



PERSONNEL AND  
READINESS

**UNDER SECRETARY OF DEFENSE**  
4000 DEFENSE PENTAGON  
WASHINGTON, D.C. 20301-4000

AUG 21 2020

The Honorable James M. Inhofe  
Chairman  
Committee on Armed Services  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

The enclosed final report is in response to the House Report 116-84, page 315, accompanying H.R. 2968, the Department of Defense (DoD) Appropriations Act, 2020, on the DoD Hearing Center of Excellence (HCE).

The report summarizes all HCE Joint Hearing Loss and Auditory System Injury Registry (JHASIR) records; identifies gaps in existing records deemed valuable for inclusion in JHASIR if converted to a queryable format, while addressing the impact of these gaps on HCE's partnerships; and reviews the feasibility of transforming nonqueryable data into a queryable format for records currently not included in JHASIR.

The Department remains committed to developing and implementing evidence-based best practices for Service member and veteran auditory-vestibular care, for which JHASIR serves as a vital tool. As the only existing auditory-vestibular injury registry for U.S. Service members and veterans, JHASIR's significant capabilities enable clinicians and researchers to improve medical readiness monitoring processes; raise awareness of auditory-vestibular injury risks; and identify earlier, more effective interventions to prevent and reduce the severity of auditory-vestibular injuries. By providing a queryable, longitudinal auditory-vestibular health care record for those injured during military service, JHASIR enhances efficiencies for auditory-vestibular care and research. As such, JHASIR will help DoD and the Department of Veterans Affairs identify earlier and more effective interventions to ensure the best health outcomes for Service members and veterans.

Thank you for continued strong support for our Service members, civilian workforce, and families. I am sending identical letters to the other congressional defense committees.

Sincerely,

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Matthew P. Donovan

Enclosure:  
As stated



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AUG 21 2020

The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
United States Senate  
Washington, DC 20510

Dear Senator Reed:

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The Honorable Adam Smith  
Chairman  
Committee on Armed Services  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

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**AUG 21 2020**

The Honorable William M. "Mac" Thornberry  
Ranking Member  
Committee on Armed Services  
U.S. House of Representatives  
Washington, DC 20515

Dear Representative Thornberry:

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**AUG 21 2020**

The Honorable Richard C. Shelby  
Chairman  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate  
Washington, DC 20510

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AUG 21 2020

The Honorable Richard J. Durbin  
Vice Chairman  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate  
Washington, DC 20510

Dear Senator Durbin:

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The Honorable Peter J. Visclosky  
Chairman  
Subcommittee on Defense  
Committee on Appropriations  
U.S. House of Representatives  
Washington, DC 20515

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**AUG 21 2020**

The Honorable Ken Calvert  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
U.S. House of Representatives  
Washington, DC 20515

Dear Representative Calvert:

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# Report to Congress



## Hearing Center of Excellence

August 2020

**In Response To:** House Report 116–84, Page 315, Accompanying H.R. 2968, Department of Defense Appropriations Act, 2020

The estimated cost of this report for the Department of Defense (DoD) is approximately \$36,000.00 for Fiscal Year 2020. This includes \$21,000.00 in expenses and \$15,000.00 in DoD labor.

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Table 1. Descriptions, Numbers, and Years of Queryable Records Currently Included in JHASIR

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## I. PURPOSE

This report is in response to House Report 116–84, page 315, accompanying H.R. 2968, Department of Defense (DoD) Appropriations Act, 2020. The House Report requests the Assistant Secretary of Defense for Health Affairs (ASD(HA)) to review the feasibility of the digital transformation of audiograms, legacy records, and other data maintained in the Joint Hearing Loss and Auditory System Injury Registry (JHASIR), and to submit a report on the review. In its report, the House Appropriations Committee (HAC) expressed its concern the current formatting of records in the DoD’s Hearing Center of Excellence (HCE) JHASIR “hinders partnerships with the Department of Veterans Affairs, institutions of higher education, and other public and private entities” (see Appendix A). The HAC requested the ASD(HA) to submit this report to the congressional defense committees no later than 90 days after enactment (March 19, 2020) of the Act. The DoD submitted an interim report on April 7, 2020, which promised the final report by September 30, 2020.

