N/A	3,707	N/A	3,798	N/A	3,826	N/A	3,244	N/A	3,564	N/A	3,694	N/A	

1. Rate is provided per 1,000 person-years.

2. The diagnosis occurred during or within 180 days of a deployment.

Active Duty- U.S. Army
NIHI Quarterly Surveillance Q1 2010 - Q2 2012

Army Regional Totals Counts & Rates, Q1 2010 - Q2 2012

US Army SENSORINEURAL HEARING LOSS diagnoses, Q1 2010 - Q2 2012																				
	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012	
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹
NORTHERN	270	10.73	227	8.89	246	9.39	317	12.17	312	12.18	297	11.38	268	10.55	300	12.13	445	18.49	406	16.97
SOUTHERN	743	17.94	697	16.59	575	13.47	455	10.82	619	14.96	635	15.11	619	14.72	568	13.84	685	17.01	648	16.15
WESTERN	568	18.66	615	19.64	566	17.90	667	20.74	588	18.22	704	21.37	580	17.24	630	18.53	622	18.42	666	19.89
PACIFIC	84	12.30	212	30.24	155	22.36	145	19.22	164	20.94	232	29.50	151	19.30	122	17.04	114	16.22	209	29.90
EUROPEAN	68	13.83	63	12.89	30	8.24	66	13.57	94	17.11	107	20.24	65	12.97	43	8.87	58	12.09	93	20.28
US Army SIGNIFICANT THRESHOLD SHIFT diagnoses, Q1 2010 - Q2 2012																				
	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012	
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹
NORTHERN	320	12.55	284	11.01	280	10.58	322	12.23	584	22.59	417	15.86	315	12.32	271	10.88	453	18.70	320	13.28
SOUTHERN	1,298	31.80	1,262	30.46	856	20.31	1,014	24.44	784	19.23	955	23.05	826	19.93	585	14.44	523	13.12	907	22.83
WESTERN	292	9.45	350	11.00	723	22.51	1,004	30.83	1,350	41.47	1,221	36.88	1,864	55.46	1,327	39.45	1,119	33.56	1,246	37.83
PACIFIC	10	1.39	83	11.28	21	2.89	16	2.03	53	6.49	23	2.81	18	2.21	4	0.54	94	12.87	80	11.01
EUROPEAN	17	3.39	24	4.82	6	1.62	102	20.62	86	15.44	39	7.27	25	4.91	8	1.62	20	4.09	38	8.13
US Army NOISE-INDUCED HEARING LOSS diagnoses, Q1 2010 - Q2 2012																				
	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012	
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹
NORTHERN	123	4.74	82	3.11	106	3.92	113	4.20	138	5.21	127	4.70	94	3.57	58	2.26	96	3.84	79	3.17
SOUTHERN	183	4.26	176	4.04	68	1.53	47	1.08	47	1.09	67	1.53	78	1.78	83	1.93	93	2.21	67	1.59
WESTERN	51	1.60	48	1.46	34	1.02	21	0.62	40	1.18	69	1.99	82	2.31	127	3.54	83	2.33	67	1.89
PACIFIC	5	0.69	14	1.89	2	0.27	8	1.00	12	1.45	18	2.16	5	0.60	10	1.31	10	1.34	13	1.74
EUROPEAN	4	0.79	1	0.20	1	0.27	7	1.39	4	0.70	5	0.91	6	1.15	3	0.59	3	0.60	8	1.66
US Army TINNITUS diagnoses, Q1 2010 - Q2 2012																				
	Q1 2010		Q2 2010		Q3 2010		Q4 2010		Q1 2011		Q2 2011		Q3 2011		Q4 2011		Q1 2012		Q2 2012	
	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹	Count	Rate ¹
NORTHERN	360	14.08	301	11.62	236	8.87	365	13.78	360	13.82	314	11.83	305	11.81	296	11.77	510	20.83	422	17.34
SOUTHERN	708	16.78	549	12.82	418	9.60	467	10.89	708	16.79	710	16.59	729	17.03	637	15.24	782	19.08	750	18.39
WESTERN	481	15.42	427	13.30	389	11.99	415	12.57	517	15.61	584	17.28	583	16.90	547	15.71	527	15.23	570	16.62
PACIFIC	70	9.92	64	8.83	55	7.66	60	7.68	72	8.87	78	9.55	84	10.30	74	9.92	89	12.17	141	19.37
EUROPEAN	64	12.80	50	10.05	30	8.08	66	13.35	85	15.22	75	13.94	78	15.27	66	13.35	82	16.77	77	16.46