

**Population Health Outcomes Report
No. 13-HG-7685-02
Pentagon Post Disaster Health
Assessment Survey**



**U.S. Army Center for Health Promotion
and Preventive Medicine
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ACRONYM LIST

ACSOPS	Assistant Chief of Staff for Operations
AFEB	Armed Forces Epidemiology Board
AFMOA	Air Force Medical Operations Agency
AHC	Army Health Clinic
AMC	Army Medical Center
AMEDD	Army Medical Department
AMSA	Army Medical Surveillance Activity
ASD-HA	Assistant Secretary of Defense – Health Affairs
BUMED	Navy's Bureau of Medicine
CNO	Chief Naval Operations
DCSIM	Deputy Chief of Staff for Information Management
DEDS	Directorate of Epidemiology and Disease Surveillance
DHPW	Directorate of Health Promotion and Wellness
DMDC	Defense Manpower Data Center
DMSS	Defense Medical Surveillance System
DOD	Department of Defense
DOIM	Department of Information Management
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision
DTHC	DiLorenzo TRICARE Health Clinic
GIS	Geographical Information Systems
HA	Health Affairs
HCP	Health Care Provider
IM	Information Management
IMD	Information Management Division
IPR	In Process Review
IRB	Institutional Review Board
MHS	Military Health System
MTF	Military Treatment Facility
NARMC	North Atlantic Regional Medical Command
NCO	Non-commissioned Officer
NCOIC	Non-commissioned Officer in Charge
NCR	National Capitol Region
NIOSH	National Institute for Occupational Safety and Health
OMB	Office of Management and Budget
OPLAN	Operational Plan
OTSG	Office of the Surgeon General, U.S. Army
PAO	Public Affairs Office
PHQ	Public Health Questionnaire
PKC	Problem Knowledge Couplers®
PM	Preventive Medicine
POI	Program of Instruction
PPDHA	Pentagon Post Disaster Health Assessment
PRIME-MD	Primary Care Evaluation for Mental Disorders

PTMS	Plans, Training, Mobilization & Security
PTSD	Post Traumatic Stress Disorder
SMART	Special Medical Augmentation Response Team
SMART-PM	Special Medical Augmentation Response Team-Preventive Medicine
SME	Subject Matter Expert
TMA	TRICARE Management Activity
TSG	The Surgeon General
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAF	U.S. Air Force
USD-P&R	Under Secretary of Defense- Personnel & Readiness
USUHS	Uniformed Services University of Health Sciences
WRAIR	Walter Reed Army Institute of Research
WRAMC	Walter Reed Army Medical Center



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28 MAY 2002

EXECUTIVE SUMMARY
POPULATION HEALTH OUTCOMES REPORT
NO. 13-HG-7685-02
PENTAGON, WASHINGTON DC

1. The Pentagon Post Disaster Health Assessment (PPDHA) survey was initiated to determine how best to render appropriate healthcare services, and to document injuries, illnesses, and exposures sustained by service members and civilian employees at the Pentagon in the aftermath of the events of 11 September 2001.
2. Epidemiologists at the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) initially conceived of the PPDHA survey within 24 hours of the terrorist attack. Once the USACHPPM Commander approved the concept, a draft operation order and plan for development and deployment was constructed and briefed to the Army Surgeon General. As part of Operation Noble Eagle, the Army Surgeon General tasked USACHPPM Commander as the Executive Agent for the PPDHA Survey and the North Atlantic Regional Medical Command (NARMC) Commander to deploy the survey and be responsible for rendering required clinical care for Pentagon employees.
3. The methodology utilized to develop and deploy the PPDHA survey involved a multidisciplinary approach extending over several directorates within the USACHPPM and a partnership with NARMC. To appropriately deploy the PPDHA survey required extensive collaboration, review, and approval with several agencies within the Department of Defense (DoD), and TriService support and participation.
4. **Survey Development**
 - a. The survey was developed by USACHPPM using concepts from the previous survey instruments utilized in the Oklahoma City Bombing, Khobar Tower bombings, and input from multiple civilian and military disciplines. Input was received from the U.S. Army Corps of Engineers, the Uniformed Services University of the Health Sciences (USUHS), the Walter Reed Army Institute of Research (WRAIR) Department of Psychiatry, the Directorate of Health Promotion and Wellness (DHPW) at USACHPPM, and from a TriService team of mental health consultants. Those elements, as well as the Preventive Medicine and Mental Health Consultants at the Air Force Medical Operations Agency and the Navy's Bureau of Medicine reviewed and made

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recommendations in the design of the survey. The Armed Forces Epidemiology Board (AFEB) reviewed the survey tool in October 2001 prior to deployment. Public Health surveys and interventions such as the PPDHA are not considered research by the CDC, National Institute for Occupational Safety and Health and DoD, therefore an institutional review board was not required.

b. The voluntary survey was designed to allow Pentagon employees the option of completing the instrument using one of two methods. The first and preferred method was through a web-based format and the second method was by completing the paper questionnaire that was initially distributed by TriService teams and then made available at the DiLorenzo Pentagon Health Clinic. The Information Management Office at USACHPPM and a DoD contractor, Problem Knowledge Couplers® worked jointly to field the web-based version of the survey.

5. Survey Deployment

a. Personnel from both NARMC and USACHPPM were actively engaged in joint efforts in order to successfully deploy the PPDHA survey. The NARMC coordinated the marketing and deployment of the survey through four TriService teams. A team from USACHPPM was tasked to develop a train the trainer program for survey team personnel and design an education packet on the PPDHA survey for distribution to local military healthcare providers.

b. The web-based survey was opened on 12 October 2001, with the paper-based survey deployed by TriService teams on 15 October 2001. Survey collection was halted on 15 January 2002.

6. Survey Results

a. A total of 19,450 Pentagon employees were asked to complete the survey, of which 4,751 responded, representing 24.4% of the population. Respondents were predominately male, active duty, 35 years of age or older, and affiliated with the Army.

b. A total of 3,713 (79%) respondents to the survey indicated that they were at or near the Pentagon at the time of the attack, of which 557 (15%) reported being less than 100 feet from the collapsed section. As expected proximity to the crash site was highly associated with exposure, injury, development of new or worsened health problems, and/or the development of mental health symptoms. With the exception of service affiliation, there were no significant differences demographically between those reporting to be less than 100 feet from the collapsed section and those reporting being farther away.

c. A total of 4,008 (86%) respondents reported some type of exposure to smoke/dust/odors following the attack. The smoke exposure for most (68%) was of light intensity with a median exposure time of 15 minutes. Factors significantly associated

with exposure were age, status (i.e. military or civilian), service affiliation, and proximity to crash site.

d. Among respondents who were at or near the Pentagon during the attack, 186 (5%) indicated that they were injured during the initial blast and/or the evacuation. Causes of injury during the initial blast included being thrown on impact, debris, blast, fire, and glass. Falling down and being cut by glass were the most reported causes of injury by those injured during evacuation. Furniture and cubicle walls were the objects most attributed for causing injuries to be worse. Although the majority of those injured noted that nothing protected them from injury, many respondents, both injured and uninjured, indicated that distance, building structure/design and blast proof windows were protective.

e. Among the 186 respondents who were injured (during the initial attack and/or during evacuation), only proximity to the crash site was a significant predictor of injury. Of note, when looking strictly at individual categories of injury, results varied. For injuries sustained during the initial blast only proximity to attack was a significant predictor, while both gender and proximity were significant predictors of injuries sustained during evacuation.

f. Of the 3,713 employees who indicated that they were at or near the Pentagon at the time of the terrorist attack, a majority (67%) indicated that they were able to evacuate the building in 10 minutes or less, with a median time of 10 minutes. Respondents assisting with rescue/medical support efforts noted delays in evacuation. Additionally, 118 (3%) respondents indicated that they were trapped or unable to reach the outside after the impact of the plane, with the average time trapped being 8.5 minutes.

g. A total of 1,700 (35%) respondents reported a worsening of prior health problems and/or new health problems, of which the majority (54%) was stress-related. Factors associated with increased risk of developing new/worsened health problems included gender, status, service affiliation, exposure, proximity to crash site, and prior health status. A linear relationship was observed between prior health status and development of new/worsened health problems.

h. Overall, 1838 (40%) of respondents met the screening criteria for being at high risk for at least one of the following mental health outcomes: post traumatic stress disorder (PTSD), depression, alcohol abuse, generalized anxiety, and/or panic attacks. Factors significantly associated with development of mental health symptoms included gender, age, status, injuries, history of prior mental health treatment, knowing someone dead or seriously injured due to the attack, and witnessing someone die or become seriously injured due to the attack.

i. Respondents who were considered at high risk for PTSD, depression, generalized anxiety, panic, and/or alcohol abuse all had significantly reduced daily functioning compared with those who were not in the high risk groups. Functioning was at least somewhat impaired for approximately 44% of those who were screen positive for any of

the mental health high-risk groups as compared with 5% of screen negative respondents. These findings validate case definitions for high-risk groups.

j. Having mental health symptoms was strongly correlated with seeking counseling from a mental health professional or chaplain following the attack. Thirty-one percent of those who screened positive for any of the mental health high-risk groups sought counseling as compared with 9% of screen negative respondents.

k. A total of 881 respondents (18.5%) expressed additional concerns about mental health, environmental health, present symptoms, building safety, etc., of which 413 (8.7%) requested additional information and/or contact from the healthcare team.

l. Respondents with new/worsened health problems, and/or mental health symptoms were significantly more likely to request contact/information. Requests also varied significantly between services. Approximately 14% of respondents who noted either worsened/new health problems and/or mental health symptoms requested contact/information as compared to only 3% of respondents without the aforementioned condition(s).

7. Overall the PPDHA was a success in the context that it was a concerted effort to reach out to the Pentagon employees following the worst terrorist attack in American history. The PPDHA provides a wealth of information for a unique and tragic disaster. Although much headway has been made to support the victims and understand/document the consequences of this incident, further study is needed to adequately assess the magnitude of the event.

8. The story of the PPDHA is one of teamwork, ingenuity, perseverance, and dedication to ensuring a successful mission. It is but one of the symbols of the type of work that comes from both USACHPPM and NARMC, and is part of the multi-pronged response by these organizations to the attacks of 11 September 2001.



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1. INTRODUCTION

a. Background.

(1) On September 11, 2001 at approximately 0936 hours hijacked American Airlines Flight 77 slammed into the western face of the Pentagon. The impact penetrated the two lower floors of a newly renovated section of the building between corridors 4 and 5. The immediate human toll from this terrorist attack included the killing of 64 passengers and crew on Flight 77 and 125 building employees.

(2) Damage to the Pentagon building as a result of impact, blast and fire was extensive as can be seen in **Appendix A**. The water damage that extended beyond the impact area is seen in **Appendix B**. The newly renovated section of the building has been attributed to saving many Pentagon employee lives and minimizing the extent of injuries. The lifesaving renovations that had been recently completed were the result of lessons learned from previous bomb blasts that had been incorporated into the renovation design.

(3) Prior to the terrorist attacks on September 11, 2001, the largest number of fatalities from a terrorist attack in the United States was in Oklahoma City, when the Alfred P. Murrah Federal building was bombed on April 19, 1995 killing 168 Americans.¹ Immediately following that event the Oklahoma Commissioner of Health initiated a special study to examine the extent of injuries and related health conditions of survivors.² Other studies on the medical consequences of terrorist attacks and the development of survey instruments following these attacks have been reported in the literature³⁻⁸.

(4) In the aftermath of the events of September 11, 2001, the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) Commander, as the Army Functional Proponent for Preventive Medicine, was assigned direct responsibility for the development of a health assessment tool, the Pentagon Post-Disaster Health Assessment (PPDHA). This tool, a concept initially developed by Preventive Medicine Officers a USACHPPM was designed for use by both military and civilian Pentagon employees.

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(5) The PPDHA survey was initiated to determine how best to render appropriate healthcare services, and to document injuries, illnesses, and exposures among Pentagon personnel. The information from previous works on the medical consequences of terrorist activities and other resources served as a basis for developing the instrument required for this effort. Using a previously developed instrument was not appropriate for this population, due to the number of affected individuals (up to 23,000), the variety of injuries and exposures, the demographics of the affected population, and the type of structural information desired.

b. Objective.

The objective of this technical report is to render an historical account of the actions taken in the development, deployment, and the analysis/evaluation of the PPDHA survey. The analysis presented in this report is largely descriptive, focusing primarily on frequency distributions. Multivariate analyses with risk estimates (ORs) are also provided for certain outcomes of interest. A more detailed analysis employing Geographical Information Systems (GIS) and hypothesis testing will be published in future technical reports.

2. METHODS.

The methodology utilized to develop and deploy the PPDHA survey involved a multidisciplinary approach extending over several directorates within the USACHPPM, a partnership with the North Atlantic Regional Medical Command (NARMC), collaboration with several agencies within the Department of Defense (DoD), and participation of TriService members.

a. Survey Development.

(1) The PPDHA survey was developed by a workgroup assembled at USACHPPM within 48 hours of the terrorist attack on the Pentagon. The USACHPPM Commander assigned the Directorate of Epidemiology and Disease Surveillance (DEDS) as the responsible directorate within the Command to develop the PPDHA.

(2) The Population Health Outcomes Program was designated within DEDS as the responsible program to oversee the development, deployment, and analysis of the PPDHA survey. The main team consisted of preventive medicine and occupational medicine officers, epidemiologists, and a pharmacy officer (**Appendix C**). The team was augmented as required by subject matter experts within USACHPPM and drew extensively on experts outside the Command. Key to the early and continued success of the team was the appointment of an experienced clinician and former commander of a military treatment facility, Colonel Walter Egerton, as team leader.

(3) Initially, the USACHPPM team drafted an operational plan (OPLAN) and proposed a three-phased approach to the mission. The proposed approach was to develop the survey within a 30-day window, deploy the survey for about 90 days and the last phase was the analysis of the survey responses with the publishing of a technical report within 6 months from deployment of the survey. Based on early guidance for the USACHPPM Commander, the core mission of the Army Medical Department, and previous work published on terrorist attacks the following goals were formulated for the PPDHA survey:

- To assist medical assets in providing optimum early care.
- To record involved persons' health problems near time zero.
- To use collected data to prevent complications of possible exposures to heat, noise, pressure, physical and psychological trauma.
- To understand and document the extent of injuries and illnesses.
- To provide civil, structural and human factors engineers with data that will enable more survivable buildings.

(4) The Army Surgeon General made the official tasking for implementing the PPDHA survey in support of Operation Noble Eagle. The USACHPPM Commander was appointed the Executive Agent of the mission with the NARMC Commander responsible for deploying the PPDHA survey and ensuring appropriate clinical care to Pentagon employees.

b. Survey Question Development.

(1) The team modeled the PPDHA survey questions (**Appendix D**) after examples provided by the Centers for Disease Control and Prevention, which were formerly used after the Oklahoma City Bombing and instruments used in the follow-up after the Khobar Tower Bombing. Insights on injuries, adverse health impact, and psychological sequelae of the attack were the focus of the questions as had been reported in previous works on the impacts of terrorist attacks (**Appendix E**). Survey questions were developed within one week with input from various sources, both military and civilian.

(2) Input was received from the U.S. Army Corps of Engineers, the Uniformed Services University of the Health Sciences (USUHS), the Walter Reed Army Institute of Research (WRAIR) Department of Psychiatry, the Directorate of Health Promotion and Wellness (DHPW) at USACHPPM, and from a TriService team of mental health consultants. Those elements, as well as the Preventive Medicine and Mental Health Consultants at the Air Force Medical Operations Agency (AFMOA) and the Navy's Bureau of Medicine (BUMED) reviewed and made recommendations in the design of the survey. A detailed description of the development of questions contained in the mental health section of the survey with supporting documentation is in **Appendix F**. The Armed Forces Epidemiology Board (AFEB) reviewed the PPDHA survey in October 2001 prior to deployment.

c. Survey Instrument Design.

(1) The survey was designed as an outreach instrument to assist in the process of guiding correct medical care to those who were in need but had not yet received care for their problems. It also was intended to serve as a registry. The DHPW was detailed to provide educational couplers for the health assessment questions and assist in the development of a cover letter for the survey (**Appendix D**). The USACHPPM Counsel, Mr. Lorin Friedman, provided legal guidance and review. His assistance was invaluable in picking the appropriate wording for the Privacy Act Statement that would be necessary to precede the surveys, both web and paper based. The final instrument had a total of 61 questions, divided into 8 sections (A-H). It was designed to be a voluntary survey and was provided in web-based and paper-based forms.

(2) The web-based survey was considered by the development team to be the preferred method for survey completion. The concept was to have the PPDHA survey completed electronically through a web portal set up at USACHPPM. The initial guidance for the USACHPPM Commander on the design of the survey was to make every attempt to have the survey easily completed by Pentagon employees within 15 minutes. Conceptually this web-based format was to be an efficient method to quickly administer the survey and provide information through a coupler program designed to allow respondents to access requested information about health concerns.

(3) The team initially used the resources of the Deputy Chief of Staff for Information Management (DCSIM) Office at USACHPPM to approach the issue of a web-based format for the survey. The USACHPPM Commander engaged a civilian company to assist in developing the web-based survey, Problem Knowledge Couplers® (PKC) who already was under contract with DoD to provide surveys using problem knowledge coupler technology. The PKC voluntarily undertook this effort in order to support the recovery efforts after the Pentagon terrorist attack.

(4) Some problems encountered by DCSIM with utilization of a commercial product not designed for a PPDHA type survey were:

- The PKC web product was designed for a very specific task and audience, and needed important and difficult modifications to handle the PPDHA survey requirements. This was especially problematic with the extremely short suspense date for deployment. Many last minute survey changes could not be incorporated; therefore the web version differed slightly from the paper version.
- Given the expected potential heavy usage for the web-based survey by over 20,000 Pentagon employees, the PKC engineers and technicians had no data on heavy-usage testing.
- A major technical limitation of using the commercial product was the modular approach used in its design, which prevented DCSIM from adding the features required for the PPDHA deployment.
- The commercial product was designed for a fairly new browser version, which was not commonly deployed in the Pentagon information systems.
- The major security and program flow requirements were especially difficult to determine, and changed frequently. This resulted in at least two major revisions of the database used to maintain the data.
- There was no security integrated into the PKC survey product, as it was designed for public use.
- An email-return system was designed and implemented by DCSIM to limit the users to those with “.mil” email addresses. There was no reliability on “.mil” identification to restrict access. Although the target population base was made up of Pentagon personnel, there were many independent computer support groups managing their separate systems, using many different configurations.
- The PKC survey engine did not automatically save the survey upon completion by a user. Each user had to press a “save” button or their data would be lost. Many users were not willing to retake the survey, resulting in data loss.
- The PKC survey engine would freeze up for many users due to various technical issues local to the Pentagon. The DCSIM was able to help troubleshoot some of these but communication between USACHPPM, the users, and the users’ computer support people was extremely difficult or impossible, resulting in a loss of some data.

- The data management process for this survey was costly in time requirements, mostly due to the changing requirements of data. One example was the addition of real-time reporting for particularly sensitive questions, or summary accounting of usage. The PKC survey was not designed for direct, on-line data collection (i.e. writing to a database) and had to have processes written to accomplish these tasks.

(5) All raw data was stored at USACHPPM in secure format. A separate server was built using 128-bit encryption to store web-based data. Data security became a key issue in securing the necessary permissions to administer the survey. The DCSIM and PKC worked jointly to overcome several obstacles in fielding the PPDHA survey. Both groups were a credit to their organizations in dealing with multiple levels of communication under short suspenses.

(6) The paper-based survey was to be utilized only by individuals who did not have access to the web-based survey. It was initially anticipated that there would be a low number of Pentagon participants requiring this option, less than 2,000 employees. The paper-based survey was produced to be scannable utilizing Teleform™ Software. Initially 2,000 copies were made for distribution by the deployment teams at the Pentagon. Once the difficulties with the web-based version were realized, the number of copies was increased to 6,000 and stored at the Pentagon's DiLorenzo Health Clinic.

d. Survey Review and Approval.