## II. JHASIR BACKGROUND AND STATUS OF RECORDS

### JHASIR Background

Section 721 of Public Law 110–417 (Appendix B) directed the development and use of JHASIR as part of the congressional mandate to establish the HCE. The mission of HCE, aligned under the Defense Health Agency (DHA), is to provide support to enhance operational performance, medical readiness, and quality of life through collaborative leadership and advocacy for hearing and balance health. One of HCE’s primary responsibilities specified in section 721 is to develop a data registry to identify and track hearing loss and auditory system injuries and associated health outcomes across the Armed Forces, and to share data in the registry with the Department of Veteran Affairs (VA). During 2010–2020, HCE developed JHASIR in collaboration with the VA to meet section 721 and other DoD and VA requirements for centralizing auditory and vestibular injury data.<sup>1</sup> The JHASIR achieved full operational capability (FOC) on January 30, 2020. It is the only existing auditory-vestibular injury registry for U.S. Service members and veterans.

The DoD aim for JHASIR is to contain data only in digitized, structured format, and to store these data in relational databases that allow users to perform queries on these data. Queryable data are not simply digitized data. For example, digital documents (e.g., Portable Document Format, “PDF,” Microsoft Word documents) and images (e.g., Joint Photographic Experts Group “JPEG,” Tagged Image File Format, “TIF” or “TIFF,” Portable Network Graphics, “PNG”) are

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<sup>1</sup> Section 721 of Public Law 110–417 only specified “auditory injury” versus “auditory-vestibular injuries” as a DoD HCE responsibility. The vestibular (balance) system is co-located with the auditory (hearing) system. Vestibular function is an important consideration for Service member medical readiness. The vestibular system typically falls under the care of hearing health care providers (e.g., audiologists, neurotologists, and otolaryngologists) and other providers (e.g., physical therapists, occupational therapists, neurologists). As such, DoD and VA deemed matters related to the vestibular system to be an HCE responsibility, and included it in the HCE Concept of Operations approved by the DoD and VA in 2012.

unstructured data in formats that are not queryable. Tools exist (such as data lakes) that can locate digitized records, parse their data, and store these data in a structured format for use by applications, researchers, and data analysts, among others.<sup>2,3</sup> For the purpose of this report, the term “queryable” refers to data and records that have been digitized, parsed, and transformed into a structured, queryable format (JHASIR’s aim). All data currently in JHASIR achieve the goal of being queryable.

Early in the establishment of HCE, subject matter experts from the DoD, Military Services, and VA collaborated to develop and implement JHASIR’s functional and data requirements. The JHASIR includes queryable DoD and VA clinical episodes of care consisting of DoD and VA audiograms (occupational/hearing conservation program [HCP] hearing tests and clinical diagnostic audiology evaluations) and queryable demographic, deployment, theater trauma, and non-trauma data. As specified in section 721 of Public Law 110–417, records of Service members are included in JHASIR for those “who incurred a hearing loss or auditory system injury while serving on active duty on or after September 11, 2001,” as well as records regarding vestibular care and injuries.

The purpose of JHASIR is threefold, allowing:

- Tracking of all Service members and veterans with service-related hearing loss and auditory-vestibular system injuries for reporting and research purposes. The JHASIR provides longitudinal data to determine, document, and assess best practices for auditory-vestibular injury health care.
- Capabilities for researchers and clinicians to improve medical readiness monitoring processes, raise awareness of auditory-vestibular injury risks, and identify earlier, more effective interventions to prevent and reduce the severity of auditory-vestibular injuries.
- Data exchange between DoD and VA to support clinical care and determination of duty-related injury status.

