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USAF Hearing Conservation Program, DOEHRS Data Repository Annual Report: CY2012

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14. ABSTRACT

The United States Air Force School of Aerospace Medicine (USAFSAM), Epidemiology Consult Service (PHR), Hearing Conservation Program (HCP) prepares an annual status report on the USAF HCP in accordance with Air Force Occupational Safety and Health Standard 48-20, Occupational Noise and Hearing Conservation Program, 2.5.8-9, and Department of Defense Instruction 6055.12, Hearing Conservation Program. This report covers CY2012. The purpose of this report is to provide a corporate view of the current status of the USAF HCP with data reported from the Defense Occupational and Environmental Health Readiness System Data Repository (DOEHRS-DR). Major command and installation level reports are available quarterly and by request from USAFSAM/PHR, as well as by those who have user-defined roles in the data repository. This report covers an overview of a few standard reports currently available in the DOEHRS-DR database, software implementation status data, hearing conservation program metrics, and recommendations.

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I. Introduction

The United States Air Force (USAF) School of Aerospace Medicine (USAFSAM), Epidemiology Consult Service (PHR), Hearing Conservation Program (HCP) prepares an annual status report on the USAF HCP in accordance with Air Force Occupational Safety and Health (AFOSH) Standard 48-20, Occupational Noise and Hearing Conservation Program, 2.5.8.9 and Department of Defense Instruction (DoDI) 6055.12, Hearing Conservation Program. This report covers CY2012.

The purpose of this report is to provide a corporate view of the status of the USAF HCP with data reported from the Defense Occupational and Environmental Health Readiness System Data Repository (DOEHRS-DR). Major command (MAJCOM) and installation level reports are available quarterly and by request from USAFSAM/PHR, as well as by those who have user-defined roles in the data repository. This report covers an overview of a few standard reports currently available in the DOEHRS-DR database, software implementation, status data, hearing conservation program metrics, and recommendations.

II. Discussion

A. *Software Implementation Status Data*

During 2012, the DOEHRS Program Management Office and the subject matter experts from each service participated in a System Qualification Testing event facilitated by Development Test and Evaluation for the DOEHRS-HC version 4.1.0.0, 8 June 2012. The version of DOEHRS-HC includes single-ear-testing capabilities, which included follow-up tests and reestablished references for a significant threshold shift (STS) in a single ear to be captured for the affected ear only. The version also integrated a partial version of Benson Medical CCA-200 into DOEHRS-HC, enabling users to utilize both programs through DOEHRS-HC. DOEHRS –HC Version 4.1.0.0 was released to the AF on 7 August 2012 and brought the AF into compliance with Code of Federal Regulations (CFR) 1910.95(g)(9). After software release, numerous critical defects were noted by the services.

Version 4.1.0.1, released on 26 September 2012, incorporated a new modularity function by allowing users, with the assistance of local level IT personnel, to download versions of DOEHRS-HC from the DOEHRS-HC-DR website. DOEHRS-HC will automatically check DOEHRS-HC-DR for software updates when a new update is available. This feature eliminates the need for DoD to mail direct disc versions of the software to installations.

Version 4.1.0.2, released on 18 December 2012, allows a demographic data feed from Defense Manpower Data Center (DMDC), which is the authoritative source for DoD personnel data. Initiating a DR inquiry within DOEHRS-HC will import the most current demographic data when available from DMDC. When DMDC data are unavailable, the DOEHRS-HC software will populate with the most recent demographic information from the DOEHRS-HC DR, as completed in previous software versions.

Unfortunately, some errors had been discovered with the DOEHRS-HC software; however, none of these errors halted mission implementation. These errors have been reported by means of a talking paper, to include workarounds, impacts, and recommendations, and presented to the Air Force Medical Support Agency.

B. *HCP Effectiveness Metrics*

Program Compliance: One measure of the effectiveness of any HCP is program compliance. Compliance is defined as the number of people in a particular program who should receive annual audiograms (denominator data) compared to those people who received their audiograms (numerator data). This is one of the metrics specified in DoDI 6055.12. While it is a useful metric, it does have limitations that can influence its accuracy and reflects a snapshot of the data based on the collection date. Aggregate data for military and civilians who required an audiogram in the occupational health module, as well the number of flyers, are obtained from the Aerospace Services Information Management Systems (ASIMS) web site. Denominator data are entered for each unit by USAFSAM/PHR.

Table 1 represents the compliance data for the USAF for the year 2012. These rates are only approximates but are representative of the most current denominator in the USAF HCP.

Table 1. Compliance Trends, CY2012

Group	Noise Exposed	People Tested	Compliance Rate (%)
	CY2012		
Military	183,249	155,509	84.86
Civilian	28,749	25,521	88.77
Total	**211,998**	**181,916**	**85.81**
	CY2011		
Military	160,242	158,703	99.04
Civilian	26,980	26,643	98.75
Total	**187,222**	**186,348**	**99.53**
	CY2010		
Military	166,736	163,834	98.26
Civilian	29,395	25,952	88.29
Total	**196,131**	**190,732**	**97.25**

Threshold Shift Trends: The key metric for any HCP is the STS as specified in DoDI 6055.12. The current data follow the STS criterion specified in DoDI 6055.12. Permanent threshold shift (PTS) is any STS that persists after the follow-up audiograms are completed and is a measure of permanent changes in hearing. Temporary threshold shift (TTS) is any STS that resolves after the follow-up audiograms are completed. TTS is a temporary loss of hearing due most likely to hazardous noise exposure and can be used to target intervention efforts for engineering controls and effective use of hearing protective devices. While PTS can be due to hazardous noise exposure, other factors, such as disease or aging, can cause permanent hearing changes. Care is necessary when reviewing STS rates. The current rates can only be compared to themselves for a given point in time. Therefore, inquiries into the DR for threshold shift information are best viewed as a "snapshot" of the data in the repository for a given day. For DOEHRS purposes, TTS and PTS rates are directly influenced by the completion deadline for civilians and military. Therefore, PTS rates are influenced by follow-up audiograms obtained outside the assigned window.