(1) The concept for the survey was briefed to the Service Surgeons General, the Dean of USUHS, the Commander, NARMC, and the Director of the Washington Headquarters Service who has oversight of the Pentagon.

(2) Appropriate administrative approval of the PPDHA survey to allow deployment to Pentagon employees was one of the most daunting and significant issues facing the team. Two issues had to be addressed. First, the issue of who needed to grant approval for survey administration and what type of approval was needed had to be answered. Second, the issue of whether or not the survey needed Human Use Review [Institutional Review Board (IRB) approval] needed to be resolved. COL Jim Geiling, Commander, DiLorenzo TRICARE Health Clinic (DTHC), Pentagon, was instrumental in obtaining the guidance needed to develop a contact list for the Pentagon in order to facilitate the approval process as well as to devise a concept for implementation. This was invaluable in cracking the code of how the Pentagon was organized and to develop a rational plan for implementation.

(3) The TRICARE Management Agency (TMA) Health Program Analysis & Evaluation office was integral in the resolution of the first issue. Any survey of multi-service DoD personnel, administered to more than 10 people requires Office of Management and Budget (OMB) approval. The TMA points of contact for this were Dr. Richard Guerin and Ms. Kim L. Frazier. Ms. Frazier was fundamental in securing an expedited review of the request for approval. She procured the packet for submission of

the request for approval. Approval had to have the endorsement of the Defense Manpower Data Center (DMDC) that required evidence that survey application and data security issues were adequately addressed. The biggest concerns of DMDC were to whom the survey would be administered, how data security would be ensured, the completeness of the Privacy Act, and under what Privacy Act Systems Notice the survey would fall. Contractors had to be withdrawn from the survey to meet data security criteria. There was no adequate Privacy Act Systems Notice to cover the various databases over which USACHPPM has purview [e.g., those within the Defense Medical Surveillance System (DMSS), Army Medical Surveillance Activity (AMSA)] and one was created for this purpose by DMDC. Mr. Dave Bosworth who sat on the DMDC committee revised the Privacy Act Statement. The committee also suggested various changes to the wording of questions that were all incorporated where possible without changing the intent of the survey.

(4) After successfully meeting the requirements of the DMDC Committee, an expedited recommendation for approval of the survey with a waiver to survey contractors was given. The OMB approval constituted approval by the Washington Headquarters Service with signature by Mr. D.O. Cooke, Director. At this time, the survey was briefed to the Director of the Washington Headquarters Service, Mr. Cooke, Dr. Jarrett Clinton, Acting Assistant Secretary of Defense-Health Affairs (ASD-HA), and Dr David Chu, Under Secretary of Defense-Personnel and Readiness (USD-P&R). After revisions to the cover letter and an exception to human use review by the IRB at Walter Reed Army Medical Center (WRAMC), based on the survey's status as a public health surveillance tool and not a research instrument, the approval was finalized.

e. Survey Deployment.

(1) Personnel from both NAMRC and USACHPPM were actively engaged in numerous joint efforts in order to successfully deploy the PPDHA survey. The USACHPPM team initially involved in deploying the survey was from DHPW.

(2) The DHPW team was tasked to develop a train the trainer program for survey team personnel and design an education packet on the PPDHA survey for distribution to local military healthcare providers (**Appendix G**). The DHPW conducted classes to a deployment team assembled by NARMC with TriService representation. The DHPW team conducted classes on 11 and 12 October, to a total of 29 personnel.

(3) The NARMC was tasked with the marketing and administration of the survey and developed the TriService plan for administration of the survey within the Pentagon (**Appendix H**). The overall plan was to devise an information campaign and then launch TriService teams throughout the Pentagon to ensure that all employees were aware of the survey and had the opportunity to complete the survey and address any concerns. The team composition is described in **Appendix I**.

(4) The marketing plan commenced on 10 October 2001 with the sending of an email message to system administrators within the Pentagon. This initial email was only

one of several messages distributed throughout the time the PPDHA was being actively collected as detailed in **Appendix H**. On 15 October 2001, four of five NARMC led Tri-Service teams began systematically marketing the survey at the Pentagon. The teams used tracking forms to maximize the opportunity to contact all Pentagon personnel, with a goal of contacting at least 90% of the personnel working at the Pentagon. One NARMC team was assigned to contacting any affected off-site personnel and any personnel displaced outside of the Pentagon due to the attack.

(5) The web-based survey was opened on-line on 12 October 2001 and remained open until 15 Jan 2002. Paper based surveys provided in a scannable format, which were produced and processed at USACHPPM, were distributed from 15 October 2001 until 15 January 2002. There were 19,450 Pentagon personnel contacted by the deployment teams. All teams were deployed at the Pentagon for 30 days, with the DiLorenzo Pentagon Health Clinic assuming responsibility for administrative support until 15 January 2002 when the data collection stopped. In the interim the clinic provided clinical consultation/information at the request of survey respondents.

(6) The most significant problem once the survey went live was the unexpected diversity of the Pentagon informatics infrastructure. There is no uniformity of network or software in the Pentagon. The web-based version was designed to work on Internet Explorer 5.5 and Netscape 6.0 or higher browsers. Many people in the Pentagon did not have the capacity to view the survey on-line or were unable to get through it before it froze on them. The frustration greatly inhibited completion and likely affected the response rate.

(7) Morale among team members remained high throughout administration even in the face of negative encounters with personnel who felt they were being harassed into completing a survey that they had no interest in completing. At the time of survey deployment, the Pentagon was undergoing a major deployment in Operation Enduring Freedom and sustaining Operation Noble Eagle. To increase response, indigenous publications (Pentagram, Stripe, Building Circular) and email (through 29 systems administrators) were used to disseminate information, reminders, and updates on the survey. Two email boxes were set up for questions and inquiries about the survey. Colonel Egerton (USACHPPM Team Leader) answered all inquiries to those mailboxes personally.

f. Survey Analysis.

(1) Analysis and reporting of the survey started within the first day of opening the website and deploying the paper based survey.

(2) **Daily Reports.** The USACHPPM team leader received a report from the NARMC Operation Team on individuals contacted by the TriService team and a report from the USACHPPM Information Management (IM) team on Pentagon employees who accessed the web-based version of the survey. These daily reports were sent through email to the USACHPPM Commander, the DTHC Commander, and the on-site team

leader, COL Wayne Young. Referrals for contacts requested by respondents to the survey were forwarded to providers in Operation Solace based in the Pentagon as part of the multi-pronged response to the attack.

(3) **Interim Results.** An early analysis conducted on 2,740 survey respondents was published in the 7 December 2001 issue of the *Pentagram* and *Stripe* newspapers. Due to the labor-intensive requirements inherent with paper surveys, this initial report was limited to surveys received on line.

(4) **Presentations.** Several briefs were conducted for the USACHPPM Commander throughout the operation. Following the termination of the survey results were presented at the Armed Forces Epidemiology Board Meeting, 18-20 February 2002, and the Navy Environmental Health Center Conference, March 2002.

(5) **Statistical Analysis.** SPSS 10.1 was used for statistical analysis. Descriptive statistics were calculated and Chi Square or Fisher's Exact tests were done to determine significant differences in distributions of respondents across the independent variables. Logistic Regression was utilized to examine which variables might be significant predictors of the outcome of interest. All statistical tests of significance were done at the alpha 0.05 level.

3. Results.

a. Demographics.

(1) A total of 19,450 Pentagon employees were asked to complete the survey, of which 4,751 responded, representing 24.4% of the population. There were 5,103-email requests made for the web-based PPDHA, with 2,903 actually saved completed surveys. Among respondents utilizing the web-based survey, a majority completed the survey within the first 30 days from deployment with over 2,000 being saved from 15 thru 31 October 2001. The remaining 1,848 surveys (39%) were received in the paper version.

(2) Over 60% of respondents were male and approximately 70% were represented in the 35 to 54 year old age group, with the median age of 43 years, mean age of 42.8 years, and range of 17 – 88 years (Table 1). The majority (56%) of the respondents were civilian, but active duty members made up the largest proportion of the population. Both the Army and the Air Force represented the bulk (60%) of respondents.

Table 1
Demographics of Respondents
(N=4,751)

	Respondents	Percentage of the Respondents
Age (years)		
Less than 25	150	3.2
25 to 34	731	15.5
35 to 44	1827	38.7
45 to 54	1466	31.1
55 to 64	512	10.8
Greater than or equal to 65	34	0.7
Total	4720	100
Gender		
Female	1816	38.4
Male	2917	61.6
Total	4733	100
Service		
U.S. Army	1610	34.5
U.S. Navy	550	11.8
U.S. Air Force	1191	25.6
U.S. Marine Corps	81	1.7
U.S. Coast Guard	-	-
Department of Defense	846	18.2
U.S. Public Health Service	-	-
Other	382	8.2
Total	4660	100
Status		
Active Duty	1907	40.6
Active Reserve or National Guard Duty	142	3
Civilian GS Employee	1657	35.3
Civilian WG Employee	44	0.9
Civilian SES Employee	59	1.3
Civilian Contract Employee	738	15.7
Other	146	3.1
Total	4693	100

(3) Cross-tabulation of the respondents' status versus service affiliation is indicated in **Table 2**. There was significant variation in the percent of responders in regards to status of being in the military versus being a civilian among the services.

Table 2
Cross-Tabulation of Respondents Status versus Service
(N=4,751)

STATUS	SERVICE						Total
	USA	USAF	USN	USMC	DOD	Other	
Military (Active Duty/Reserve)	771	797	383	68	20	4	2043
Civilian (GS/SES/WG/Contract/Other)	832	388	166	12	815	362	2575
Total	1603	1185	548	80	835	366	4617
Missing							134

b. Location.

(1) A map of the Pentagon labeled by sector, corridor, and point of the attack was provided in the survey to assist individuals answering the location questions of the instrument (**Appendix D**). The majority (66%) of respondents indicated that they were in an office/bay within the Pentagon at the time of the attack (**Table 3**).

Table 3
Location of Respondents at the Time of the Attack
(N=4,751)

Location	Respondents	Percentage of the Respondents
Not at the Pentagon	1016	21.7
Pentagon in an office/bay	3088	65.9
Pentagon, not in an office	339	7.2
Outside the Pentagon, between rings	31	0.7
Pentagon Courtyard	29	0.6
Pentagon Parking Lots	184	3.9
Total	4687	100.0
Missing	64	

(2) Further examination of the 64 missing responders through follow-up survey questions (i.e., room location) determined that 42 employees were actually at or near the Pentagon at the time of the attack, bringing the total number of respondents present to 3,713, which represented a majority (79%) of the responders (**Table 4**).

Table 4
Location of Respondents
(N=4,751)

Location	Respondents	Percentage of the Respondents
At or Near the Pentagon	3713	78.5
Not at the Pentagon	1016	21.5
Total	4729	100.0
Missing	22	

(3) Among respondents determined to be at or near the Pentagon, 3,395 (91.4%) were able to further delineate their actual location by indicating what corridor in the Pentagon building they were nearest to at the time of the attack (**Table 5**). The plane crashed nearest corridor 4, with damage extending roughly from corridors 3 through 6 (**Appendix B**). Approximately 34% of respondents present during the attack reported being near this area.

Table 5
Pentagon Corridor Location of Respondents at the Time of the Attack
(N=3,713)

Nearest Corridor	Respondents	Percentage of the Respondents
Corridor 1	354	10.4
Corridor 2	364	10.7
Corridor 3	158	4.7
Corridor 4	348	10.3
Corridor 5	226	6.7
Corridor 6	406	12.0
Corridor 7	316	9.3
Corridor 8	581	17.1
Corridor 9	341	10.0
Corridor 10	243	7.2
Main Corridor	39	1.1
Mall Corridor	18	0.5
Don't Know/Remember	4	0.1
Total	3395	100.0
Missing	318	

(4) When asked to estimate their distance from the sections of the building that collapsed (**Table 6**), the majority reported being at a distance greater than 100 feet, while 557 employees (15%) indicated that they were located less than 100 feet from the sections of the building that collapsed. Due to the subjective nature of the question, many conflicting responses were noted; however, respondents perceived distance from the crash site is currently the best estimate of distance available.

Table 6
Distance from Collapsed Sections of the Pentagon at the Time of the Attack
(N=3,713)

Distance From the Collapsed Sections	Respondents	Percentage of the Respondents
In collapse sections	41	1.1
5 – 9 feet	42	1.2
10 – 24 feet	58	1.6
25 – 49 feet	114	3.1
50 – 99 feet	302	8.3
Greater than 100 feet	2606	72.0
Don't Know	458	12.6
Total	3621	100.0
Missing	92	

(5) With the exception of service affiliation, there were no significant differences between respondents less than 100 feet from the collapsed section and those farther away

(Figure 1). An examination of possible outcomes associated with proximity to the crash site indicated four significant factors: exposure, worsened/new health problems, injury, and/or mental health symptoms (Figure 2). A comparison of associated risk estimates for both univariate and multivariate analysis is presented in Table 7. Factors that were considered significant at the $p < 0.05$ level are represented by an asterisk.

Figure 1
Characteristics of Respondents Located Within 100 Feet from the Crash Site
(N=3,713)

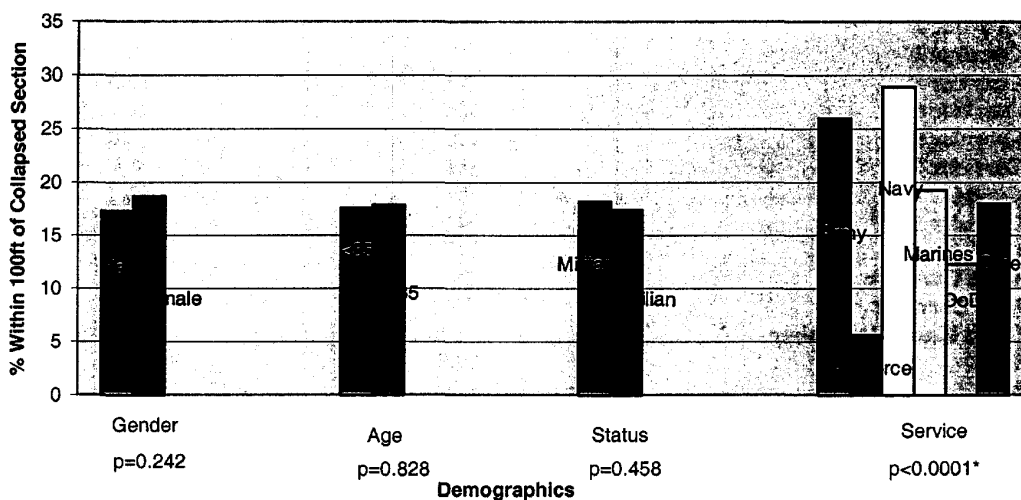


Figure 2
Outcome Measures of Respondents Located Within 100 Feet from the Crash Site
(N=3,713)

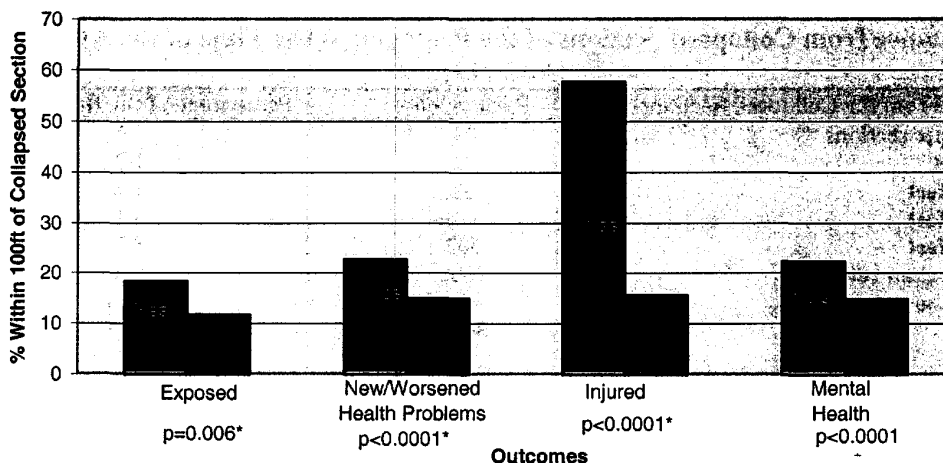


Table 7
Analysis of Distance from Crash Site (<100ft/>100ft):
Crude and Adjusted Estimates
(N=3,713)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	1.1 (0.9-1.4)	1.0 (0.8-1.2)
Age (>35:<35)	1.0 (0.8-1.3)	1.0 (0.7-1.3)
Status (Civilian:Military)	0.9 (0.8-1.1)	0.9 (0.7-1.1)
Service	NA (p<0.0001)*	NA (p<0.0001)*
Exposure (Y:N)	1.7 (1.1-2.4)*	1.7 (1.1-2.6)*
New/Worsened Health Probs(Y:N)	1.7 (1.4-2.0)*	1.3 (1.0-1.6)*
Injury (Y:N)	7.5 (5.4-10.5)*	5.4 (3.7-7.8)*
Mental health symptoms (Y:N)	1.7 (1.4-2.0)*	1.3 (1.0-1.6)*

(6) Other questions related to location and activities/responses at the time of attack were included in the survey (**Table 8**). Among respondents determined to be at or near the Pentagon at the time of the attack, the majority (49%) indicated that their activity at the time of the attack was sitting. The direction they were facing at the time of the attack was fairly evenly distributed among respondents. The majority (75%) began to evacuate the building immediately following the attack. Most respondents indicated that they sensed vibrations and/or heard a loud noise at the moment of the attack.

Table 8
Activities at the Time of the Attack
(N=3,713)

Activities At Time of the Attack	Respondents	Percentage of the Respondents
Sitting	1812	49.5
Standing	1409	38.5
Bending/Stooping	33	0.9
Walking	343	9.4
Lying down	2	0.1
Running	24	0.7
Don't know/Don't remember	39	1.1
Total	3662	100.0
Missing	51	
Direction Facing at Time of Attack	Respondents	Percentage of the Respondents
In front	789	21.7
Behind	892	24.5
To the right	799	21.9
To the left	823	22.6
Don't Know/Don't remember	339	9.3
Total	3642	100.0
Missing	71	
Immediate Response After Attack	Respondents	Percentage of the Respondents
Made a phone call	469	12.8
Went to TV	121	3.3
Started to evacuate	2759	75.4
Went toward the blast	300	8.2
Awaited further instructions	472	12.9
Gave instructions to others	1124	30.7
Continued routine work	156	4.3
Assisted with rescue of others	367	10.0
Nothing	32	0.9
Don't know/remember	19	0.5
Other	521	14.2
Missing	55	
Experiences at the Moment of Attack	Respondents	Percentage of the Respondents
Sense of pressure in room	585	16.1
Flash of light	224	6.2
Became very dark	132	3.6
Loud noise	1884	51.8
Slight noise or dull thud	814	22.4
Vibrations	2112	58.1
Being thrown/pulled through space	124	3.4
Nothing unusual	483	13.3
Don't remember	51	1.4
Do not know until told by others	720	19.8
Other	486	13.4
Missing	75	

c. Environmental Exposure.

(1) Of the total responding population, a majority (85.8%) indicated some type of inhalation exposure following the attack (**Table 9**). Most responders had more than one type of inhalation exposure, of which, 16 responders reported that these exposures were nothing unusual.

Table 9
Inhalation Exposure of Respondents Following the Attack
(N=4,751)

Inhalation Exposure	Respondents	Percentage of the Respondents
Smoke	3019	64.7
Dust	2307	49.4
Odors	3102	66.4
Nothing Unusual	677	14.5
Missing	82	
ANY Exposure		
Yes	4008	85.8
No	661	14.2
Total	4669	100.0
Missing	82	

(2) Of the respondents indicating that they had been exposed to smoke (N=3,019), the majority (68%) perceived the thickness of the smoke as being light. Approximately 64% reported their duration of exposure to smoke was for 30 minutes or less, with the median time of 15 minutes. Their responses are listed in **Table 10**.