### Status of Queryable JHASIR Records

As stated above, all JHASIR records are in a queryable format, summarized in Table 1. The HCE is currently providing DoD and VA clinicians with JHASIR training and access to all data. The JHASIR includes information for active duty and Reserve Component (Reserve and National Guard) Service members and veterans identified during their military service with hearing loss and/or auditory-vestibular injury. This information includes patient encounters,

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<sup>2</sup> A data lake is a centralized repository that allows users to store all structured and unstructured data at any scale. The user can store data as-is, without having to first structure the data, and can run different types of analytics to include dashboards, visualizations, big data processing, real-time analytics, and machine learning to guide better decisions. Source: Amazon. 2020. “What is a Data Lake?” Accessed May 15, 2020. <https://aws.amazon.com/big-data/datalakes-and-analytics/what-is-a-data-lake/>.

<sup>3</sup> Parsing data refers to splitting a file or other input into pieces of data that can be easily stored or manipulated (i.e., made “queryable”). Source: Oracle. 2020. “Parsing Concept Guide.” Accessed May 15, 2020. [https://www.oracle.com/webfolder/technetwork/data-quality/edqhelp/Content/advanced\\_features/parsing.htm](https://www.oracle.com/webfolder/technetwork/data-quality/edqhelp/Content/advanced_features/parsing.htm).



laboratory tests, radiology exams, medications, and clinical audiogram data. By request to HCE and in accordance with established DoD and VA research policies, researchers from DoD, VA, institutions of higher education, and appropriate public and private research entities can also be granted access to JHASIR data.

**Table 1. Descriptions, Numbers, and Years of Queryable Records Currently Included in JHASIR**

JHASIR Record Type	Number of Records	Years
DoD Enterprise Clinical Audiology Application (ECAA) audiograms for injured Service members (clinical diagnostic audiology evaluations)	218,467	2004 to Present
DoD ECAA audiograms for all Service members and their dependents (clinical diagnostic audiology evaluations)	1,154,100	2004 to Present
Defense Occupational and Environmental Health Readiness System-Hearing Conservation (DOEHRS-HC) audiograms (occupational/HCP audiograms) for injured Service members	8,482,937	1970 to Present
audiograms (occupational/HCP audiograms) for all Service members via a “standalone” menu option	33,030,493	1970 to Present
VA clinical audiograms (clinical diagnostic audiology evaluations) for injured veterans	378,295	2000 to Present
VA clinical audiograms (clinical diagnostic audiology evaluations) for all veterans	6,856,473	1990 to Present
DoD Trauma Registry (DODTR) Acoustic Injury Module (AIM) episodes of care data for injured Service members	11,366	2001 to 2017
DODTR AIM audiograms for injured Service members	2,359	2004 to Present
DoD outpatient and inpatient encounters for injured Service members	13,721,971	2001 to Present
VA outpatient and inpatient encounters for injured veterans (injured Service members while on active duty that were included in JHASIR)	2,273,931	2001 to Present
VA outpatient and inpatient encounters for all veterans	2,761,945,805	1999 to Present
Defense Manpower Data Center Data Request System (DMDCRS) - Defense Enrollment Eligibility Reporting System (“DEERS”) records - all Service members and their dependents	1,382,730,402	2001 to Present
DMDCRS -Active and Reserve Component Master Personnel Data records - all Service members	515,200,411	2001 to Present
DMDCRS -Reserve Activation records - all Service members	2,152,647	2001 to Present
DMDCRS Deployment Records - all Service members	17,141,327	2001 to Present

Section 721 of Public Law 110–417, which established the requirement for JHASIR, did not include a mandate for HCE to provide queryable audiograms and other records. However, HCE



was able to invest in and deploy the ECAA, the queryable DoD clinical audiogram (a commercial off-the-shelf product), for use at all military medical treatment facilities (MTFs) in the Military Health System (MHS) with clinical audiology services. The ECAA will interface with MHS GENESIS, the DoD's new electronic health record (EHR).

### **III. IDENTIFIED GAPS REGARDING QUERYABLE RECORDS AND THE IMPACT ON HCE PARTNERSHIPS**

#### Gaps in Queryable Records That Would Be Beneficial for Inclusion in JHASIR

The HCE and DHA recognize that gaps exist regarding the availability of some clinical audiograms, vestibular evaluations, otoacoustic emissions (OAEs) test results, and other audiometric data that were not transformed into queryable format. If these records were queryable, it would be beneficial to include them in JHASIR to enhance Service member and veteran longitudinal records of auditory-vestibular health and care.