Table 2 represents the STS/PTS trend data for CY2010 to CY2012. The PTS rates show a slight decrease from 2010-2012. These data can be further broken down into military and civilian trend rates to determine if there are significant differences between these groups.

A review of the data suggests civilian rates continue to be somewhat higher than military rates. The difference is most pronounced for the PTS rates. Overall, PTS rates for both military and civilians have decreased slightly over the past 3 years. As noted above, factors other than hazardous noise exposure can influence PTS rates, the most prevalent of which is length of time working in hazardous noise environments. In some instances, military members retire and may return to the base as civilian employees in the same job duty. The effects of working in hazardous noise environments for many years will negatively affect the auditory status of many workers, as exposure over time accumulates. Some individuals will be affected by a predisposition for age-related hearing loss and/or noise-induced hearing loss. Installation and MAJCOM HCP managers (HCPMs) are encouraged to pay particular attention to efforts directed toward civilian worker areas.

Table 2. STS Trends, CY2010-2012

Year/Group	No. of Periodic	STS (%)	TTS (%)	PTS (%)
CY2012				
Military	138,625	7.50	2.99	4.51
Civilian	25,195	15.00	4.56	10.44
CY2011				
Military	142,885	7.52	2.75	4.77
Civilian	25,097	15.01	4.45	10.55
CY2010				
Military	144,788	8.19	2.89	5.30
Civilian	23,469	18.25	4.94	13.31

Table 3 displays STS rates by MAJCOM. Air Reserve Components, which include Air National Guard (ANG) and AFRC (Air Force Reserve Command) MAJCOMs, may have increased STS rates due to follow-up schedule disruptions related to the unique "weekend warrior" aspect of these MAJCOMs. Similarly, each MAJCOM has a unique mission focus, which influences the type of work environments and the type of career fields or personnel. For example, AFMC has the largest number of personnel on the HCP compared to other MAJCOMs.

Table 3. STS Rates for MAJCOMs from 2010-2012

MAJCOM	2010 (%)	2011 (%)	2012 (%)
ACC	6.84	3.68	3.76
AETC	9.21	6.89	8.76
AFDW	8.87	5.62	5.62
AFGSC	7.41	4.09	2.83
AFMC	9.33	5.72	7.45
AFR	13.49	10.31	10.4
AFSOC	6.33	3.04	3.38
AFSPC	11.37	9.57	11.44
AMC	7.40	4.89	5.2
ANG	11.43	9.00	9.03
PACAF	7.83	3.81	5.18
USAFA	8.42	7.90	11.6
USAFE	5.75	2.99	3.26

Table 4 displays hearing profile levels for H-1, H-2, and H-3 levels for military members. These data change little from year to year. Note that the numbers for cadets differ significantly from officers and enlisted. Possibly, cadets are tested using the DOEHRS-HC system to determine hearing qualifications prior to placement in specific career fields, such as flying status; this may influence the higher rate of H-3 profiles in this population.

Table 4. Military Hearing Profiles from 2010-2012

Year/Group	No. of Personnel	H-1		H-2		≥H-3	
		No.	%	No.	%	No.	%
2012							
Cadet	102	94	92.16	6	5.88	2	1.96
Enlisted	115,512	107,418	92.99	5,363	4.64	2,731	2.36
Officer	30,810	28,668	93.05	1,474	4.78	668	2.17
2011							
Cadet	195	167	85.6	10	5.1	18	9.2
Enlisted	120,737	111,826	92.6	5,930	4.9	2,981	2.4
Officer	32,497	30,041	92.4	1,691	5.2	765	2.3
2010							
Cadet	276	229	82.9	18	6.5	29	10.5
Enlisted	124,934	115,316	92.3	6,314	5	3,304	2.6
Officer	31,713	29,252	92.2	1,692	5.3	769	2.4

III. Recommendations

The DOEHRS-DR reports cited in this document reflect the data available in the data repository. Local hearing conservation program records may reflect a lower PTS rate due to the inability to resolve certain types of PTS cases within the data repository and to import/export difficulties related to baselines older than 1998. The differences between the locally reported PTS rate and the PTS rate with the DR continue to be addressed by USAFSAM/PHR through quarterly records review of common errors from each Air Force exporting location. Additionally, USAFSAM/PHR will be undertaking a more extensive analysis of the records to determine if baseline assignment significantly affects the PTS rates in the DR. The current method of biannual PTS rate reporting from base to headquarters level involves self-reporting of each hearing conservation unit through Microsoft Excel sheets. This method is inaccurate and not recommended for several reasons: 1) a PTS is not defined for the bases to create consistency in recording; 2) there are no instructions provided to the base on the appropriate data source for this information; and 3) entries are completed by hand, which can often lead to errors. Although the PTS rates in the data repository are affected by a DoD business rule change, and may be elevated compared to the actual PTS rates, the data are consistently handled in the same manner, unlike the locally generated Microsoft Excel sheets.

We strongly recommend installation and MAJCOM HCPMs review their respective programs using the metrics given in this report, as they give an initial guideline to estimate program effectiveness. Installation-level reports are available for installation HCPMs to use quarterly and by request. If not already obtained, HCPMs are encouraged to apply for a DOEHRS-DR web site password to gain access to these reports. MAJCOM HCPMs can also request MAJCOM access to assess trends in their respective MAJCOM. All are encouraged to contact the Hearing Conservation Program Manager at USAFSAM/PHR for assistance.