Table 10
Thickness and Duration of Smoke Exposure for Respondents
(N=3,019)

Thickness of Smoke Exposure	Respondents	Percentage of the Respondents
Light	2028	68.2
Medium	733	24.6
Heavy	214	7.2
Total	2975	100.0
Missing	44	
Duration of Smoke Exposure (minutes)	Respondents	Percentage of the Respondents
<=10	1185	41.4
11-30	649	22.7
31-60	287	10.0
>60	743	25.9
Total	2864	100.0
Missing	155	

(3) Significantly more exposure was reported by respondents over 35 years of age and/or military status, with significant variation also observed between services (**Figure 3**). As noted previously, proximity to the crash site was also significantly associated with whether a respondent was exposed following the attack. For purposes of analysis, any one who was not at the pentagon on the day of the attack was considered to be at a

distance greater than 100 feet from the crash site. This factor could then be included in a regression model along with demographics. Results from this multivariate analysis were similar and are indicated in **Table 11**.

Figure 3
Characteristics of Respondents Reporting Exposure
(N=4,751)

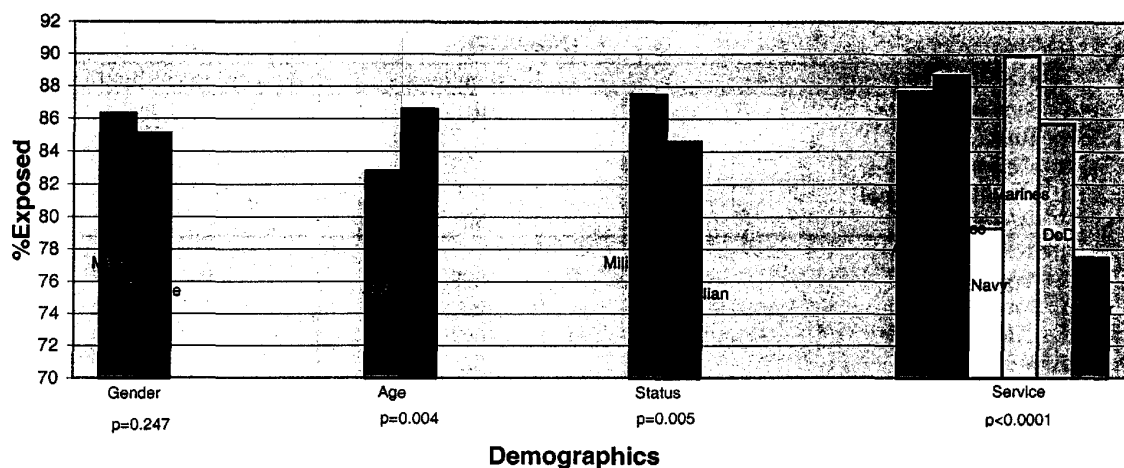


Table 11
Analysis of Exposures Post 9/11 Attack: Crude and Adjusted Estimates
(N=4,751)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	0.9 (0.8-1.1)	0.9 (0.7-1.1)
Age (>35:<35)	1.3 (1.1-1.6)*	1.4 (1.1-1.7)*
Status (Civilian:Military)	0.8 (0.7-0.9)*	0.8 (0.6-0.9)*
Service	NA (p<0.0001)*	NA (p<0.0001)*
Distance (<100 ft: >100 ft)	2.8 (1.9-3.9)*	3.4 (2.3-4.9)*

d. Health Status

(1) Out of the total population (N=4,751), survey respondents listed their place of usual medical care as indicated in **Table 12**. The majority of respondents received care from a personal civilian provider and/or the DiLorenzo TRICARE health clinic.

Table 12
Place of Receiving Usual Medical Care of Respondents
(N=4,751)

Place of Medical Care	Respondents	Percentage of the Respondents
WRAMC	243	5.2
NNMC (Bethesda)	233	5.0
Malcolm Grove AFMC	188	4.0
Kimbrough AHC	25	0.5
DeWitt ACH	293	6.3
Rader AHC	79	1.7
DiLorenzo TRICARE HC	1480	31.8
DiLorenzo Civilian HC	336	7.2
Pentagon Flight Medical Clinic	261	5.6
Bolling AFBC	118	2.5
Personal Civilian Provider	1572	33.8
Other Military Treatment Facility	325	7.0
Other Civilian Treatment Facility	757	16.3
Total	4655	100.0
<i>Missing</i>	96	

(2) The majority (79%) of respondents rated their health status for 12 months prior to the attack as very good to excellent (Table 13).

Table 13
Prior Health Status of Respondents
(N=4,751)

Prior Health Status	Respondents	Percentage of the Respondents
Excellent	1862	39.3
Very Good	1886	39.8
Good	842	17.8
Fair	136	2.9
Poor	8	0.2
Total	4734	100.0
<i>Missing</i>	17	

(3) The majority (84%) of respondents indicated that they did not have any old health problems or health concerns that had worsened since the attack. Likewise, the majority (73%) of survey respondents indicated that they had not experienced any new health problems or health concerns since the attack (Table 14).

Table 14
Health Problems or Concerns of Respondents
(N=4,751)

Worsened Old Health Problems or Concerns	Respondents	Percentage of the Respondents
No	3921	83.6
Yes	773	16.4
Total	4694	100.0
Missing	57	
New Health Problems or Concerns	Respondents	Percentage of the Respondents
No	3407	72.7
Yes	1280	27.3
Total	4687	100.0
Missing	64	

(4) Based on positive responses to either question pertaining to a worsening of old health problems or the development of new health problems since the attack or positive responses to follow up health questions (**Appendix D, Section F**), 1,700 (36%) responders were determined to have some type of new or worsened health problem since the attack (**Table 15**). However, it should be noted that 70 respondents gave conflicting responses (i.e., answering "no" to both question 23 and 24, but indicating otherwise on follow-up health questions such as question 39 in which respondents listed their new/worsened health problems).

Table 15
New/Worsened Health Problems or Concerns of Respondents
(N=4,751)

New/Worsened Health Problems or Concerns	Respondents	Percentage of the Respondents
No	3026	64.0
Yes	1700	36.0
Total	4726	100.0
Missing	25	

(5) Among the 1,700 respondents who reported a worsening of old health problems and/or the development of new health problems since the attack, the largest proportion (43.4%) first noted their problems during normal business activities (**Table 16**).

Table 16
Activities when Health Problems First Noted
(N=1,700)

Activities when noted health problem(s)	Respondents	Percentage of the Respondents
Normal business activities	635	43.4
Escaping	81	5.5
Assisting others	57	3.9
Calling for help	3	0.2
Returning back to the building	212	14.5
Don't know or don't remember	184	12.6
Other	290	19.8
Total	1462	100.0
Missing	238	

(6) The majority (54%) of respondents indicated that their health problems/concerns were stress related. Headaches and irritated eyes, nose and throat were also prevalent (**Table 17**).

Table 17
Identification of New/Worsened Health Problems or Concerns of Respondents
(N=1,700)

Old/New Health Problems or Concerns	Respondents	Percentage of the Respondents
Injuries	133	8.7
Burns	22	1.4
Breathing problems	425	27.8
Cough	456	29.9
Headache	632	41.4
Irritated eyes, nose, or throat	609	39.9
Hearing problems	67	4.4
Stress-related	824	54.0
Other	180	11.8
Missing	173	

(7) Although only 133 respondents identified injuries as a new/worsened health problem since the attack, 338 (20%) of the population sampled (N=1,700) indicated a type of injury sustained. The distribution of injury types for both groups is identified in **Table 18**. Within these groups, 8 and 2 respondents, respectively, had conflicting responses (i.e., reporting no injuries in addition to a type of injury).

Table 18
Type of Injuries Among Respondents
(N=1,700)

Type of Injuries	Total Respondents (N=1700)	Percentage of Total Respondents	Injured Respondents (N=133)	Percentage of Injured Respondents
Bruise	56	16.6	46	36.8
Abrasion	35	10.4	28	22.4
Burn	25	7.4	20	16.0
Cut	50	14.8	36	28.8
Broken Bones	1	0.3	1	0.8
Concussion/head injury	14	4.1	12	9.6
Hearing Problems	31	9.2	14	11.2
Vision Problems	40	11.8	9	7.2
Other Problems	229	67.8	75	60.0
Total Injuries (any of the above)	338	44.5	125	98.4
Not Injured	421	55.5	2	1.6
Total	759	100.0	127	100.0
Missing	941		6	

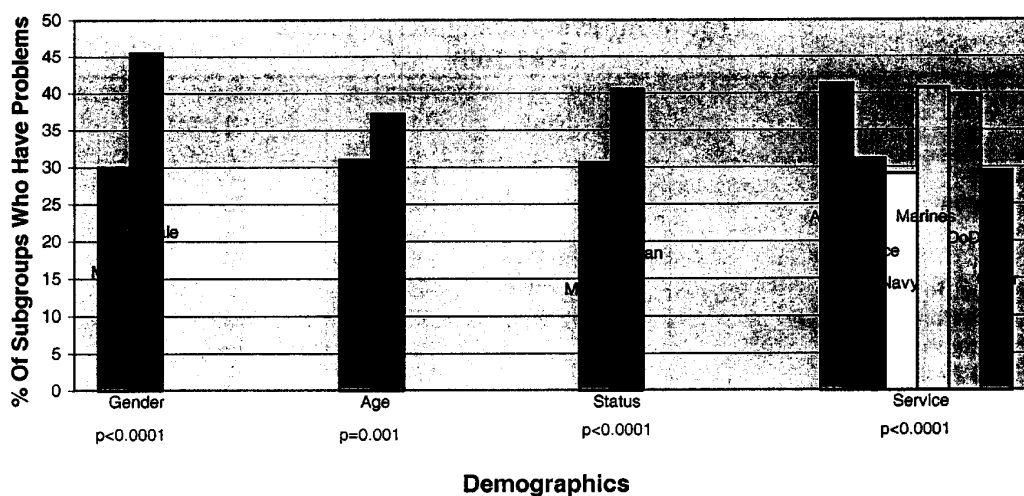
(8) Health problems still present at the time of the survey are indicated in **Table 19**. The majority (60.6%) of respondents indicated that other problems were still present at the time of the survey. These problems were mostly stress-related.

Table 19
New/Worsened Health Problems Still Present Among Respondents
(N=1,700)

Problems still present	Respondents	Percentage of the Respondents
None	120	9.1
Injuries	45	3.4
Burns	6	0.5
Breathing problems	307	23.4
Irritated eyes, nose, or throat	366	27.9
Hearing problems	44	3.4
Other	795	60.6
Total	1312	100.0
Missing	388	

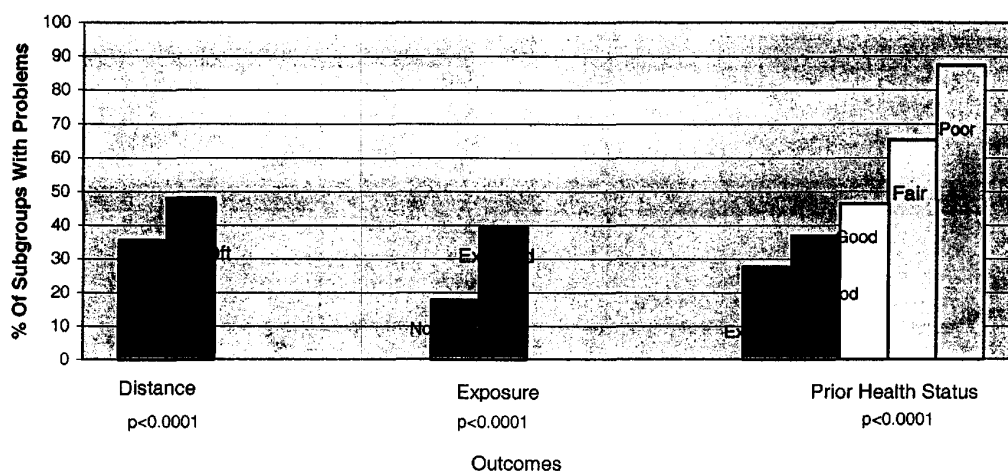
(9) There was an association between reported development of new health problems and/or worsened old health problems following the terrorist attack and respondents gender, age, status, and service (**Figure 4**). The significance in the four demographic categories was consistent when new health problems and worsened old health problems were examined separately.

Figure 4
Proportion of Demographic Subgroups Reporting New and/or Worsened Health Problems Post 9/11 Attack
(N=4,751)



(10) An examination of the 1,700 respondents who reported new and/or worsened old health problems indicates that there were three factors (proximity, exposure, and prior health status) significantly associated with an increase in reporting problems (**Figure 5**). The observed association between prior health status and development of new/worsened health problems revealed a significant linear trend.

Figure 5
Proportion of Outcome Subgroups Reporting New
and/or Worsened Health Problems
(N=4,751)



(11) With the exception of age, all of the observed associations (**Figures 4 and 5**) remained highly significant predictors of development of new/worsened health problems during multivariate analysis (**Table 20**).

Table 20
Analysis of New/Worsened Health Problems: Crude and Adjusted Estimates
(N=4,751)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	1.9 (1.7-2.2)*	1.8 (1.5-2.1)*
Age (>35:<35)	1.3 (1.1-1.5)*	1.2 (1.0-1.4)
Status (Civilian:Military)	1.5 (1.4-1.7)*	1.3 (1.1-1.5)*
Service	NA (p<0.0001)*	NA (p<0.0001)*
Distance (<100 ft: >100 ft)	1.9 (1.4-2.3)*	1.8 (1.5-2.1)*
Exposure (Exposed:Non-exposed)	3.0 (2.4-3.7)*	3.1 (2.5-4.0)*
Prior health status	NA (p<0.0001)*	NA (p<0.0001)*

e. Injuries.

(1) Among respondents who were at or near the Pentagon during the attack, 186 (5%) indicated that they were injured during the initial blast and/or during the evacuation. If each injury question is examined separately, then 107 individuals indicated that they were injured during the initial blast and 114 indicated that they were injured while evacuating. There were 35 individuals who responded "Yes" to both questions. (**Table 21**)

Table 21
Injuries Resulting from Attack
(N=3,713)

Any Injury	Respondents	Percentage of the Respondents
No	3440	94.9
Yes	186	5.1
Total	3626	100.0
Missing	87	
Injured During Initial Blast	Respondents	Percentage of the Respondents
No	3540	97.1
Yes	107	2.9
Total	3647	100.0
Missing	66	
Injured During Evacuation	Respondents	Percentage of the Respondents
No	3528	96.9
Yes	114	3.1
Total	3642	100.0
Missing	71	

(2) Major causes of injury among the 107 individuals reporting being injured during the initial blast included being thrown on impact, debris, blast, fire, and glass (Table 22). Causes of injury during evacuation are also listed in Table 22. It should be noted that 13 (12%) and 19 (17%) responders, respectively, gave conflicting answers (i.e. reporting not being injured later in the survey, with many of the identified injuries reported not being physical).

Table 22
Causes of Injuries of Respondents
(N=107)

Cause of Injury During the Initial Blast	Respondents	Percentage of the Respondents
Blast	24	22.3
Fire	24	22.3
Debris	36	35.0
Glass	7	6.8
Thrown on impact	42	40.8
Don't Know	4	3.9
Other	37	35.9
Missing	4	
Cause of Injury During Evacuation	Respondents	Percentage of the Respondents
Tripped over debris/furniture	18	17.0
Caught in collapsing building	4	3.8
Fell	22	20.8
Cut on glass or structural debris	22	20.8
Other	82	77.4
Missing	1	

(3) Among the 186 individuals (Table 21) who indicated that they were injured either during the initial blast or during evacuation, furniture and cubicle walls were the most attributed objects causing injuries to be worse (Table 23); however, conflicting responses were again noted. Examination of comments input under the other

category for the question indicated that fire, smoke, ceiling tiles, and/or unidentified/miscellaneous debris were largely responsible for making injuries worse.

Table 23
Objects Making Injury Worse
(N=186)

Objects	Respondents	Percentage of the Respondents
Furniture	30	22.6
Computer Equipment	11	8.3
Wall hangings	7	5.3
Cubicle Walls	21	15.8
Glass Within 1 ft.	9	6.8
Glass Within 1-3 ft.	4	3.0
Glass Within 3-10 ft.	2	1.5
Glass Within 10-20 ft.	0	0
Glass Within 20-100 ft.	2	1.5
Don't know/ remember	36	27.1
Other	67	50.4
Conflicting Response	25	
Missing	28	

(4) Respondents also indicated objects that may have protected them from injury or further injury. These objects are listed for both injured and non-injured respondents in **Table 24**. A majority noted that no objects protected them from injury. Examination of comments input under the other category for the question indicated that distance, building structure/design and/or blast proof windows were protective.

Table 24
Objects Protecting Respondents From Injury
(N=3,713)

Objects	Injured Respondents (N=186)	Percentage of the Injured Respondents	Non-injured Respondents (N=3,527)	Percentage of Uninjured Respondents
Furniture	16	10.1	28	0.8
Computer Equipment	1	0.6	5	0.2
Wall hangings	0	0	5	0.2
Cubicle Walls	13	8.2	38	1.2
Doorways	5	3.1	43	1.3
Long Sleeved Clothes	12	7.5	21	0.6
Don't know/ remember	17	10.7	129	3.9
None	79	49.7	1577	47.8
Other	41	25.8	280	8.5
Not Injured	NA	NA	1249	37.8
Conflicting Response	11		NA	
Missing	16		226	

(5) As previously noted, proximity to crash site was significantly correlated with injury. A closer examination of total injuries (injuries occurring during the initial attack and/or evacuation) by demographics indicates that the respondents' service affiliation was significantly associated with sustaining an injury (**Figure 6**). Both gender and status were borderline significant. However, only proximity to crash site remained significant

during multivariate analysis with all demographic variables and distance from crash site included in the model (**Table 25**).

Figure 6
Characteristics of Respondents Reporting Injury
(N=3,713)

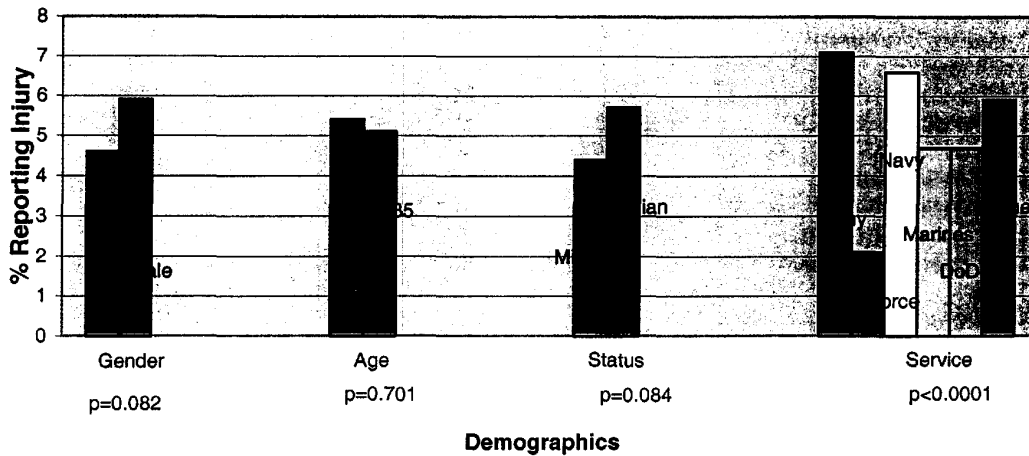


Table 25
Analysis of Injuries Sustained: Crude and Adjusted Estimates
(N=3,713)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	1.3 (1.0-1.8)	1.3 (0.9-1.9)
Age (>35:<35)	0.9 (0.6-1.4)	0.8 (0.5-1.3)
Status (Civilian:Military)	1.3 (1.0-1.8)	1.3 (0.8-1.9)
Service	NA (p<0.0001)*	NA (p=0.078)
Distance (<100 ft: >100 ft)	7.5 (5.4-10.5)*	6.4 (4.5-9.1)*

(6) A closer examination of injuries sustained during the initial attack shows similar patterns across strata as indicated in **Figure 5**, with similar associations noted during multivariate analysis (**Table 26**).