For example, it would be advantageous to transform the following records into a queryable format and include them in JHASIR:

- DoD clinical audiograms conducted prior to HCE's implementation of ECAA.
- DoD clinical audiograms conducted by DoD TRICARE network private sector audiologists who delivered care from 2001 and into the future.
- Other health care encounter data associated with Service members who received DoD private sector from 2001 and into the future.
- VA clinical audiograms conducted prior to VA implementation of its queryable clinical audiogram capability (Quality: Audiology and Speech Analysis and Reporting [QUASAR]) and VA auditory-vestibular evaluations conduct by VA Community Care audiologists.<sup>4</sup>

#### Advancements in Technologies to Transform Nonqueryable Medical Information

Gaps in the availability of queryable medical information are not issues unique to HCE, but are challenges encountered across the MHS enterprise and in the private sector. Historically, the cost to manually extract and transform data from medical records into queryable format has been prohibitive. Fortunately, the majority of records required for inclusion in JHASIR were already available in queryable form.

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<sup>4</sup> The QUASAR audiogram module is a Windows-based Graphical User Interface developed to simplify and enhance the entry, display, and use of information obtained during an audiometric exam of a patient. The VA implemented QUASAR in 2007.

For those medical records pending conversion into a queryable format, the reliability and ease of available automated technologies to parse medical records into digital, structured, and queryable data are improving. Advancements in cloud-based data lake technologies and data science tools (e.g., Amazon Web Services Simple Storage Service [AWS S3]), AWS Elastic Map Reducer, Amazon Comprehend, Amazon Comprehend Medical, R, Python, and Amazon Textract) make it much easier to parse digitized medical records into a queryable data format, and provide greater flexibility in choosing how to work with parsed data. For example, a data scientist could retrieve a representative sample of digitized audiograms from AWS S3, write a Python script to parse only the section of interest, present it as an interactive result set/graphic, save the script, and then free up all the computer resources. This scenario provides data scientists the flexibility to work with unstructured, digitized (nonqueryable) records that reside in a low-cost storage data lake, incurring higher cost only as additional resources are temporarily brought online to process the data. Once the desired results are obtained, the temporary resources (i.e., high-cost processing resources) are shut down, saving taxpayer dollars.

By the end of Fiscal Year 2020, Quarter Three, AWS GovCloud will host the JHASIR. Transition to AWS GovCloud is currently underway. The AWS GovCloud will have all the technologies described above (at a minimum) to enable parsing of digitized medical records (i.e., transforming them into queryable data) and performing data science, data analytics, and/or research on those records.

#### Impact of Some Nonqueryable Records on Relationships with DoD HCE Partners

Given JHASIR's recent FOC status, the impact of JHASIR's exclusion of some nonqueryable auditory-vestibular health care records on HCE's relationships with the VA, institutions of higher education, and other public and private entities, is currently unknown. Training of DoD and VA clinicians and researchers is underway; these groups will gain access to JHASIR over the next year. As of the end of June 2020, 450 of the 200 DoD and 1,400 VA audiologist users received training and have access to JHASIR. The HCE has not received any concerns from these users about nonqueryable data for clinical purposes.

DoD and VA auditory-vestibular health clinicians will use JHASIR data daily through the MHS Information Platform (MIP), which allows clinicians to view queryable, longitudinal records for Service members and veterans with auditory-vestibular injuries. The CarePoint Information Portal within the MIP promotes self-service business intelligence, user collaboration, content delivery, and information transparency to improve healthcare quality, access, and delivery across the MHS.

Although clinicians may be unable to use the CarePoint Information Portal to view nonqueryable records not in JHASIR, other applications may enable access to such records. If legacy or TRICARE network records were scanned and included in the DoD EHR, Health Artifact and Image Management Solution ("HAIMS"), or Joint Legacy Viewer (JLV), these records would be available for DoD clinician review through these applications. However, VA clinicians would not have this option, unless the JLV or VA captured DoD records, perhaps as part of a VA disability application record or an earlier VA evaluation. Currently, the HCE and the VA



Denver Logistics Center are working to coordinate processes for VA evaluation of clinical audiograms conducted by VA Community Care audiologists for capture in the VA National Audiometric Registry and sent to JHASIR.