Table 26
Analysis of Injuries Sustained During Initial Attack: Crude and Adjusted Estimates
(N=3,713)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	1.1 (0.8-1.6)	1.0 (0.6-1.6)
Age (>35:<35)	0.8 (0.5-1.3)	0.7 (0.4-1.3)
Status (Civilian:Military)	1.2 (0.8-1.8)	1.3 (0.8-2.1)
Service	NA (p<0.0001)*	NA, (p=0.149)
Distance (<100 ft: >100 ft)	15.8 (9.8-25.3)*	15.3 (9.5-25.6)*

(7) When looking strictly at injuries sustained during evacuation, service affiliation loses significance while both gender and status become significant (**Figure 7**).

When multivariate analysis including demographics and proximity to crash site is performed, only gender and proximity remain significant predictors of injury during evacuation (**Table 27**).

Figure 7
Characteristics of Respondents Reporting Injury During Evacuation
(N=3,713)

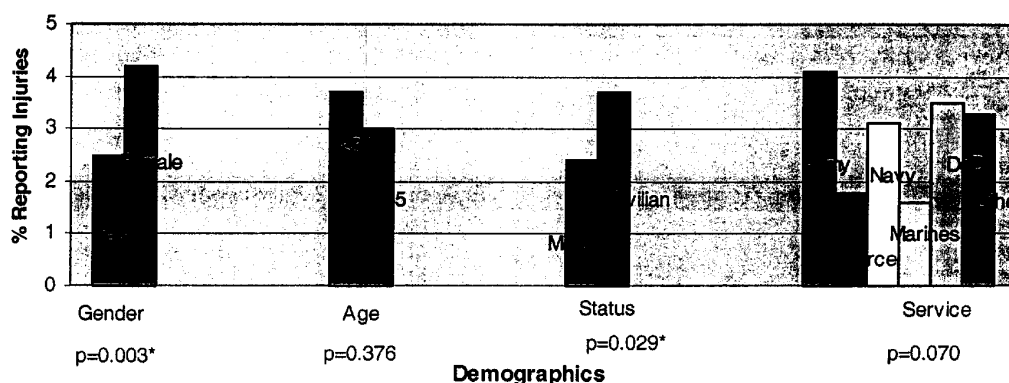


Table 27
Analysis of Injuries Sustained During Evacuation: Crude and Adjusted Estimates
(N=3,713)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Gender (F:M)	1.7 (1.2-2.5)*	1.7 (1.1-2.6)*
Age (>35:<35)	0.8 (0.5-1.3)	0.7 (0.4-1.2)
Status (Civilian:Military)	1.5 (1.0-2.3)*	1.3 (0.8-2.1)
Service	NA (p=0.070)	NA (p=0.511)
Distance (<100 ft: >100 ft)	3.5 (2.3-5.4)*	3.6 (2.3-5.5)*

f. Trapped and Evacuation.

(1) Of the respondents who indicated that they were at or near the Pentagon at the time of the terrorist attack, 118 (3%) indicated that they were trapped or unable to reach the outside after impact of the plane. The majority (62%) of respondents were trapped for less than 10 minutes, with a median time of 5 minutes and a mean of 8.5 minutes. Causes of being trapped after the attack are also enumerated in **Table 28**.

Table 28
Trapped After the Attack
(N=3,713)

Trapped After the Attack	Respondents	Percentage of the Respondents
No	3525	96.8
Yes	118	3.2
Total	3643	100.0
Missing	70	
If trapped, Amount of Time Trapped (minutes)	Respondents	Percentage of the Respondents
<10	71	61.7
10 – 59	42	36.5
>=60	2	1.7
Total	115	100.0
Missing	3	
If trapped, Cause of Being Trapped	Respondents	Percentage of the Respondents
Furniture	16	13.9
A wall	21	18.3
A door	41	35.7
Fire	24	20.9
Smoke	38	33.0
Debris	30	26.1
Other	56	48.7
Total	115	100.0
Missing	3	

(2) Of the population reporting being at or near the Pentagon during the attack, the majority (67%) indicated that they were able to evacuate the building in 10 minutes or less, with a median time of 10 minutes (**Table 29**). Those assisting with rescue/support efforts noted delays in evacuation.

Table 29
Time to Evacuate the Pentagon Building After the Attack
(N=3,713)

Time to Evacuate the Building (minutes)	Respondents	Percentage of the Respondents
Less than 5	631	18.1
5 – 10	1713	49.1
11 – 30	896	25.7
31 – 60	96	2.8
Greater than 60	150	4.3
Total	3486	100.0
Missing	227	

g. Mental Health.

(1) Mental Health personnel at WRAMC, WRAIR, USUHS, as well as the mental health consultants to the Army Surgeon General were consulted regarding the development of questions about mental health problems most likely to be seen after a terrorist incident. They also recommended asking questions about overall functioning and possible predictive factors. The end product consisted of 17 questions (**Appendix D, Section G, Questions 44-60**), for which the results are given in **Table 30**.

Table 30
Responses to Mental Health Portion of PPDHA
(N=4,751)

44. During the attack and immediately afterward, did your sense of time change – did things seem to be happening in slow motion?	Respondents	Percentage of the Respondents
NOT AT ALL	2161	47.1
A LITTLE BIT	1203	26.2
MODERATELY	605	13.2
QUITE A BIT	409	8.9
EXTREMELY	211	4.6
Total	4589	100.0
Missing	162	
45a. Since the attack, how often have you been bothered by feeling nervous, anxious, on edge, or worrying a lot about different things?	Respondents	Percentage of the Respondents
NOT AT ALL	1517	32.8
SEVERAL DAYS	1863	40.3
MORE THAN HALF THE DAYS	507	11.0
NEARLY EVERY DAY	732	15.8
Total	4619	100.0
Missing	132	
45b. Since the attack, how often have you been bothered by little interest or pleasure in doing things?	Respondents	Percentage of the Respondents
NOT AT ALL	2192	47.6
SEVERAL DAYS	1744	37.9
MORE THAN HALF THE DAYS	425	9.2
NEARLY EVERY DAY	243	5.3
Total	4604	100.0
Missing	147	
45c. Since the attack, how often have you been bothered by feeling down, depressed, or hopeless?	Respondents	Percentage of the Respondents
NOT AT ALL	2263	49.1
SEVERAL DAYS	1790	38.8
MORE THAN HALF THE DAYS	346	7.5
NEARLY EVERY DAY	211	4.6
Total	4610	100.0
Missing	141	
46. Since the attack (not counting the attack itself), have you experienced any sudden feelings of panic or fear (sometimes called a panic attack)?	Respondents	Percentage of the Respondents
No	3575	76.9
Yes	1071	23.1
Total	4646	100.0
Missing	105	
47. Since the attack, have you been feeling emotionally numb or unable to have loving feelings for those close to you?	Respondents	Percentage of the Respondents
NOT AT ALL	3132	67.4
A LITTLE BIT	1024	22.0
MODERATELY	314	6.8
QUITE A BIT	137	2.9
EXTREMELY	42	0.9
Total	4649	100.0
Missing	102	

48. Since the attack, have you had repeated, disturbing memories or dreams?	Respondents	Percentage of the Respondents
NOT AT ALL	2477	53.1
A LITTLE BIT	1358	29.1
MODERATELY	449	9.6
QUITE A BIT	281	6.0
EXTREMELY	101	2.2
Total	4666	100.0
Missing	85	
49. Since the attack, have you avoided thinking about it or having feelings about the disaster?	Respondents	Percentage of the Respondents
NOT AT ALL	2464	52.9
A LITTLE BIT	1278	27.4
MODERATELY	535	11.5
QUITE A BIT	302	6.5
EXTREMELY	77	1.7
Total	4656	100.0
Missing	95	
50. Since the attack, have you been feeling jumpy or easily startled?	Respondents	Percentage of the Respondents
NOT AT ALL	2136	45.8
A LITTLE BIT	1453	31.2
MODERATELY	517	11.1
QUITE A BIT	377	8.1
EXTREMELY	176	3.8
Total	4659	100.0
Missing	92	
51. Since the attack, how much did personal or emotional problems keep you from doing your usual work, studies, or other daily activities?	Respondents	Percentage of the Respondents
NOT AT ALL	2336	50.2
VERY LITTLE	1360	29.2
SOMEWHAT	752	16.2
QUITE A LOT	185	4.0
COULD NOT DO DAILY ACTIVITIES	19	0.4
Total	4652	100.0
Missing	99	
52. How many close friends or relatives do you have (people you feel at ease with and can talk to about what is on your mind)?	Respondents	Percentage of the Respondents
NONE	133	2.9
ONE OR TWO	1256	26.9
SEVERAL	2140	45.9
MANY	1134	24.3
Total	4663	100.0
Missing	88	
53. How many times since the attack have you visited a psychiatrist, psychologist, social worker, chaplain, or other mental health care provider?	Respondents	Percentage of the Respondents
NOT AT ALL	3837	82.3
ONCE	502	10.8
TWO OR THREE	232	5.0
MORE THAN THREE	93	2.0
Total	4664	100.0
Missing	87	

54. Since the attack, have you used alcohol more than you meant to?	Respondents	Percentage of the Respondents
DON'T DRINK	1077	23.1
NO	3361	72.0
YES	227	4.9
Total	4665	100.0
Missing	86	
55. Since the attack, have you felt the need to cut down on your drinking?	Respondents	Percentage of the Respondents
DON'T DRINK	569	14.1
NO	3256	80.9
YES	198	4.9
Total	4023	100.0
Missing	728	
56. Did you ever have mental health treatment BEFORE the attack (treatment by a psychiatrist, psychologist, social worker, or other mental health care provider)?	Respondents	Percentage of the Respondents
NEVER	3903	83.9
OVER 5 YEARS AGO	369	7.9
1-5 YEARS AGO	205	4.4
WITHIN PAST YEAR	174	3.7
Total	4651	100.0
Missing	100	
57. BEFORE the attack did you EVER have a terrible experience that caused you to fear you would be injured or killed?	Respondents	Percentage of the Respondents
NO	3147	67.5
ONLY AS A CHILD	212	4.5
ONLY AS ADULT	864	18.5
BOTH AS A CHILD & ADULT	439	9.4
Total	4662	100.0
Missing	89	
58. Do you currently feel safe in your workplace?	Respondents	Percentage of the Respondents
NOT AT ALL	380	8.1
A LITTLE BIT	590	12.6
MODERATELY	1358	29.1
QUITE A BIT	1617	34.6
EXTREMELY	723	15.5
Total	4668	100.0
Missing	83	
59. Did you know anyone who was killed or seriously injured during any of the terrorist attacks?	Respondents	Percentage of the Respondents
NO	2056	44.1
YES	2601	55.9
Total	4657	100.0
Missing	94	
If YES, whom? (select all that apply)		
Family member	25	0.1
Close friend	401	15.7
Coworker	1160	45.4
Other acquaintance	1734	67.8
Total	2566	100.0
Missing	45	

60. Did you see anyone killed or seriously injured during the attacks?	Respondents	Percentage of the Respondents
NO	4102	88.2
YES	550	11.8
Total	4652	100.0
Missing	99	

(2) Post-disaster mental health domains of interest chosen from the survey included Post Traumatic Stress Disorder (PTSD), depression, alcohol abuse, generalized anxiety, and panic attacks. Although there are a number of psychological instruments that have been standardized to test these questions, they were deemed too long and time consuming to use in totality in this survey. See **Appendix F** for details regarding development of the mental health section of the questionnaire.

(3) Although the questionnaire was not designed to make specific mental disorder diagnoses, it is possible to discern high-risk groups for each of the mental health symptom domains and perform subgroup analysis. Overall, 1,838 (40%) of respondents met the screening criteria for being at high risk for any one of these mental health outcomes (i.e. PTSD, depression, alcohol abuse, generalized anxiety, and/or panic attacks), as is indicated in **Table 31**.

Table 31
High-Risk Group for Mental Health Outcomes
(N=4,751)

Mental Health Outcomes	Respondents	Percentage of the Respondents
No	2755	60.0
Yes	1838	40.0
Total	4593	100.0
Missing	158	

(4) PTSD.

(a) For the diagnosis of PTSD, the DSM IV requires that the following criteria be met:

- a traumatic event must occur that threatens death or serious injury and causes a response involving horror, fear, or helplessness;
- the traumatic event must be re-experienced (**Question 48, Table 30**);
- avoidance of stimuli associated with the trauma and general numbing occur (**Question 47 OR 49, Table 30**); and
- increased arousal must be present (**Question 50, Table 30**).

(b) Under the circumstances of the September 11, 2001 terrorist attack on the Pentagon, the first requirement was considered met for everyone so no questions were asked about this on the survey. Persons who had a positive response (moderate to extreme levels) in all 3 of the remaining areas were considered to meet the screening criteria for the PTSD high-risk group (**Table 32**).

Table 32
High-Risk Group for PTSD
(N=4,751)

PTSD	Respondents	Percentage of the Respondents
No	4298	92.1
Yes	370	7.9
Total	4668	100.0
<i>Missing</i>	83	

(5) DEPRESSION.

(a) For Depression the Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision (DSM IV) recognizes anhedonia or absence of pleasure (**Question 45b, Table 30**) and depressed mood (**Question 45c, Table 30**) as the two most important stem questions necessary to make the diagnosis of major depression. Although it is not possible to make the diagnosis of depression with only two questions, studies have shown that if either of these is positive, there is a reasonably high sensitivity and specificity compared with the full diagnostic criteria. Therefore, respondents experiencing either of these symptoms (anhedonia OR depressed mood) for more than half the days or nearly every day were considered to be in the high-risk group for depression (**Table 33**).

Table 33
High-Risk Group for Depression
(N=4,751)

Depression	Respondents	Percentage of the Respondents
No	3786	82.3
Yes	813	17.7
Total	4599	100.0
<i>Missing</i>	152	

(6) ALCOHOL ABUSE.

(a) The survey asked two questions about alcohol use (**Questions 54 and 55, Table 30**). Only respondents that answered yes to both questions were placed in the high-risk group (**Table 34**). These two questions have also been shown to be highly reliable when compared with much longer structured alcohol screening questionnaires.

Table 34
High-Risk Group for Alcohol Abuse
(N=4,751)

Alcohol Abuse	Respondents	Percentage of the Respondents
No	4554	97.5
Yes	116	2.5
Total	4670	100.0
<i>Missing</i>	81	

(7) GENERALIZED ANXIETY AND PANIC ATTACKS

(a) High-risk groups for generalized anxiety and panic attacks were based on positive responses to single survey questions. Respondents were considered to be at high risk for generalized anxiety if they reported experiencing symptoms more than half the time to nearly every day (**Question 45a, Table 30**). Respondents were considered at high risk for panic attacks based on self-report of panic attacks (**Question 46, Table 30**). Again, these do not constitute clinical diagnoses, but suggest that a significant portion of respondents had high anxiety levels. Results are again given in **Table 35**.

Table 35
High-Risk Group for Generalized Anxiety and Panic Attacks
(N=4,751)

Generalized Anxiety	Respondents	Percentage of the Respondents
No	3380	73.2
Yes	1239	26.8
Total	4619	100.0
Missing	132	
Panic Attacks	Respondents	Percentage of the Respondents
No	3575	76.9
Yes	1071	23.1
Total	4646	100.0
Missing	105	

(8) VALIDATION OF MENTAL HEALTH RISK GROUPS.

(a) An important finding was that the mental health symptoms impacted people's ability to perform their daily activities. The survey asked one question (**Question 51, Table 30**) to assess overall mental health functioning. Approximately, 20 % reported that daily functioning was at least somewhat impacted by personal or emotional problems. This question was especially important in validating the criteria used to determine the high-risk groups for each of the mental health symptom domains.

(b) There was a strong association between reduced daily functioning and meeting the screening criteria for each of the mental health risk groups. People who were considered at high risk for PTSD, depression, generalized anxiety, panic, and alcohol abuse all had significantly reduced daily functioning compared with those who were not in the high risk groups (**Table 36**). Functioning was at least somewhat impaired for approximately 44% of those who were screen positive for any of the mental health high-risk groups compared with 5% of screen negative respondents. Odds ratios and significance testing supported the strong relationship between each of these high-risk groups and impaired functioning (**Table 37**). Results changed little when higher cut points for impaired functioning were used (e.g., function impairment reported at quite a lot or higher vs. lower levels). Overall, these findings strongly validate the risk group classifications.

Table 36
Daily Functioning Levels Across High Risk Groups
(N=4,751)

Level of Functioning	PTSD Screen Positive (N=366)	PTSD Screen Negative (N=4,276)
NOT AT ALL	29 (7.9%)	2,303 (53.9%)
VERY LITTLE	66 (18.0%)	1,292 (30.2%)
SOMEWHAT	166 (45.4%)	582 (13.6%)
QUITE A LOT	95 (26.0%)	90 (2.1%)
COULD NOT DO DAILY ACTIVITIES	10 (2.7%)	9 (0.2%)
Level of Functioning	Depression Screen Positive (N=806)	Depression Screen Negative (N=3,765)
NOT AT ALL	105 (13.0%)	2,183 (58.0%)
VERY LITTLE	196 (24.3%)	1,141 (30.3%)
SOMEWHAT	337 (41.8%)	406 (10.8%)
QUITE A LOT	151 (18.7%)	33 (0.9%)
COULD NOT DO DAILY ACTIVITIES	17 (2.1%)	2 (0.1%)
Level of Functioning	Alcohol Abuse Screen Positive (N=114)	Alcohol Abuse Screen Negative (N=4,530)
NOT AT ALL	24 (21.1%)	2,309 (51.0%)
VERY LITTLE	30 (26.3%)	1,328 (29.3%)
SOMEWHAT	45 (39.5%)	706 (15.6%)
QUITE A LOT	13 (11.4%)	170 (3.8%)
COULD NOT DO DAILY ACTIVITIES	2 (1.8%)	7 (0.4%)
Level of Functioning	Generalized Anxiety Screen Positive (N=1,223)	Generalized Anxiety Screen Negative (N=3,361)
NOT AT ALL	219 (17.9%)	2,073 (61.7%)
VERY LITTLE	368 (30.1%)	977 (29.1%)
SOMEWHAT	460 (37.6%)	286 (8.5%)
QUITE A LOT	159 (13.0%)	23 (0.7%)
COULD NOT DO DAILY ACTIVITIES	17 (1.4%)	2 (0.1%)
Level of Functioning	Panic Attack Screen Positive (N=1,066)	Panic Attack Screen Negative (N=3,555)
NOT AT ALL	207 (19.4%)	2,114 (59.5%)
VERY LITTLE	339 (31.8%)	1,013 (28.5%)
SOMEWHAT	372 (34.9%)	376 (10.6%)
QUITE A LOT	133 (12.5%)	49 (1.4%)
COULD NOT DO DAILY ACTIVITIES	15 (1.4%)	3 (0.1%)
Level of Functioning	Mental Health Outcome Screen Positive (N=1,819)	Mental Health Outcome Screen Negative (N=2,749)
NOT AT ALL	412 (22.6%)	1,868 (68.0%)
VERY LITTLE	602 (33.1%)	737 (26.8%)
SOMEWHAT	607 (33.4%)	138 (5.0%)
QUITE A LOT	180 (9.9%)	5 (0.2%)
COULD NOT DO DAILY ACTIVITIES	18 (1.0%)	1 (0%)

Table 37
High Risk Groups by Impact on Daily Functioning
(Somewhat or more impairment vs. no/little impairment)
(N=4,751)

Mental Health Outcome	OR (95% CI)	p-value
PTSD	15.1 (11.7-19.4)	<0.0001
Depression	12.6 (10.6-15.0)	<0.0001
Alcohol Abuse	4.5 (3.1-6.6)	<0.0001
Generalized Anxiety	10.6 (9.0-12.5)	<0.0001
Panic Attacks	7.0 (5.9-8.1)	<0.0001
ANY	14.4 (11.9-17.4)	<0.0001

(9) RISK FACTOR ANALYSIS.

(a) Factors that have been suggested in the literature to increase risk or protect for the mental health outcomes examined include: age, gender, prior trauma, history of prior mental health treatment (tx), type and duration of attack, injury, witnessing death/serious injury (SI), knowing someone dead/SI, and social supports. The survey items allowed for some measure of the most important risk factors.

(b) Crude and adjusted rates for factors evaluated in the survey are shown in **Table 38**. Rates were adjusted by all other factors through binary logistic regression. Statistically significant findings ($p \leq 0.05$) are indicated by an asterisk. Many of the known risk factors were significantly associated with the high-risk symptom groups. This further strengthens the validity of the symptom criteria used in this survey.

Table 38
Risk Factor Analysis
(N=4,751)

Risk Factors Crude Rates	PTSD OR (95% CI)	Depression OR (95% CI)	Alcohol Abuse	Gen. Anxiety	Panic Attacks
Gender (F:M)	3.1(2.5-3.9)*	2.7(2.3-3.2)*	0.9(0.6-1.4)	2.0(2.7-3.5)*	3.8(3.3-4.3)*
Age (>35:<35)	0.7(0.5-0.9)*	0.9(0.7-1.0)	0.9(0.6-1.4)	0.7(0.6-0.9)*	0.8(0.7-0.9)*
Status (Civilian:Military)	2.5(2.0-3.2)*	2.4(2.1-2.9)*	1.6(1.0-2.3)*	2.4(2.1-2.8)*	2.6(2.2-3.0)*
Injured (Y:N)	4.1(2.9-5.9)*	2.8(2.0-3.8)*	2.1(1.1-4.1)*	2.2(1.6-2.9)*	3.4(2.5-4.6)*
Trapped (Y:N)	4.2(2.7-6.3)*	2.6(1.8-3.8)*	1.9(0.8-4.5)	2.5(1.7-3.6)*	2.7(1.9-3.9)*
Hx of prior MH tx (Y:N)	3.0(2.4-3.8)*	2.5(2.1-3.0)*	2.2(1.4-3.2)*	2.3(1.9-2.7)*	2.4(2.0-2.9)*
Prior trauma (Y:N)	1.3(1.0-1.6)*	1.2(1.0-1.4)*	1.3(0.9-1.9)	1.0(0.9-1.2)	0.9(0.8-1.1)
Know dead/SI (Y:N)	2.0(1.6-2.6)*	1.6(1.4-1.9)*	1.4(0.9-2.1)	1.6(1.4-1.8)*	1.9(1.6-2.2)*
Witness death/SI (Y:N)	2.7(2.1-3.4)*	1.6(1.3-2.0)*	1.9(1.2-3.0)*	1.6(1.4-2.0)*	1.5(1.2-1.8)*
Confidants (Y:N)	0.6(0.4-1.0)	0.4(0.3-0.6)*	0.4(0.2-0.8)*	0.7(0.5-1.0)	0.9(0.6-1.4)
Risk Factors Adjusted Rates	PTSD	Depression	Alcohol Abuse	Gen. Anxiety	Panic Attacks
Gender (F:M)	2.5(1.9-3.3)*	2.3(1.9-2.8)*	0.6(0.4-1.0)*	2.5(2.1-2.9)*	3.0(2.5-3.6)*
Age (>35:<35)	0.6(0.5-0.8)*	0.8(0.6-0.9)*	0.8(0.5-1.4)	0.7(0.6-0.8)*	0.7(0.6-0.9)*
Status (Civilian:Military)	1.6(1.2-2.2)*	1.7(1.4-2.1)*	1.7(1.1-2.7)*	1.9(1.6-2.3)*	1.8(1.5-2.1)*
Injured (Y:N)	2.2(1.4-3.4)*	2.0(1.4-2.8)*	1.3(0.6-2.9)	1.5(1.0-2.1)*	2.6(1.8-3.7)*
Trapped (Y:N)	2.2(1.3-3.6)*	1.6(1.0-2.4)	1.8(0.8-4.3)	1.8(1.2-2.8)*	1.8(1.2-2.8)*
Hx of prior MH tx (Y:N)	2.3(1.8-3.0)*	2.0(1.6-2.4)*	2.2(1.4-3.5)*	1.9(1.5-2.3)*	1.9(1.6-2.4)*
Prior trauma (Y:N)	1.4(1.1-1.8)*	1.3(1.1-1.6)*	1.2(0.8-1.8)	1.1(0.9-1.3)	0.9(0.8-1.1)
Know dead/SI (Y:N)	1.6(1.3-2.2)*	1.4(1.2-1.8)*	1.4(0.9-2.3)	1.4(1.2-1.7)*	1.6(1.3-1.9)*
Witness death/SI (Y:N)	2.3(1.7-3.2)*	1.6(1.3-2.1)*	1.8(1.1-3.0)*	1.9(1.5-2.4)*	1.3(1.0-1.7)*
Confidants (Y:N)	0.6(0.3-1.0)	0.4(0.3-0.7)*	0.4(0.2-0.9)*	0.8(0.5-1.2)	1.2(0.7-2.0)
Risk Factors Crude Rates	ANY Mental Health Outcome		Risk Factors Adjusted Rates	ANY Mental Health Outcome	
Gender (F:M)	3.3 (2.9-3.8)*		Gender (F:M)	2.7 (2.3-3.1)*	
Age (>35:<35)	0.7 (0.6-0.9)*		Age (>35:<35)	0.7 (0.6-0.8)*	
Status (Civilian:Military)	2.4 (2.2-2.8)*		Status (Civilian:Military)	1.8 (1.5-2.1)*	
Injured (Y:N)	3.4 (2.5-4.7)*		Injured (Y:N)	2.3 (1.6-3.3)*	
Trapped (Y:N)	2.5 (1.7-3.6)*		Trapped (Y:N)	1.5 (1.0-2.4)	
Hx of prior MH tx (Y:N)	2.5 (2.1-2.9)*		Hx of prior MH tx (Y:N)	2.0 (1.6-2.4)*	
Prior trauma (Y:N)	1.0 (0.9-1.2)		Prior trauma (Y:N)	1.1 (1.0-1.3)	
Know dead/SI (Y:N)	1.6 (1.4-1.8)*		Know dead/SI (Y:N)	1.5 (1.3-1.7)*	
Witness death/SI (Y:N)	1.6 (1.4-2.0)*		Witness death/SI (Y:N)	1.7 (1.4-2.1)*	
Confidants (Y:N)	0.6 (0.4-0.9)*		Confidants (Y:N)	0.6 (0.4-1.0)	

(10) MENTAL HEALTH COUNSELING.

(a) Having mental health symptoms was strongly correlated with seeking counseling from a mental health professional or chaplain (**Table 39**); 31% of those who were screen positive for any of the mental health high risk groups sought counseling compared with 9% of all other respondents.

(b) Although 31% may still seem like a low rate overall, this is very consistent with many studies that have shown that only one quarter to one third of persons who have diagnosable mental disorders seek professional help.

Table 39
Mental Health Counseling
(N=4,751)

Sought Counseling Following Attack	Mental Health Outcome Screen Positive (N=1,826)	Mental Health Outcome Screen Negative (N=2,753)
Yes	558 (30.6%)	259 (9.4%)
No	1,268 (69.4%)	2,494 (90.6%)

h. Clinical Care.

(1) Overall, 881 (18.5%) of the Pentagon employees who responded to the survey reported additional concerns (Table 40). The majority (27.1%) of the concerns pertained to the mental health category. Among those expressing additional concerns, slightly less than half (413, 8.7%) specifically requested further information and/or contact (Table 40).

Table 40
Complaints and Concerns of Respondents
(N=881)

General Categories of Complaints/Concerns	Number Received (N=881)	Percentage of Responders	Number of Requests for Info/Contact (N=413)	Percentage Requesting Info/Contact
Mental Health	239	27.1	143	34.5
Environmental Health	226	25.7	112	27.1
Somatic*	153	17.4	91	22.0
Building Safety	100	11.4	53	12.8
Administrative	55	6.2	32	7.7
Feedback	44	5.0	15	3.6
Bioterrorism	35	4.0	15	3.6
Survey	34	3.9	11	2.7
Positive	30	3.4	6	1.5
Family Member Concerns	21	2.4	9	2.2
Other	126	14.3	28	6.8
Not Specified	24	2.7	24	5.6

(2) Examples of written comments falling under the general categories indicated in Table 40 are expanded in Table 41.

Table 41
General Categories of Complaints and Concerns

General Category	Identified Complaints and Concerns
Mental Health	Sleep and/or eating disorders, anxiety, stress
Environmental Health	Impact of exposure on health from smoke, lead, asbestos
Somatic	Breathing difficulty, headache, nausea
Building Safety	Emergency response and preparedness, security, lack of fire alarms
Administrative	Decision to return to work too soon, lack of sympathy, VA assistance
Feedback	Requests for survey results, information on other disaster victims
Bioterrorism	Information regarding anthrax, other chemical /biological agents
Survey	Complaints and suggestions to improve the web-based survey design
Positive	Commendation of response to attack, appreciation of reach out with survey
Family Member Concerns	Impact on family members and friends

(3) Of the 413 individuals who requested contact by a member of the healthcare team, 197 (47.7%) requests were generated from the web-based survey and 217 (52.3%) were from the paper-based survey. Demographics are indicated in **Table 42**. Additional outcomes of interest for these referrals are listed in **Table 43**.

Table 42
Demographics of Referrals
(N=413)

	Respondents	Percentage of the Respondents
Age:		
<35	75	18.2
>=35	337	81.8
Total	412	100.0
<i>Missing</i>	1	
Gender:		
Males	223	54.4
Females	187	45.6
Total	410	100.0
<i>Missing</i>	3	
Status:		
Active Duty	146	35.7
Civilian	263	64.3
Total	409	100.0
<i>Missing</i>	4	
Service:		
USA	138	33.7
USAF	91	23.2
USN	32	7.8
USMC	10	2.4
DoD	100	24.4
Other	38	9.3
Total	409	100.0
<i>Missing</i>	4	

Table 43
Outcomes Noted by Referrals
(N=413)

	Respondents	Percentage of the Respondents
Exposure:		
Yes	373	91.4
No	35	8.6
Total	408	100.0
Missing	5	
Worsened /New Health Problems:		
Yes	290	70.2
No	123	29.8
Total	413	100.0
Missing	0	
Injury:		
Yes	36	8.8
No	369	91.2
Total	408	100.0
Missing	5	
Mental Health High Risk Group:		
Yes	251	62.0
No	154	38.0
Total	405	100.0
Missing	8	

(4) Respondent's with new/worsened health problems and/or presence of mental health symptoms were significantly more likely to request contact/information. Requests also varied significantly between services (Table 44).

Table 44
Analysis of Demographics/Outcomes Noted by Referrals
(N=4751)

	Requests Made Crude OR (95% CI)	Requests Made Adjusted OR (95% CI)
Gender (F:M)	1.4 (1.2-1.7)*	1.0 (0.8-1.2)
Age (>35:<35)	1.0 (0.8-1.3)	1.0 (0.7-1.3)
Status (Civilian:Military)	1.5 (1.2-1.8)*	0.9 (0.7-1.2)
Service	NA (p<0.0001)*	NA (p<0.0001)*
Exposure (Y:N)	1.9 (1.3-2.7)*	1.3 (0.9-1.9)
Worsened/New Health Probs(Y:N)	2.7 (1.8-4.0)*	2.8 (3.0-4.9)*
Injury (Y:N)	2.8 (1.9-4.1)*	1.5 (1.0-2.2)
Mental health symptoms (Y:N)	2.8 (2.2-3.4)*	1.8 (1.4-2.3)*

(5) Throughout active collection of the survey, NARMC personnel and/or DiLorenzo Pentagon Health Clinic personnel screened daily for any positive answers ("Yes") or requests for information and/or contact entered into the comments section. The USACHPPM personnel would cross check this same question to ensure all Pentagon employees responding to the survey and requesting assistance were given appropriate opportunities for contact. At the close of the survey (15 January 2002), there were 7 survey responders who had requested information but were not reachable due to incorrect contact information.

(6) As previously noted, respondents reporting new/worsened health problems and/or mental health symptoms were significantly more likely to request contact/information. Approximately 14% of these respondents requested contact and/or information as compared to only 3% of respondents reporting no such symptoms (Table 45).

Table 45
Referrals
(N=4751)

Requests for Contact	New/Worsened Health Problems OR Mental Health Symptoms Screen Positive (N=2377)	New/Worsened Health Problems OR Mental Health Symptoms Screen Negative (N=2023)
Yes	343 (14.4%)	67 (3.3%)
No	2034 (85.6%)	1958 (96.7%)

4. Discussions and Lessons Learned.

a. In order to accomplish the development and deployment of a post disaster survey in a timely fashion, a multidisciplinary approach that brought together the efforts of two major Army Medical Commands (USACHPPM and NARMC) supplemented by personnel from all three services and their civilian counterparts was initiated. This effort was part of a multi-pronged preventive-based approach conducted by USACHPPM.

b. One of the most recognizable goals achieved by conducting the PPDHA survey was the extended outreach to the Pentagon employees at a time of national disaster. This population of Americans (Pentagon employees) was not only directly impacted by the terrorist attack but was also responsible in the ensuing weeks to expertly execute a war against terrorism.

c. Of the employees who participated in the survey, approximately 36% of the population indicated that they had old and/or new health problems or concerns that became worse since the attack. Most of the symptoms identified by those indicating new health problems were stress-related, followed by headaches, irritated eyes, nose, or throat. A large majority (95%) indicated that they did not sustain an injury as a result of the attack, which may be partially attributed to recent renovations at the Pentagon, survival bias, and voluntary nature of the survey. Leading causes of injury are not dramatically different from the leading causes of injury reported from similar incidents. Although the terrorist attack on the Pentagon on 11 September 2001 was unique, the blast from the plane and ensuing fire and smoke is similar to previously reported terror-related incidents.

d. The preponderance of behavioral health complaints found in the survey is consistent with prior experience and supports existing doctrine concerning the need to maintain adequate behavioral health resources within the military health care system to cope with future disasters and attacks. This finding should not, however, detract attention

from physical health problems that also have an impact on work performance and general well being. The affected population of Pentagon service members and civilian employees should be carefully followed over time and provided every opportunity to resolve their health issues, whatever the cause or manifestation. A more extensive discussion of the results from the mental health portion of the survey to include recommendations is provided in **Appendix J**.

e. The lessons learned in the rapid development, deployment, and analysis of the PPDHA survey were:

(1) Survey Development.

- The USACHPPM team solicited input from a variety of sources in this effort to include the U.S. Army Corps of Engineers, USUHS, WRAIR, and the Army Surgeon General's Mental Health Task Force among others. It was difficult at times to coordinate this multiple input.
Recommendation: There should be one designated subject matter expert (SME) representative from each specialty community providing input into the survey questions. It would be the responsibility of the SME to gain consensus on a particular question and then present that decision to the development team.
- The survey information from those previous works and other resources served as a basis for developing the instrument required for this attack. Using a previously developed instrument was not appropriate for this population, due to the number of affected individuals (up to 23,000), the variety of injuries and exposures, and the demographics of the affected population.
Recommendation: This survey can serve as a template in the event of another unfortunate incident in the future.
- Review and approval of the PPDHA survey required many agencies within the DoD, Health Affairs (HA), TMA, Services Medical Departments, and the Pentagon Building. Since the survey was targeted for all employees, both civilian and military agencies were involved.
Recommendation: Public Health surveys and interventions such as the PPDHA are not considered research by the CDC, National Institute for Occupational Safety and Health, and DoD. Even so, notification was given to the WRAMC Institutional Review Board (IRB), who agreed that IRB review was not warranted.
- While negotiating the necessary process of approval it was noted that there was no adequate Privacy Act Systems Notice to cover the various databases over which USACHPPM had purview (e.g., DMSS) and Defense Manpower Data Center.
Recommendation: Privacy Act Systems Notice approved for future use at USACHPPM has been accomplished and covers all databases, registries, and analogous surveys under the purview of USACHPPM.

- The short suspense to deploy the survey did not allow adequate time to field-test the instrument except locally at USACHPPM on a small scale. As such there were differences in the final structure of the web-based survey versus the paper-based survey that presented problems in the data merge for the analysis portion of the operation, and flaws in survey design/wording were overlooked.

Recommendation: Using this survey instrument as a template, recommend more field-testing prior to deployment and a complete match of questions between the web-based and any paper-based survey. This match will greatly assist in analysis.

(2) Survey Deployment.

- There were several issues and difficulties with the web-based survey that were due to a combination of unforeseen incompatibilities with the networks and browsers in the Pentagon and utilizing a civilian contracted software application that wasn't specifically designed for a PPDHA-like survey. There is no uniformity of informatics within the Pentagon. Standardization of systems in the building is virtually nonexistent. The lack of a proper operating system to support the survey in the on-line version led to a fair degree of frustration among respondents and most likely decreased the number of potential participants.

Recommendation: There is no immediate solution to the diversity of systems in the Pentagon. Consideration should be given to utilizing the simplest form of survey instrument if web-based to ensure optimum success when deployed across systems. A fluid system of feedback is imperative to address problems on a daily basis. Any field-testing and redesign of the survey prior to deployment would most likely enhance response.

- TriService participation was solicited in this effort with the support of all three service Surgeons General; however, the deployment teams were decidedly Army and Air Force with minimal Navy participation.

Recommendation: The approach of early briefing to all three Service Surgeon Generals is the best course of action. Disproportionate participation by any one service may inhibit response by that service population, which is particularly important in a voluntary survey.

- This was a voluntary survey and as such respondents were not contacted about results unless they specifically requested to be contacted. There were discrepancies identified in follow-up care for respondents who indicated that they wanted healthcare team contact but were not initially tracked by the healthcare team members. This deficiency was corrected by establishing a system whereby both NARMC and USACHPPM reviewed requests for contact.

Recommendation: As was done in this survey, establish a crosscheck system to ensure all respondents requesting contact from the health care team are contacted.

- Some Pentagon personnel reported that the survey was of little significance to them during a time in which they were occupied with preparing to prosecute a war

against new enemies. The USACHPPM and NARMC teams at the Pentagon took great pains to inform and remind the employees and service members at the Pentagon that participation in the survey was voluntary. Widely available publications (Pentagram, Stripe, Building Circular) and email (distributed through 29 systems administrators) were used to disseminate information, reminders, and updates on the survey. Two email boxes were set up for questions and inquiries about the survey. The lead officer on the project answered all such inquiries personally and within one day of receipt.

Recommendation: As was done in this survey, marketing and constant communication and contact with potential respondents was the best approach.

(3) Survey Analysis.

- The survey design incorporated branching questions that directed respondents to other questions accordingly, with each subsection or branch containing several follow-up questions. Analysis across these sections uncovered numerous conflicting responses, which greatly complicated analysis.

Recommendation: Using this survey as a template, incorporate more pilot testing in order to clarify survey design and wording of questions to ensure that respondents understand what is being asked.

- Because the web-based survey tool was not ideal for use with the PPDHA, it was not only unwieldy/frustrating for Pentagon participants, but was also not designed for efficient data export. Both USACHPPM's Information Management Division (IMD) staff and epidemiologists had to perform extensive programming to produce a data file that was suitable for analysis.

Recommendation: Further consideration should be given to data extraction when utilizing web applications. Preference should be given to packages that efficiently transfer data in a useful format.

- Since the web-based questions were not matched with questions on the paper-based survey, analysis by importing numerous fields into statistical programs was complicated.

Recommendation: To enhance analysis both the web-based and paper-based survey instruments should be identical.

- The daily report on the number of Pentagon employees contacted and number of web-based surveys completed was provided to the entire team and the USACHPPM Commander, and was an excellent tool to track deployment progress.

Recommendation: Recommend establishing a daily tracking system as was done in this survey.

5. Conclusion.

The data collected as a result of the PPDHA survey will continue to be analyzed and reported in future technical reports. Additional reports will control for conflicting responses and integrate data with GIS software to more accurately quantify distance of respondents from the actual impact site. The PPDHA is a graphic and tangible illustration of teamwork, ingenuity, perseverance, and dedication. It is a classic example of a multidisciplinary effort that extended across major command and service lines as noted in **Appendix K**. It, along with the Special Medical Augmentation Response Team-Preventive Medicine (SMART-PM) team environmental assessment, is a capstone example of the work of the USACHPPM and NARMC, and was part of the multi-pronged response by the organizations to the attacks of 11 September 2001.