Likewise, given JHASIR recent FOC status, it is currently unknown how the gaps in queryable data will impact HCE's relationships with its research partners. The JHASIR data will be available to DoD, VA, institutions of higher education, and public and private entities for research purposes in accordance with their requests, and with DoD- and VA-established processes and research policies. Ideally, data sets that are more complete would contain queryable data for every instance of DoD and VA auditory-vestibular care. The greater the completeness of queryable data sets, the greater the efficiency in conducting research that yields precise and conclusive findings. Since JHASIR achieved FOC status, HCE received one request (which it is currently processing) for JHASIR data from a private research organization. It is too early to determine if this potential HCE partner will report concerns about the impact of nonqueryable data it might request for this project.

Despite certain gaps in queryable data that could be included in JHASIR (if made queryable), JHASIR provides the most centralized, queryable longitudinal data sets of U.S. Service member and veteran auditory-vestibular continuum of care records world-wide.

#### **IV. FEASIBILITY OF THE TRANSFORMATION OF NONQUERYABLE AUDIOGRAMS, LEGACY RECORDS, AND OTHER DATA FOR INCLUSION IN JHASIR**

The DHA developed functional requirements (included in Table 2) to transform nonqueryable auditory-vestibular care records into queryable format for inclusion in JHASIR for current (Year One effort) and annual (over a 5-year period) gaps.

Phase One of the project would require approximately one year from initiation to completion. This approach assumes there will be an annual need to transform a certain number of nonqueryable DoD and VA audiograms into a queryable format (Phase Two). Completion of the second phase of the project will occur over 5 years, at which time only a negligible number of nonqueryable records would require transformation into queryable format and inclusion in JHASIR on an annual basis.



**Table 2. Summary of Requirements to Transform Nonqueryable Auditory-Vestibular Care Records into a Queryable Format**

<b>Record Type</b>	<b>Number of Records</b>	<b>Years</b>
DoD nonqueryable clinical audiograms, vestibular testing, OAE test results, and other audiometric data	Direct care (MTF) – 767,296	2001 to present
DoD nonqueryable purchased care	Purchased care – 188,637	2001 to present
VA nonqueryable clinical audiograms	VA care – 74,000	2001 to present
All record types included in this table	Additional labor (Project Lead, Test Engineer, and Configuration Manager) and travel. This additional labor and travel support applies to all records that will be transformed to queryable format in this table.	Year One initial effort (not future years)
Future years DoD and VA nonqueryable clinical audiograms	This is a very rough estimate and assumes several MHS changes with potential to reduce the number of nonqueryable records over a 5-year period (e.g., implementation of new DHA policies, deployment of new technologies, magnitude of use of DoD purchased care and VA Community Care).	Annually, for a 5-year period

## V. CONCLUSION

This report addresses Congress’ concerns regarding the format of data currently in JHASIR and the impact of JHASIR data format on HCE’s relationship with its partners. It provides a study on the feasibility of transforming nonqueryable data into a queryable format for records currently not included in JHASIR. Study findings indicate that the transformation of these records is feasible.

The DoD is committed to developing and implementing evidence-based best practices for Service member and veteran auditory-vestibular care. The JHASIR is a vital tool for facilitating documentation of Service member and veteran care; providing a queryable, longitudinal auditory-vestibular health care record for those injured during military service; and enhancing efficiencies for the conduct of auditory-vestibular care and research.

The JHASIR’s capabilities will help the DoD and VA ensure the best health outcomes for Service members and veterans by developing and using evidence-based best practices. While the

majority of JHASIR's data sources currently provide queryable data, there are instances of nonqueryable records currently not included in JHASIR. If these records are parsed and made queryable, their added data would bridge the current gaps where the complete hearing health of included patients is not queryable in the current legacy systems to further enhance the value of JHASIR to its customers and stakeholders.