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A handwritten signature in black ink, appearing to read "R. Erickson", written in a cursive style.

for

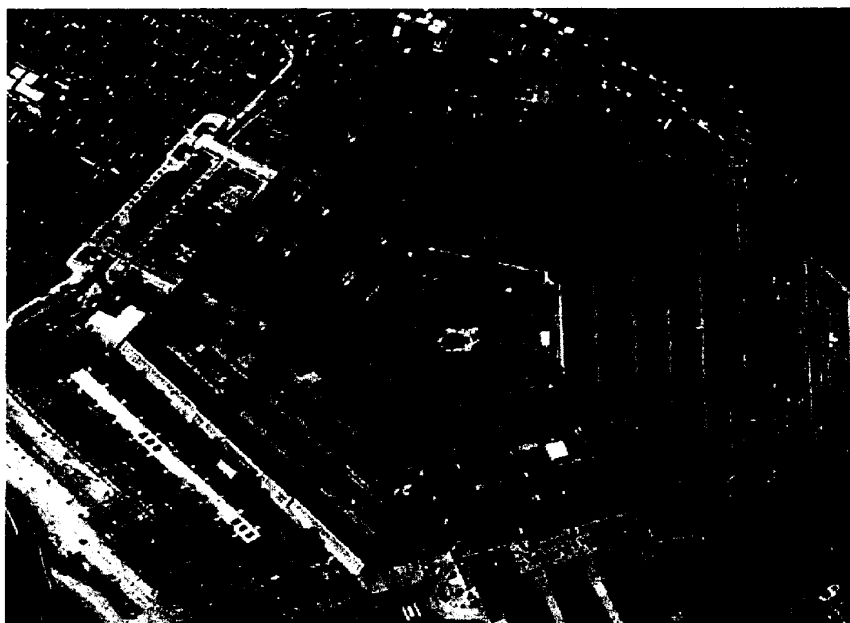
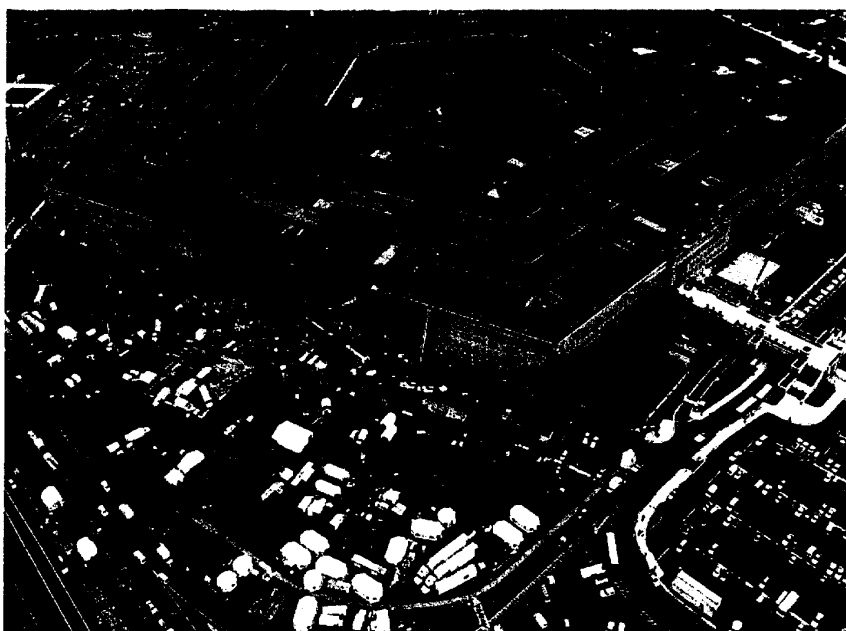
RALPH L. ERICKSON
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APPENDIX A
PENTAGON PICTURES

APPENDIX B

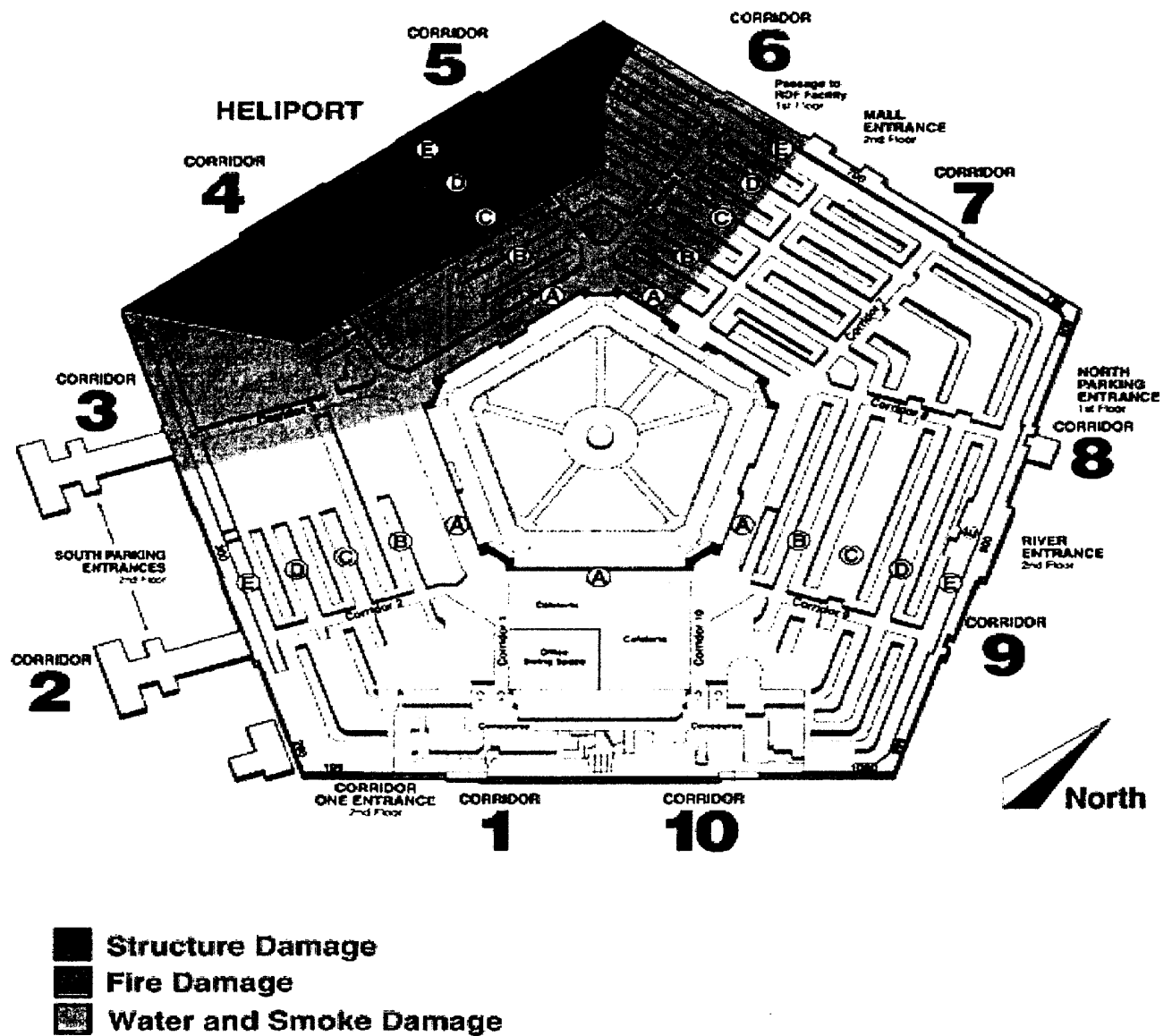
**REAL ESTATE AND FACILITIES INITIAL
DAMAGE ASSESSMENT**

Appendix A Pentagon Pictures



Appendix B

Real Estate and Facilities Initial Damage Assessment



Sep 14, 2001 1300

APPENDIX C
USACHPPM PPDHA TEAM

Appendix C
USACHPPM PPDHA Team

Team Leader

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APPENDIX D
PPDHA SURVEY

Appendix D PPDHA Survey



ADMINISTRATION
& MANAGEMENT

OFFICE OF THE SECRETARY OF DEFENSE
1980 DEFENSE PENTAGON
WASHINGTON, DC 20301-1820



4 October 2001

SUBJECT: Pentagon Post Disaster Health Assessment Survey

Each of you was affected by the attacks of 11 September. Each of you has a story to tell about the events of that day. We are interested in learning what happened to you to make sure that you get the help you may need.

If you believe that this attack has worsened any existing health condition or created new ones, you should contact your own health care provider to discuss your concerns. You can also obtain additional health references and information at the web site listed below. However, if you need immediate assistance or would like to speak to someone right away, please call the Pentagon Health Clinic at (703) 692-8810.

Next, please complete the attached survey. This is an initial attempt to learn how you were affected by this attack, to assist you in getting the help you may need, and to document your experience for the future. Your responses will help suggest what may have protected you from injury or what may have increased your risk. Information you may recall from the attack could also help save lives and prevent injuries in future attacks of this kind.

Based on the answers you provide to the survey questions, you may automatically receive more detailed health information. There may also be further questionnaires circulated to measure the full impact of this attack on Pentagon personnel.

This survey can be completed in about 15 minutes in one of two ways: 1) electronically at <https://medreg.amedd.army.mil/survey>; 2) or on paper, by completing the paper questionnaire with pencil or pen and returning it in the enclosed business reply envelope.

It will take several months to gather and analyze all the survey responses. Once that's completed, a copy of the final results will be sent to each of you.

To ensure privacy, all the information collected through the Internet questionnaire option will be done using encryption. All of the information collected from both paper and electronic forms will be maintained in a secure area and system at the U.S. Army Center for Health Promotion and Preventive Medicine, which meet all Defense Manpower Data Center data security requirements.

Thank you in advance for your cooperation.

D. O. Cooke

D. O. Cooke
Director

Attachment



Pentagon Post Disaster Health Assessment

Please complete the questionnaire as accurately as possible.
DO NOT LEAVE ANY QUESTIONS BLANK. Thank you for your assistance.

For optimum accuracy, please print in capital letters and avoid contact with the edge of the box.

The following will serve as an example:

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Example of numbers

1	2	3	4	5	6	7	8	9	0
---	---	---	---	---	---	---	---	---	---

Shade Circles Like This--> ●

Not Like This--> ⊗ ⊕

PRIVACY ACT STATEMENT – Pentagon Post Disaster Health Assessment

AUTHORITY: 5 U.S.C. 301; and Executive Order 9397

PRINCIPAL PURPOSE: The Pentagon Post Disaster Health Assessment is being conducted to determine the nature and extent of injuries sustained by employees and personnel in the September 11th attack on the Pentagon.

ROUTINE USES: None

DISCLOSURE: Voluntary. Failure to respond will not result in any penalty. However, maximum participation is encouraged so that data will be complete and representative. Your survey questionnaire will be treated as confidential. Any identifiable information will be used only by persons engaged in the survey.

All survey information will be retained by United States Army Center for Health Promotion and Preventive Medicine, and only a record of completion will be included in your military or occupational health record.

I HAVE READ THE ABOVE AND UNDERSTAND THE INFORMATION.

Signature

PRIVACY ACT STATEMENT

		/			/		
--	--	---	--	--	---	--	--

Today's date (MM/DD/YY)

D-4

7. What is your SSN?

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 -

--	--

 -

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8. What was your job title on the day of the Pentagon terrorist attack?

[illegible]

9. What is your current mailing address?

House # and Street OR PO Box #

[illegible]

City

[illegible]

State

--	--

Zip Code

--	--	--	--	--

10. What is your current email address?

[illegible]

11. What is your current office phone number?

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SECTION B *This section helps us to briefly understand your overall health before the attack, what you might have noticed in the air after the attack, and where you normally receive your health care.*

QUESTIONS 12-14

12. In the 12 months before the attack, how would you describe your overall health? (Select only one)

- ☐ Excellent
☐ Very Good
☐ Good
☐ Fair
☐ Poor

13. Did you breathe any of the following in the Pentagon on the day of the attack or any day since? (Select all that apply)

- ☐ Smoke ☐ Dust ☐ Strong Odors ☐ Nothing unusual

13.1 If you breathed smoke, what is your best estimate of how thick it was? (Select only one)

- Light (see smoke, but doesn't impact vision)
- Medium (considerable smoke, but can make out images)
- Heavy (can't see or identify any objects)

13.2. How long did you breathe the smoke?

--	--	--

Minutes

14. Where do you usually get your health care? (Select all that apply)

- ☐ Walter Reed Army Medical Center (WRAMC)
- ☐ National Naval Medical Center (Bethesda)
- ☐ Malcolm Grove Air Force Medical Center (Andrews AFB)
- ☐ Kimbrough Army Health Clinic (Ft Meade)
- ☐ Dewitt Army Hospital (Ft Belvoir)
- ☐ Rader Army Health Clinic (Ft Meyer)
- ☐ DiLorenzo TriCare Health Clinic (Pentagon)
- ☐ DiLorenzo Civilian Health Clinic (Pentagon)
- ☐ Pentagon Flight Medicine Clinic
- ☐ Bolling Air Force Base Clinic
- ☐ Personal civilian medical provider

- ☐ Other military treatment facility
- ☐ Other civilian treatment facility

SECTION C *This section helps us to understand when you returned to the Pentagon and your GENERAL location at the time of the attack.*

QUESTIONS 15-16

15. Have you returned to the Pentagon for work or work visits since the attack?

(Select only one - Yes or No)

- ☐ Yes MM/DD/YYYY

 -

 -

 Examples: 9/18/2001 or 10/25/2001
- ☐ No

16. Where were you at the time of the attack? (Select only one)

- ☐ I was not at the Pentagon (GO TO QUESTION 23)
- ☐ I was inside the Pentagon building, in an office/bay (CONTINUE WITH QUESTION 17)
- ☐ I was inside the Pentagon building, but NOT in an office/bay (GO TO QUESTION 18)
- ☐ I was outside the building, between the Pentagon Rings (GO TO QUESTION 21)
- ☐ I was outside the building, in the Pentagon Center Courtyard area (GO TO QUESTION 22)
- ☐ I was outside the entire Pentagon building or near the parking lots (GO TO QUESTION 22)

SECTION D *This section helps us to understand your SPECIFIC location at the time of the attack and whether you have now or have had any recent health problems or concerns.*

QUESTIONS 17-24

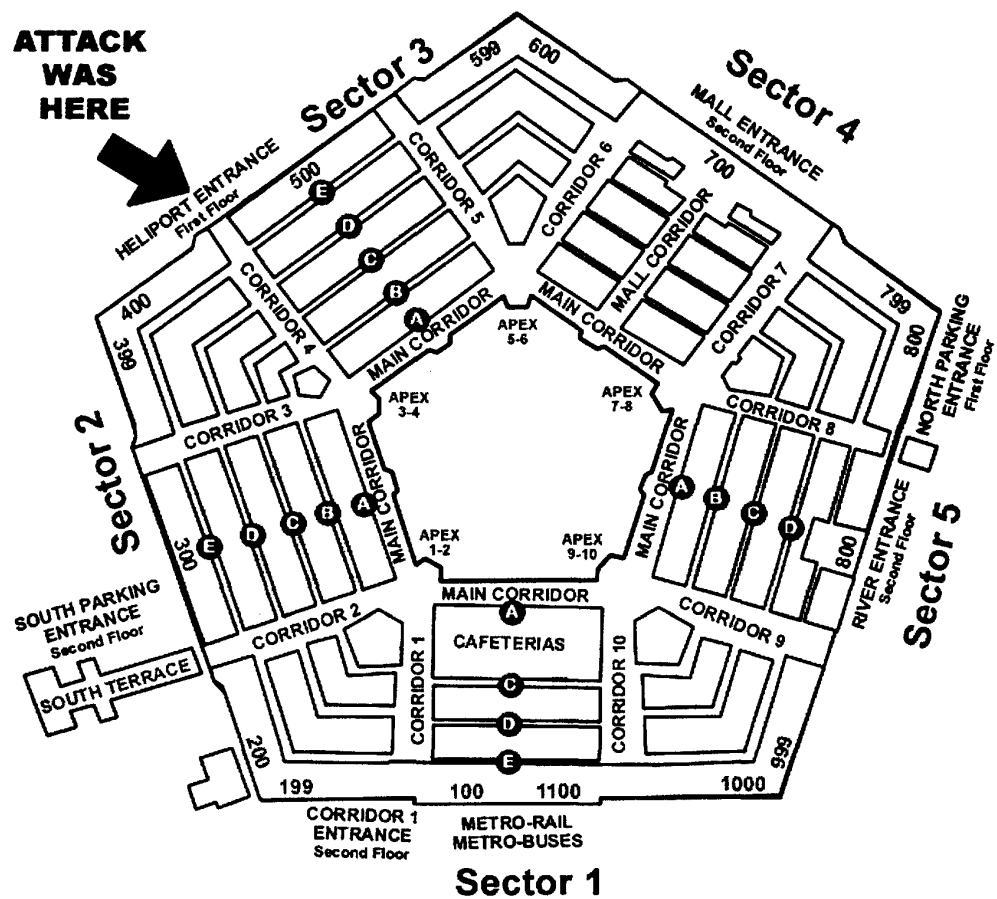
ANSWER QUESTION 17 IF YOU WERE IN AN OFFICE OR BAY OF THE PENTAGON AT THE TIME OF THE ATTACK. A MAP OF THE PENTAGON IS ATTACHED FOR YOUR REFERENCE.

17. Do you know the room or bay # where you were at the time of the attack?

- ☐ Yes

 If you answered "YES", please GO TO QUESTION 23.
Examples: 3B345A or MC100

- ☐ No If you answered "NO", please ANSWER QUESTIONS 18-20 & 22 to the best of your ability.



ANSWER QUESTIONS 18-20, IF YOU WERE INSIDE THE PENTAGON, BUT NOT IN AN OFFICE OR BAY AT THE TIME OF THE ATTACK. A MAP OF THE PENTAGON IS ATTACHED FOR YOUR REFERENCE.

18. What FLOOR were you *on or nearest to* at the time of the attack? (Select only one)

- ☐ Basement Floor ☐ 5th Floor
☐ Mezzanine Floor ☐ Between floors on an elevator
☐ 1st Floor ☐ Between floors in a stairwell
☐ 2nd Floor ☐ On top of the Pentagon building
☐ 3rd Floor ☐ Don't know or don't remember
☐ 4th Floor ☐ Other

[illegible]

19. What CORRIDOR were you *in or nearest to* at the time of the attack? (Select only one)

- ☐ Main Corridor (Same as Ring A) ☐ Corridor 7
☐ Corridor 1 ☐ Corridor 8
☐ Corridor 2 ☐ Corridor 9
☐ Corridor 3 ☐ Corridor 10
☐ Corridor 4 ☐ Mall Corridor
☐ Corridor 5 ☐ Don't know or don't remember
☐ Corridor 6

20. What RING were you *on or nearest to* at the time of the attack? (Select only one)

- ☐ Ring A ☐ Ring E (Floors 1-5 & Mezzanine Only)
☐ Ring B ☐ Ring F (Basement Only)
☐ Ring C ☐ Ring G (Basement Only)
☐ Ring D ☐ Don't know or don't remember

ANSWER QUESTION 21, IF YOU WERE OUTSIDE THE PENTAGON AND BETWEEN THE PENTAGON RINGS AT THE TIME OF THE ATTACK

21. What RINGS were you *between* at the time of the attack? (Select only one)

- ☐ I was between Rings A and B
- ☐ I was between Rings B and C
- ☐ I was between Rings C and D
- ☐ I was between Rings D and E
- ☐ Don't know or don't remember

ANSWER QUESTION 22, IF YOU WERE AT THE PENTAGON, (INSIDE OR OUTSIDE) AT THE TIME OF THE ATTACK

22. What SECTOR were you *in or nearest to* at the time of the attack? (Select only one)

- ☐ Sector 1 (with Corridors 1 and 10; metro-rail/metro bus stop)
- ☐ Sector 2 (with Corridors 2 and 3, and south parking entrance)
- ☐ Sector 3 (with Corridors 4 and 5, and heliport entrance)
- ☐ Sector 4 (with Corridors 6 and 7, mall corridor)
- ☐ Sector 5 (with Corridors 8 and 9, and river entrance)
- ☐ Don't know or don't remember

EVERYONE, PLEASE ANSWER QUESTIONS 23 & 24, AND PROCEED FROM THERE.

23. Do you HAVE any OLD health problems or health concerns that have gotten worse since the attack? (Select only one - Yes or No)

- ☐ Yes
- ☐ No

24. Do you NOW HAVE, or at any time since the attack HAVE YOU HAD, a NEW health problem(s) or health concern(s)? (Select only one - Yes or No)

- ☐ Yes
- ☐ No

If you answered YES to EITHER Question 23 or 24, AND you were AT OR NEAR THE PENTAGON at the time of the attack, please answer ALL remaining questions.

If you answered YES to EITHER Question 23 or 24, AND you were NOT AT THE PENTAGON at the time of the attack, please GO TO QUESTION 37.

If you answered NO to BOTH Question 23 or 24, AND you were AT OR NEAR THE PENTAGON at the time of the attack, please answer ALL remaining questions EXCEPT those in Section F (Questions 37 through 43).

If you answered NO to EITHER Question 23 or 24, AND you were NOT AT THE PENTAGON at the time of the attack, please GO TO QUESTION 44.

29. How close were you to the sections of the building that collapsed? (Select only one)

- ☐ In the collapse
- ☐ 5-9 feet
- ☐ 10-24 feet
- ☐ 25-49 feet
- ☐ 50-99 feet
- ☐ more than 100 feet
- ☐ Don't know or don't remember

**30. What do you remember experiencing at the moment the plane crashed into the Pentagon?
(Select all that apply)**

- ☐ A sense of pressure in the room
- ☐ A flash of light
- ☐ It became very dark
- ☐ A loud noise
- ☐ A slight noise or dull thud
- ☐ Vibrations
- ☐ Being thrown or pulled through space
- ☐ I didn't notice anything unusual
- ☐ Don't remember
- ☐ Did not know there was an attack until I was told by others

☐ Other

31. Were you injured during the initial crash, blast, or fire? (Select only one - Yes or No)

- ☐ No
- ☐ Yes, and my injuries were caused by: (select all that apply)
- ☐ A blast explosion
- ☐ Fire
- ☐ Flying debris (things flying through the air)
- ☐ Shattered glass
- ☐ Being thrown and injured on impact
- ☐ Don't know or don't remember
- ☐ Other _____

[illegible]

32. Immediately after the attack, were you trapped or unable to reach the outside at any time?

- ☐ No
- ☐ Yes, I was trapped for

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 minutes (your best estimate)

I was trapped because of: (Select all that apply)

- ☐ Furniture ☐ Smoke
☐ A wall ☐ Debris
☐ A door ☐ Other
☐ Fire

33. After the attack, about how long did it take you to leave the building?

minutes (your best estimate)

34. Were you injured while *evacuating* the building after the attack? (Select only one - Yes or No)

- ☐ No
- ☐ Yes, and the ways that I was injured may have included: (select all that apply)
- ☐ I tripped over debris or furniture
 - ☐ I got caught in the collapsing building
 - ☐ I fell
 - ☐ I got cut on glass or structural debris
 - ☐ Other

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35. Did any of the following objects cause or make your injury worse? (Select all that apply)

- | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <input type="radio"/> I was not injured | <input type="radio"/> Glass within 1 ft of my body | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Furniture | <input type="radio"/> Glass within 1 to 3 ft of my body | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Computer equipment | <input type="radio"/> Glass within 3 to 10 ft of my body | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Wall hangings | <input type="radio"/> Glass within 10 to 20 ft of my body | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Cubicle walls | <input type="radio"/> Glass within 20 to 100 ft of my body | | | | | | | | | | | | | | | | | | | | |
| | <input type="radio"/> Don't know or don't remember | | | | | | | | | | | | | | | | | | | | |
| | <input type="radio"/> Other <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | | | |
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36. Did any of the following objects protect you from injury? (Select all that apply)

- | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <input type="radio"/> I was not injured | <input type="radio"/> Doorways | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Furniture | <input type="radio"/> Long sleeved clothing | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Computer equipment | <input type="radio"/> Don't know or don't remember | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Wall hangings | <input type="radio"/> None | | | | | | | | | | | | | | | | | | | | |
| <input type="radio"/> Cubicle walls | <input type="radio"/> Other <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

SECTION F *If you have a NEW health problem(s) beginning after the attack, these questions help us understand what those problems are.*

QUESTIONS 37-43

37. What were you doing when you first noted your NEW health problem(s)? (Select only one)

- ☐ Normal business activities
- ☐ Escaping
- ☐ Assisting others
- ☐ Calling for help
- ☐ Returning back to the building
- ☐ Don't know or don't remember
- ☐ Other

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38. When did your NEW health problem(s) begin?

MM/ DD/YY

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 Examples: 9/18/2001 or 10/25/2001

39. What NEW health problem(s) have you noted? (Select all that apply)

- ☐ Injuries
- ☐ Burns
- ☐ Breathing problems
- ☐ Cough
- ☐ Headache
- ☐ Irritated eyes, nose, or throat
- ☐ Hearing problems
- ☐ Stress-related
- ☐ Other

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[illegible]

40. If you were injured, what kind(s) of injury did you have? (Select all that apply)

- ☐ I have no new injuries
☐ Bruise
☐ Abrasion
☐ Burn
☐ Cut or laceration
☐ Broken bone
☐ Concussion or head injury
☐ Hearing problem
☐ Vision problem
☐ Other

[illegible]

41. If you were injured, what part(s) of your body was injured? (Select all that apply)

- ☐ I was not injured ☐ Right leg
☐ Head ☐ Left foot
☐ Neck ☐ Right foot
☐ Chest ☐ Left arm
☐ Back ☐ Right arm
☐ Stomach ☐ Left hand
☐ Buttocks ☐ Right hand
☐ Left leg ☐ Other

[illegible]

42. Did you receive medical care for the NEW health problem(s) you noted above?

(Select only one - Yes or No)

☐ No

☐ Yes, I received my care at: (select all that apply)

- ☐ Walter Reed Army Medical Center (WRAMC)
- ☐ National Naval Medical Center (Bethesda)
- ☐ Malcolm Grove Air Force Medical Center (Andrews AFB)
- ☐ Kimbrough Army Health Clinic (Ft Meade)
- ☐ Dewitt Army Hospital (Ft Belvoir)
- ☐ Rader Army Health Clinic (Ft. Meyer)
- ☐ DiLorenzo TriCare Health Clinic (Pentagon)
- ☐ DiLorenzo Civilian Health Clinic (Pentagon)
- ☐ Pentagon Flight Medicine Clinic
- ☐ Bolling Air Force Base Clinic
- ☐ Pentagon Triage Area
- ☐ Personal civilian medical provider
- ☐ Self-care

☐ Other military treatment facility

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☐ Other civilian treatment facility

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☐ Other

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43. Which of the following NEW health problems, do you still have today? (Select all that apply)

- ☐ Injuries
- ☐ Burns
- ☐ Breathing problems
- ☐ Irritated eyes, nose, or throat
- ☐ Hearing problems
- ☐ Other

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SECTION G *This section helps us to understand the emotions that you have noted since the attack.*

QUESTIONS 44-60 -- Select one response for each question.

44. DURING the attack and immediately afterward, did your sense of time change - did things seem to be happening in slow motion?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

45. Since the attack, how often have you been bothered by any of the following problems? (Please mark one answer for each statement below)

Feeling nervous, anxious, on edge, or worrying a lot about different things

☐ Not at all ☐ Several Days ☐ More than half the days ☐ Nearly every day

Little interest or pleasure in doing things

☐ Not at all ☐ Several Days ☐ More than half the days ☐ Nearly every day

Feeling down, depressed, or hopeless

☐ Not at all ☐ Several Days ☐ More than half the days ☐ Nearly every day

46. Since the attack (not counting the attack itself), have you experienced any sudden feelings of panic or fear (sometimes called a panic attack)?

☐ Yes ☐ No

47. Since the attack, have you been feeling emotionally numb or unable to have loving feelings for those close to you?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

48. Since the attack, have you had repeated, disturbing memories or dreams?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

49. Since the attack, have you avoided thinking about it or having feelings about the disaster?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

50. Since the attack, have you been feeling jumpy or easily startled?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

51. Since the attack, how much did personal or emotional problems keep you from doing your usual work, studies, or other daily activities?

☐ Not at all ☐ Very little ☐ Somewhat ☐ Quite a lot ☐ Could not do daily activities

52. How many close friends or relatives do you have (people you feel at ease with and can talk to about what is on your mind)?

☐ None ☐ One or Two ☐ Several ☐ Many

53. How many times since the attack have you visited a psychiatrist, psychologist, social worker, chaplain, or other mental health care provider?

☐ Not at all ☐ Once ☐ Two or Three ☐ More Than Three

54. Since the attack, have you used alcohol more than you meant to?

☐ Yes ☐ No ☐ Don't drink

55. Since the attack, have you felt the need to cut down on your drinking?

☐ Yes ☐ No ☐ Don't Drink

56. Did you ever have mental health treatment BEFORE the attack (treatment by a psychiatrist, psychologist, social worker, or other mental health care provider)?

☐ Never ☐ Yes, Within Past Year ☐ Yes, 1-5 Years ago ☐ Yes, Over 5 Years Ago

57. BEFORE the attack did you EVER have a terrible experience that caused you to fear you would be injured or killed?

☐ No ☐ Yes, only as a child ☐ Yes, only as adult ☐ Yes, BOTH as a child & adult

58. Do you currently feel safe in your workplace?

☐ Not at all ☐ A Little Bit ☐ Moderately ☐ Quite a Bit ☐ Extremely

APPENDIX E

REFERENCES

Appendix E

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APPENDIX F

**DEVELOPMENT OF MENTAL HEALTH SECTION
OF PPDHA QUESTIONNAIRE**

Appendix F

Development of Mental Health Section of PPDHA Questionnaire

1. This appendix describes the mental health section of the PPDHA, developed through consultation between WRAIR (LTC Hoge), Deployment Health Clinical Center (LTC Engel), USUHS (Dr. Ursano), and the specialty consultants to the Army Surgeon General from psychiatry (COL Orman), clinical psychology (COL Crandell), and social work (COL Patterson). The questions about mental health focused on four main symptom domains, as well as key risk/ protective factors considered to be most important following a terrorist attack (e.g., loss of friend or co-worker, prior mental health care use, prior trauma, and social support). The symptom domains were: acute and posttraumatic stress symptoms, depression, anxiety/panic attacks, and alcohol abuse, as well as an overall measure of mental health functioning (1).

2. A number of standardized assessment instruments exist for the mental health domains of interest. Unfortunately, the need for rapid data on the health impact of a terrorist incident is somewhat at odds with conducting systematic studies of the psychiatric burden related to these events. Most mental health surveys tend to be lengthy, and have generally not been standardized in populations following terrorist attacks or in military populations. The 17 questions selected for the PPDHA survey were the best attempt to cover elements from all of the important mental health domains for this rapid public health assessment. Since a short, standardized mental health instrument that assessed all the domains of interest did not exist, it was decided to choose single questions and subsets of questions from existing surveys and/or stem questions from the Diagnostic and Statistical Manual of Mental Disorders (2) for each of the mental health outcomes of interest. The items were drawn mostly from standardized instruments widely used in primary care settings, modified to fit the current situation. This included changing the time frame of reference to the time since the September 11, 2001 attack.

3. Specifics About Each Question.

a. The following briefly describes the rationale supporting the use of each of the mental health questions on the PPDHA (**Appendix D, Section G, Questions 44-60**):

(1) Question 44 has to do with a common dissociative experience that many people describe at the time of traumatic events that has been shown to be predictive of PTSD. The question was drawn from the Peritraumatic Dissociative Experiences Questionnaire (3).

(2) Question 45 includes stem items for the DSM-IV diagnoses of generalized anxiety (question 45a) and major depression (questions 45b and 45c) derived from the Patient Health Questionnaire (PHQ), which is a self-administered version of the Primary Care Evaluation for Mental Disorders scale (PRIME-MD) (4). The two stem questions for depression have been shown to have high sensitivity and specificity for screening for major depression when compared with subsequent structured interview or clinician evaluation (5, 6).

(3) Question 46 is the stem item for the DSM-IV panic disorder diagnosis derived from the PHQ (4).

(4) Questions 47-50 cover the three key domains from DSM-IV of acute stress reaction and PTSD, including re-experiencing the trauma (question 48), emotional numbing and avoidance (questions 47 and 49), and physiological hyperarousal (question 50). These are derived from the PTSD checklist from the National Center for PTSD (7). Out of these three domains, questions about emotional numbing and avoidance in particular have been shown to be strongly predictive of PTSD among survivors of the Oklahoma City bombing (8).

(5) Question 51 is a general measure of mental health functioning, which is a standard component of the Short Form health questionnaires (SF8, SF12, and SF36), widely used in primary care and general population assessments (9).

(6) Question 52 is a question about social support, an important buffer to the impact of traumatic events (10).

(7) Question 53 is one that we designed pertaining to mental health service utilization since the disaster, important for planning the health care response.

(8) Questions 54 and 55 pertain to the use of alcohol since the attack, from the Two-Item Conjoint Screening test developed for screening in primary care settings (11). These two questions have been shown to have approximately an 80% sensitivity and specificity when compared with structured diagnostic instruments for alcohol abuse or dependence (12).

(9) Question 56 is one that we designed pertaining to prior mental health service utilization, an important risk factor for mental health problems following trauma.

(10) Question 57 is a single question related to prior trauma used in place of a trauma checklist (11). Prior trauma is a significant risk factor for PTSD following subsequent trauma.

(11) Question 58 is one that we designed related to current feeling of safety in the workplace. It was included due to recognition that this was a major concern for many employees immediately after the attack.

(12) Questions 59 and 60 were key exposure questions, considered to be potentially as important as physical location in the building at the time of the attack.

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APPENDIX G
DHPW - AFTER ACTION REPORT

Appendix G

DHPW - AFTER ACTION REPORT

Operation Noble Eagle
Pentagon Post Disaster Health Assessment
U. S. Army Center for Health Promotion & Preventive Medicine
Directorate of Health Promotion & Wellness
22 October 2001

BACKGROUND INFORMATION:

Personnel involved: CH (LTC) Gregory Black, MAJ(P) Sharon Reese, MAJ Anthony Cox, CPT Dennis Palalay (CHPPM-North), and Ms. Judith Harris.

Dates involved: 9/24/01 10/18/01

In response to the September 11th terrorist attack on the Pentagon, a DHPW team was tasked to participate in Operation Noble Eagle. This participation was part of the NARMC mission to initiate a complete, concise execution of a survey process in overseeing the registry of injuries, illnesses and exposures resulting from the attack. The DHPW team received the following taskings:

- 1) Provide educational couplers for health assessment questions.
- 2) Develop a Train the Trainer program for survey team personnel.
- 3) Develop a cover letter for web and Teleform surveys.
- 4) Design a Health Care Provider (HCP) education packet for distribution to local military HCPs.

The DHPW team provided the Train The Trainer class on 11 and 12 October. A total of 29 people participated in the training. There were 16 Army, 11 Air Force and 2 Navy in attendance. One soldier was recalled to her home station for personnel reasons. The group received 7.5 hours of training on the 11th and 4.5 hours on the 12th. The group met at WRAMC the first day due to a Memorial Service at the Pentagon, but spent the 12th at the Pentagon for continued training and a Pentagon tour. The afternoon of the 12th was spent with the group leaders doing coordination and sub planning for their particular areas of responsibility. The POI included didactic instruction, taking the assessment, small group work and role-play (See POI included). Participants were provided with copies of informational letters, frequently asked questions, maps of the Pentagon and external sites locations, tracking sheets for contacts, an excel spreadsheet for daily numbers and statistical roll-up, and a referral list of specialists for questions they could not answer.

PRE-DEPLOYMENT:

The DHPW team reviewed the health assessment instrument to determine appropriate couplers for assessment questions. During that process in addition to providing question couplers, the team made numerous suggestions for revision of mental health questions included in the survey. The DHPW team members spent numerous hours coordinating with mental health professionals to gain approval by the mental health community for that section of the assessment. Those suggestions were incorporated into the instrument. RECOMMENDATION: Include a representative from the mental health community as part of the development team right from the beginning of the survey design.

While reviewing the instrument, the DHPW team raised a concern regarding the confidentiality statement of the assessment and the plan to include assessment results in the medical records of participants. After deliberation, the confidentiality statement was revised and it was determined that only an SF 600 stating that the individual had taken the assessment would be placed in the medical record.

RECOMMENDATION: Information in a health assessment is sensitive and could potentially cause prospective participants to decline to take part if it was felt that information such as alcohol use and mental health issues would be available for others to see. This would eliminate an important population in the survey process. Care must be taken to reassure participants that this information will remain confidential.

Due to difficulty with the web-based health assessment tool the DHPW team was unable to review the automated version prior to deployment. The web-based assessment was not available until after the train the trainer class was completed on Friday the 12th.

RECOMMENDATION: All portions of the health assessment tool should be completed in time to allow the trainer team to prepare, in order to provide complete instruction to students.

DEPLOYMENT:

ISSUE: The DHPW team arrived at the DiLorenzo Health Clinic on 10 October to evaluate the area and prepare for training. The team identified the following needs during that evaluation:

1. A larger office area was needed as a base of operations than that originally offered. In particular, the surveyors would need access to a computer, a phone, and have an area to hold small group leader meetings.
2. A list of locations of displaced employees from the Pentagon was needed in order to ease the inclusion of those individuals in the assessment process.
3. Arrangements for tours were needed.

The team obtained maps of the Pentagon area and of several external sites and discussed space needs with Col. Young.

RECOMMENDATION: Make arrangements for all logistical needs as early as possible to make sure issues are met and can be briefed during training.

ISSUE: While preparing the classroom for instruction it was discovered that the power cord was not included with the Audio Visual equipment and the PowerPoint Presentation disc was not the complete presentation. Audio-visual equipment was obtained through “connections” and the correct version of the presentation was downloaded from the Internet.

RECOMMENDATION: Conduct a pre-deployment checklist for equipment and teaching needs.

ISSUE: The DHPW team observed several problems regarding the web-based assessment when they did a walk about the Pentagon and asked some Pentagon staff to complete the assessment. The DHPW staff made several recommendations for correction of the assessment to make it easier for participants to complete.

RECOMMENDATIONS: Complete all tools prior to time for training and test those tools to ensure that the system works smoothly and is easy for customer use.

Trainees did not have a clear understanding of the purpose of the mission and initially had concerns regarding the purpose of the assessment. As a rule of thumb, personnel should know the mission at least two commands up. In the OPLAN brief the commander’s intent states the “why” of conducting the PPDHA and the mission brief will state the who, what, when and where. By briefing this part, it would help overcome the initial objections we encountered with the trainees.

RECOMMENDATION: Brief the Mission/OPLAN to trainees prior to attending the classroom instruction.

REDEPLOYMENT/RECOVERY:

A list of DHPW Pentagon Disaster Response Products and the POI are included with this AAR.

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APPENDIX H
NARMC - AFTER ACTION REPORT

Appendix H

NARMC - AFTER ACTION REPORT

Operation NOBLE EAGLE
OPLAN 1-03 (Pentagon Post Disaster Health Assessment)
North Atlantic Regional Medical Command
21 November 2001

BACKGROUND INFORMATION:

In response to the September 11th terrorist attack on the Pentagon, there was a need to understand and document the extent of injuries and illnesses sustained by persons at the Pentagon. Approval for the US Army to conduct a survey in the Pentagon came from Dr. Chu, Under Secretary of Defense for Personnel and Readiness. Subsequently, the NARMC, at WRAMC, Washington, DC, was tasked to execute the PPDHA developed by the USACHPPM. The objectives of the survey were to:

1. To assist medical assets in providing optimum early care.
2. To understand and document the extent of injuries and illnesses.
3. To use collected data to prevent complications of possible exposures to heat, noise, pressure, physical and psychological trauma.
4. To provide civil, structural, and human factors engineers with data that will enable more survivable building sites.