## VI. REFERENCES

Committee on Appropriations, Department of Defense Appropriations Act, 2020, H.R. Rep. No. 116–84, at 315 (2019).

Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Pub. L. No. 110–417, 122 Stat. 4506 (2008).

U.S. Department of Defense. 2012. *Department of Defense Hearing Center of Excellence Concept of Operations*. Acquisition sensitive report.



## VII. DEFINITIONS

Audiogram	A graphic representation of hearing threshold level as a function of frequency.
Auditory system	The sensory system responsible for hearing. It is divided into two subsystems: the peripheral auditory system (outer ear, middle ear, and inner ear) and the central auditory system (from the cochlear nucleus up to the primary auditory cortex).
Data lake	A centralized repository that allows users to store all structured and unstructured data, at any scale. The user can store data as-is, without having to first structure the data, and can run different types of analytics to include dashboards, visualizations, big data processing, real-time analytics, and machine learning, to guide better decisions.
DOEHRS-HC	An information system designed to support personal auditory readiness and help prevent hearing loss through early detection. It collects, maintains, compares, and reports hearing conservation, hearing readiness, and deployment data for DoD personnel.
Digitize, digitization	The process of converting information into a digital (i.e., computer-readable) format, in which the information is organized into bits. The result is the representation of an object, image, sound, document or signal (usually an analog signal) by generating a series of numbers that describe a discrete set of points or samples.
OAE test	The OAE test is used to determine how well the inner ear, or cochlea works. It measures OAEs. These are sounds given off by the inner ear when responding to a sound. There are hair cells in the inner ear that respond to sound by vibrating.
Parse	Splitting a file or other input into pieces of data that can be easily stored or manipulated (i.e., make “queryable”).
Queryable	For this report, the term “queryable” is used to refer to data and records that have been digitized, parsed, and transformed into a structured, queryable format (JHASIR’s aim).
Vestibular system	A sensory system responsible for maintaining balance, posture, and the body's orientation in space. This system also regulates locomotion and other movements and keeps objects in visual focus as the body moves.

## VIII. ACRONYMS

AIM	Acoustic Injury Module
ASD(HA)	Assistant Secretary of Defense for Health Affairs
AWS	Amazon Web Services
DHA	Defense Health Agency
DMDCRS	Defense Manpower Data Center Data Request System
DoD	Department of Defense
DODTR	Department of Defense Trauma Registry
DOEHRS-HC	Defense Occupational and Environmental Health Readiness System-Hearing Conservation
ECAA	Enterprise Clinical Audiology Application
EHR	electronic health record
FOC	full operational capability
HAC	House Appropriations Committee
HCE	Hearing Center of Excellence
HCP	Hearing Conservation Program
JHASIR	Joint Hearing Loss and Auditory System Injury Registry
JLV	Joint Legacy Viewer
MHS	Military Health System
MIP	Military Health System Information Platform
MTF	military treatment facility
OAEs	otoacoustic emissions
QUASAR	Quality: Audiology and Speech Analysis and Reporting
S3	Simple Storage Service
VA	Department of Veterans Affairs

**IX. APPENDIX A. HOUSE REPORT LANGUAGE ON HCE**

**House Report 116–84, Page 315, Accompanying H.R. 2968, Department of Defense  
Appropriations Bill, 2020**

**HEARING CENTER OF EXCELLENCE**

The Committee is concerned that the current formatting of records in the Department of Defense’s Hearing Center of Excellence Joint Hearing Loss and Auditory System Injury Registry (JHASIR) hinders partnerships with the Department of Veterans Affairs, institutions of higher education, and other public and private entities. The Committee directs the Assistant Secretary of Defense for Health Affairs to review the feasibility of the digital transformation of audiograms, legacy records, and other data maintained in the JHASIR, and to submit a report on the review to the congressional defense committees not later than 90 days after the enactment of this Act.