The primary method for data collection was a web-based version of the survey constructed by the contractor PKC. Also, paper copies were made available to individuals without access to the Internet or a military email address. On 15 October 2001, a tri-service team of thirty personnel deployed to the Pentagon for thirty days to conduct a marketing campaign, including contacting Pentagon personnel, the distribution and collection of paper surveys as required. Mission success would be measured in terms of contacting at least ninety (90) percent of all military, Federal civilian and contractor personnel, either assigned or working at Pentagon on the day of the attack. Another factor of mission success was the goal of sixty (60) percent participation in the survey, either by Internet or paper copy.

Phase I. PRE-DEPLOYMENT:

Based on guidance from Office of the Surgeon General, the NARMC staff developed OPLAN 1-03, titled the Pentagon Post Disaster Health Assessment (PPDHA). Subsequently, Colonel Ted A. Martinez, Assistant Chief of Staff, Operations, presented the PPDHA concept briefing on 24 September 2001 to Lieutenant General Peake, The Army Surgeon General, and Brigadier General (P) Martinez-Lopez, Commander, US Army Center for Health Promotion and Preventive

Medicine. Colonel Wayne S. Young, Deputy Assistant Chief of Staff for Operations (ACSOPS), NARMC was designated to serve as its Project Director. The Surgeon General (TSG) approved the plan pending outcome of TRICARE Management Agency's coordination with Office of Management and Budget for a waiver to survey civilian contractors, and coordination with Dr. Clinton, Department of Defense for Health Affairs. Ultimately, Dr. Chu, Under Secretary of Defense for Personnel and Readiness, would have to provide approval for the survey. On 4 October 2001, NARMC received the approval to execute the PPDHA project.

ADMINISTRATION

The DTHC was tasked to provide administrative and logistic support for the PPDHA project. At first, administrative space for the Project Director was designated in the rear of the shoe clinic of DTHC. However, the computer did not work and the room was inadequate for conducting business. Subsequent coordination with the Civilian Occupational Health clinic administrative staff proved beneficial in obtaining access to their staff conference area in room 110, along with a dedicated computer and telephone. Location was conveniently located for easy access to copier, fax machine, and other administrative supplies.

The Upton Conference Room in DTHC was scheduled daily between 0700-0800 hours and 1500-1600 hours for conducting meetings with the team members to pass along information and discuss issues resulting from the day's activities. On a space available basis, team leaders were also able to use another smaller conference area in room 156.

PERSONNEL

Initial concept included staffing five tri-service survey teams with personnel of any military occupation specialty that consisted of ten (10) US Air Force personnel, ten (10) US Navy personnel, and fifteen (15) US Army personnel. On 5 October 2001, the NARMC, Operations Tasking NCO tasked several subordinate Medical Treatment Facilities (MTFs) to provide personnel for staffing survey teams. Requested number of personnel for support is as follows: (8) WRAMC, Washington, DC; (3) Womack Army Medical Center (AMC), Fort Bragg, NC; (2) Dewitt Army Health Clinic (AHC), Fort Belvoir, VA; (2) MacDonald AHC, Fort Eustis, VA; and (2) Keener AHC, Fort Lee, VA.

ISSUE: Several US Army personnel complained later that they were notified by their MTF one or two days before having to attend training at WRAMC. Apparently, the Plans, Training, Mobilization and Security (PTMS) at both Womack AMC and MacDonald AHC did not access the AMEDD Resource Tasking System database until

after the Columbus Day holiday weekend. With the exception of MacDonald AHC, all MTFs complied with the tasking. MacDonald AHC sent only one non-commissioned officer (NCO) to training on Thursday morning, but recalled her back to Fort Eustis, VA, on Thursday afternoon. Later, the MTF sent Sergeant's Coberley and Langston who reported to duty at the Pentagon on Monday, 22 October 2001.

Both US Air Force and US Navy Surgeons' General offices were contacted to market the PPDHA and solicit personnel for both team leaders and members. Additionally, telephone calls were made to Bethesda National Medical Center and to Malcolm Grow Medical Center to coordinate specific requirements. The result was a total of 10 USAF personnel volunteered from Malcolm Grow Medical Center and Bolling Air Force Base Clinic. No US Navy personnel were recruited. However, two US Navy personnel were detailed from the TRICARE Northeast region's Lead Agent office to serve on the project.

TRAINING

Staff members from the DHPW, USACHPPM, developed a Program of Instruction (POI) for both team leaders and team members and provided four trainers to conduct initial training at WRAMC. Training led by Chaplain(LTC) Gregory Black was conducted in the Vorde Bruegge Auditorium, located in Building 1, from 0800-1700 hours, on Thursday, 11 October 2001. The next day all team members reported to the Pentagon at 0800 hours to complete the training that consisted of role-playing and orientation to the building by official military tour guides.

LOGISTICS

Below is a list of supplies required during the survey.

1. Long-range pagers for team leaders
2. PPDHA Identification badges
3. Pentagon security badges
4. Temporary Pentagon parking permits
5. Pentagon building plans
6. Pentagon parking diagram
7. Crystal City diagram
8. Washington, DC diagram
9. DD Form 844, Requisition for Local Duplication at WRAMC for 20,000 copies of CHPPM Handouts
10. 5, 000 copies of Mr. D.O. Cooke's letter
11. 10,000 copies of Pentagon Building Circular, Subject: News Release

Phase II- DEPLOYMENT:

MARKETING PLAN

Ms. Joan Malloy, Public Affairs Office (PAO), at WRAMC, developed a PPDHA Marketing Plan and provided on-site PAO support to the project during the first week of execution. Her duties included answering phone inquiries, drafting PPDHA articles and coordinating with the various National Capitol Region (NCR) military newspapers to publish those articles. She returned to WRAMC on the following Monday, but continued to coordinate publishing several articles in local military newspapers. Nonetheless, only the "STRIPES", "Pentagram" and "Stars and Stripes" eventually printed one or more articles about the survey.

During the initial 30-day execution period, the following marketing efforts were accomplished to generate support for the project.

10 October- WRAMC Directorate of Information Management (DOIM) sends Pentagon-wide News Release email message.

ISSUE: Upon investigation of the effectiveness of our message on 15 October 2001, it was discovered that the intended email message had not gone out to all Pentagon email administrators. Subsequent coordination with SSG Rippl, the DTHC Information Technology Non-commissioned Officer in Charge (NCOIC), determined there are at least 10 email administrators within the Pentagon. Later, SSG Rippl sent to them a follow-up email News Release asking for assistance in the distribution.

15 October - Early Monday morning, a total of 5000 copies of Mr. Cooke's letter were handed out at the three Pentagon entrances. Team members began walking the Pentagon Monday afternoon and providing a PPDHA handout to everyone contacted.

16 October - A total of 10,000 copies of Building Circular, Subject: News Releases were handed out at Pentagon entrances.

17 October - A total of six posters with PPDHA handouts were displayed at three Pentagon entrances, the concourse, and on both sides of the Main cafeteria.

18 October - An email message was sent to each Pentagon email administrator with News Releases and Survey Handout as attachments for distribution.

19 October - Initial PPDHA article published in the "STRIPES" newspaper.

19 October - BUMED Memorandum, Subject: PPDHA Survey, was sent through US Navy distribution.

26 October - Follow-up PPDHA survey announcement was sent to each email administrator for distribution.

26 October - "Pentagram" publishes PPDHA article.

29 October - Follow-up letter from Mr. Cooke distributed to all DoD organizations.

30 October-2 November - Team members set-up and staff four display tables with PPDHA poster on a tripod. Note: NARMC Operations provided 300 items (pens, tape measures, and key chains) with NARMC logo as giveaways to attract people to the tables. However, several team members bought candy as giveaways that seemed to work better.

2 November - MG Timboe's PPDHA article published in "STRIPES" newspaper.

6-9 November - Team members set-up and staffed the USACHPPM Noble Eagle exhibits with a table at both ends of the Concourse area. Note: USACHPPM assembled two displays and delivered them to the Remote Delivery Facility, along with 10,000 plastic laminated "Noble Eagle Remembrance" cards for handing out at the exhibit tables.

8 November - Final Notice of PPDHA sent to email administrators.

13 November - Lead Agent Office photographs LTG Carlton, Air Force Surgeon General, showing CMDR Madden a diagram of where he was following the attack. Note: The photograph along with an accompanying PPDHA article will be published in both the TRICARE and Air Force newspapers at a future date.

PERSONNEL

"NOBLE EAGLE" fund site code (EOF Funds) was provided to the team members for TDY reimbursement.

ISSUE: SSgt Chaisson, USAF NCO, was released back to his unit on 23 October due to personal issues that prevented him from starting work at 0730 hours daily. Project Director made a telephone call to his supervisor explaining the reason for his release from the project. No further action was required.

SURVEY EXECUTION

On Monday afternoon, 15 October 2001, four of the five teams began marketing the survey within the Pentagon. Each team was assigned a separate floor and walked from office to office using a building diagram provided to the team leader. An individual contact received the PPDHA handout or the office supervisor was given a sufficient quantity for every employee.

Furthermore, all team members used the PPDHA Tracking Form developed by USACHPPM to document each individual contact and location of all paper surveys given out, as required.

The mission for contacting personnel outside the Pentagon was assigned to Team 1, led by MAJ Gerard Gonzaludo. Outside contacts consisted of all personnel displaced to other NCR locations after the attack or personnel visiting the Pentagon that day of the attack. The expected number of contacts outside the Pentagon was thought to be close to 4000 total. Actual contacts outside the Pentagon totaled 1626 due to most displaced personnel having already returned to the Pentagon. Only 38 paper copies of the survey were required.

ISSUE: On the first day, several problems were encountered using the web-based survey on nearly every Pentagon floor. Once notified of the problems, the PPDHA Project Director immediately called Colonel Walter (Gene) Egerton, MD, USACHPPM Project Director for the survey instrument, to discuss the reported problems associated with completing the web-based survey. Problems reported included:

- Inability to open survey document
- Long time to transition from one question to the next
- Being kicked out of the survey prior to completion

It was determined that most difficulties were due in part to the number of firewalls in their Network or the version of Internet browser used.

ISSUE: Throughout the survey period, the administrative staff answered numerous phone calls to register complaints, usually resulting in a request for obtaining a paper copy of the survey. The majority of reported problems came from USAF personnel located on the Pentagon fourth floor, which accounts for the large number of paper copies handed out there.

ISSUE: The USACHPPM handout contained the web address to request the survey electronically at: medreg.apgea.army.mil (NOTE: Only computers with military networks could access the PPDHA survey website.) However, the web address as written created some confusion for people who were typing (www.) as part of the address found out it didn't work. Therefore, the USACHPPM Handout had to be changed to read as the following <https://medreg.apgea.army.mil> prior to printing the next 5000 copies.

ISSUE: Another problem reported was confusion on how to properly save and send the completed survey. The solution was for USACHPPM to provide additional instructions at the end of the survey.

ISSUE: A related problem was the lack of feedback for those properly saving the web-based survey. In many cases, individuals mistakenly thought they had saved the survey. This created a significant difference in the reported number of email surveys requested and number actually saved to the database.

ISSUE: The Federal Protective Service union had not been advised of the PPDHA survey being conducted for all Pentagon personnel as required by the local negotiated contract. Therefore, the Project Director met with Mr. David Butler, Real Estate and Facilities of the Washington Headquarters Service, to correct the oversight. A memorandum sent to the Chairman, Fraternal Order of Police that met the contract requirement.

During the second week of the survey, Team 4 led by MAJ Aarhus adjusted their work schedule to 1500-2300 hours, thereby allowing them to contact potential night shift personnel. His team found few offices open other than the various Emergency Operations Centers staffed in the evening.

Half way into the project, USACHPPM sent a follow-up email message to all individuals not completing a previously requested web-based survey. This action generated numerous calls for the delivery of a paper copy survey.

On Friday, 2 November, both US Army personnel on TDY from Fort Lee, in addition to all the USAF and USN personnel other than those on Team 1 were released to their units because of excess manpower. Subsequently, all members of Team 1 were released on Tuesday, 6 November, after the collection of all remaining paper surveys outside the Pentagon.

All three (3) TDY personnel from Womack AMC were released on Tuesday, 6 November 2001.

All eight (8) WRAMC personnel were released on Friday, 9 November 2001.

Both personnel from MacDonald AHC serving as administrative support were released on 16 November 2001.

Again, USACHPPM sent an email notice to those who did not complete the requested web-based survey, along with instructions not to provide a written reply to the message. Nevertheless, over 240 individuals did reply and COL Egerton answered each one by email. Similar to the first notice, more telephone requests were generated for the paper copy survey. At this point, individuals were asked to pick-up blank surveys at the DTHC and return it when completed.

On 21 November 2001, Project Director transitioned primary contact for the PPDHA to SPC Long at the DiLorenzo TRICARE Health Clinic. Telephone number 692-8861 will be forwarded to 692-8801 for paper survey pick-up and drop-off information.

SURVEY REPORTING

Team leaders submitted a daily consolidated Team Tracking Form to the Project Director at the end of the shift. Additionally, the USACHPPM Project Director sent an email at the end of each day with the number of requests for the web-base survey and the number of surveys saved. The NARMC Project Director subsequently entered total numbers for each team on the Group Tracking Sheet and emailed a daily SITREP to the Commanding General, with copies furnished to the Chief of Staff, ACSOPS, ACSCLINOPS, and USACHPPM Project Director.

Every morning the PPDHA Project Director received from USACHPPM a list of High Priority respondents who made a comment in the remarks area on the last page of the web-based survey. Copies of the list were provided to MAJ Leavitt, Mental Health Crisis Intervention Team OIC located in Room 5D1033, for follow-up. Ms. Sandy Hannish, Nurse Practitioner, DTHC, did a telephone contact with each individual. This process worked well throughout the entire survey period resulting in a total of over 250 personnel contacted for follow-up.

The Project Director held an In Process Review (IPR) on 14 November to provide the CG with current status of the PPDHA project and to seek guidance regarding the project's termination. Other attendees at the IPR included USACHPPM Project Director, ACSCLINOPS, and Operation SOLACE Project Director. The CG made the decision to terminate project staffing, effective 16 November 2001. However, the survey collection effort would be extended to the end of December for both web-based and paper versions. Also, there needed to be a transition of PPDHA efforts to the DTHC.

COLLECTION DATA RESULTS

Below are the survey results, as of 20 November 2001.

Total Email Survey Requested - 4968
Total Email Surveys Saved - 2789
Percent saved - 56%

Total Personnel Contacted - 19450
Total Paper Surveys Given - 3900
Total Paper Surveys Collected - 2314
Percent Collected - 60%

Upon release from the project, each team members received the NARMC Commanding General's coin, along with a TRICARE Lead Agent Certificate of Commendation in recognition for their outstanding contribution to mission accomplishment and the survey's success in obtaining its goals.

SUMMARY

The PPDHA project was a success, in terms of the total number of Pentagon personnel contacted by team members walking door to door in the Pentagon and their follow-up collection efforts. In the near term, the survey resulted in over 250 high priority follow-up contacts being made with personnel having various post-attack issues. Total number of personnel completing the survey either by the web-based version or paper copy did not achieve the sixty percent desired. Therefore, the NARMC Commanding General approved extending the deadline for collecting survey data until 30 December 2001, based on USACHPPM Project Director's recommendation, along with NARMC staff concurrence. When judging the overall success of the PPDHA, it should be noted that the post- Oklahoma City survey achieved the sixty percent participation only after one year of effort.

At this time there is no plan to do a follow-up survey in the future.



Point of contact for this report is the undersigned that may be contacted at commercial (202) 782-0833 or DSN: 662-0833.

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COL, MS
Project Director

APPENDIX I

SURVEY DEPLOYMENT TEAM COMPOSITION

Appendix I
Survey Deployment Team Composition

<u>PROJECT OFFICER</u>		<u>5 TEAM CHIEFS CONSISTING OF:</u>
NARMC OPERATIONS	Directs 	<i>Team Chief - Field Grade Officer</i>
29 Personnel Total		3 Squads per Team Chief
<u>Tri-Service Representation</u>	Consists of 	Squad Composition:
<i>2 Navy</i>		<i>1 Company Grade Officer</i>
<i>11 Air Force</i>		1 NCO
<i>16 Army</i>		

APPENDIX J
MENTAL HEALTH CONCLUSIONS/ RECOMMENDATIONS

Appendix J

Mental Health Conclusions/ Recommendations

1. Mental health complaints affected a considerably larger number of survey participants than physical complaints. Approximately 18% of survey participants met the screening criteria for being at high risk for depression, 8% for PTSD, 23% for panic, 27% generalized anxiety, and 3% for alcohol problems. Overall 40% of persons met the screening criteria for one of these symptom categories. Although these rates were based on screening questions and not full diagnostic scales, the rates are comparable to those observed in more systematic studies of other populations following terrorist events. For example, in a telephone survey conducted among a random sample of Manhattan residents one to two months after the September 11, 2001 World Trade Center attack, 8% reported symptoms consistent with a current diagnosis of PTSD, and 10% reported symptoms consistent with current depression (Galea, et. al. N Engl J Med 2002; 346:982-7). The prevalence of PTSD was 20% for those who lived in lower Manhattan. In a study of 182 adults who were in the immediate area of the Oklahoma City bombing assessed six months after the event, 45% had a diagnosed psychiatric disorder, most commonly PTSD and depression (North, et al. JAMA 1999; 282:755-62).

2. The approach taken in this survey to measure the mental health impact of the attack has several limitations. First of all, the short length of the questionnaire precludes making clinical mental health diagnoses. Many of the symptoms seen after the attack were normal reactions to the extremely abnormal event. In addition, although nearly 5000 Pentagon employees completed the questionnaire, this represented only 24% of the population. It is not known how representative this sample is or the reasons for non-response.

3. Despite these limitations the mental health symptom categories identified on this survey were found to strongly correlate with reduced daily functioning and use of counseling services. In addition, risk factors known to be associated with mental health problems following traumatic events were found to be strongly predictive of the high-risk categories identified in this survey. These data suggest that the approach used in this rapid public health assessment had validity.

4. The 40% prevalence of current mental health symptoms among survey participants supports the early and sustained preventive behavioral health intervention implemented in the Pentagon workplace and in primary care clinics serving the Pentagon population. Given what we know from previous disasters there is likely to be continued need for behavioral health services, particularly during times such as anniversaries, holidays, etc.

5. Scoring positive on mental health screening questions, or even on complete diagnostic scales used in clinical settings, does not necessarily predict a need for treatment. Although there was a significant association between mental health symptoms and seeking counseling services in this survey, only 31% of persons who screened positive for any of the mental health problems reported that they sought counseling. This is

consistent with numerous studies that have shown that only one-fourth to one-third of persons with diagnosable mental disorders seek professional help. Many of the symptoms that people experienced after September 11 were normal reactions to the attack, and there are many ways besides professional help to cope with these reactions. Hopefully, the early pre-clinical behavioral health outreach program conducted at the Pentagon following the 11 September attack, as well as the ongoing support provided in primary care clinics, has been helpful in preventing the development of more chronic conditions.

6. Recommendations.

a. The short mental health questionnaire used in this survey is a prototype that can be used for rapid public health assessment of the mental health impact of future terrorist events.

b. Follow-up surveys of the population are necessary to measure the full impact of the 11 September attack. These surveys should utilize full scales measures of the key mental disorder categories, so that the sensitivity, specificity, and predictive value of individual items included on this initial survey can be better delineated.

c. In future surveys, it would be optimal to systematically sample of the population, so that mental health survey results can be better generalized to the population at large.

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APPENDIX K
ACKNOWLEDGMENTS

Appendix K

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