**X. APPENDIX B. PUBLIC LAW 110-417, SECTION 721**

**SEC. 721. CENTER OF EXCELLENCE IN PREVENTION, DIAGNOSIS, MITIGATION, TREATMENT, AND REHABILITATION OF HEARING LOSS AND AUDITORY SYSTEM INJURIES.**

(a) **IN GENERAL.**—The Secretary of Defense shall establish within the Department of Defense a center of excellence in the prevention, diagnosis, mitigation, treatment, and rehabilitation of hearing loss and

auditory system injury to carry out the responsibilities specified in subsection (c).

(b) **PARTNERSHIPS.**—The Secretary shall ensure that the center collaborates to the maximum extent practicable with the Secretary of Veterans Affairs, institutions of higher education, and other appropriate public and private entities (including international entities) to carry out the responsibilities specified in subsection (c).

(c) **RESPONSIBILITIES.**—

(1) **IN GENERAL.**—The center shall—

(A) implement a comprehensive plan and strategy for the Department of Defense, as developed by the Secretary of Defense, for a registry of information for the tracking of the diagnosis, surgical intervention or other operative procedure, other treatment, and follow up for each case of hearing loss and auditory system injury incurred by a member of the Armed Forces while serving on active duty;

(B) ensure the electronic exchange with the Secretary of Veterans Affairs of information obtained through tracking under subparagraph (A); and

(C) enable the Secretary of Veterans Affairs to access the registry and add information pertaining to additional treatments or surgical procedures and eventual hearing outcomes for veterans who were entered into the registry and subsequently received treatment through the Veterans Health Administration.

(2) **DESIGNATION OF REGISTRY.**—The registry under this subsection shall be known as the "Hearing Loss and Auditory System Injury Registry" (hereinafter referred to as the "Registry").

(3) **CONSULTATION IN DEVELOPMENT.**—The center shall develop the Registry in consultation with audiologists, speech and language pathologists, otolaryngologists, and other specialists, personnel of the Department of Defense and the audiologists, speech and language pathologists, otolaryngologists, and other specialist personnel of the Department of Veterans Affairs. The mechanisms and procedures of the Registry shall reflect applicable expert research on military and other hearing loss.

(4) **MECHANISMS.**— mechanisms of the Registry for tracking under paragraph (1)(A) shall ensure that each military medical treatment facility or other medical facility shall submit to the center for inclusion in the Registry information on the diagnosis, surgical intervention or other operative procedure, other treatment, and follow up for each case of hearing loss and auditory system injury described in that paragraph as follows (to the extent applicable):

(A) Not later than 30 days after surgery or other operative intervention, including a surgery or other operative intervention carried out as a result of a follow-up examination.

(B) Not later than 180 days after the hearing loss and auditory system injury is reported or recorded in the medical record.

(5) **COORDINATION OF CARE AND BENEFITS.**—(A) The center shall provide notice to the National Center for Rehabilitative Auditory Research (NCRAR) of the Department of Veterans

Affairs and to the auditory system impairment services of the Veterans Health Administration on each member of the Armed Forces described in subparagraph (B) for purposes of ensuring the coordination of the provision of ongoing auditory system rehabilitation benefits and services by the Department of Veterans Affairs after the separation or release of such member from the Armed Forces.

(B) A member of the Armed Forces described in this subparagraph is a member of the Armed Forces with significant hearing loss or auditory system injury incurred while serving on active duty, including a member with auditory dysfunction related to traumatic brain injury.

(d) UTILIZATION OF REGISTRY INFORMATION—The Secretary of Defense and the Secretary of Veterans Affairs shall jointly ensure that information in the Registry is available to appropriate audiologists, speech and language pathologists, otolaryngologists, and other specialist personnel of the Department of Defense and the Department of Veterans Affairs for purposes of encouraging and facilitating the conduct of research, and the development of best practices and clinical education, on hearing loss or auditory system injury incurred by members of the Armed Forces.

(e) INCLUSION OF RECORDS OF OIF/OEF VETERANS.—The Secretary of Defense shall take appropriate actions to include in the Registry such records of members of the Armed Forces who incurred a hearing loss or auditory system injury while serving on active duty on or after September 11, 2001, but before the establishment of the Registry, as the Secretary considers appropriate for purposes of the Registry.