

NAVAL HEALTH RESEARCH CENTER

The Millennium Cohort Study

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The study protocol was approved by the Naval Health Research Center Institutional Review Board in compliance with all applicable Federal regulations governing the protection of human subjects. Research data were derived from an approved Naval Health Research Center, Institutional Review Board protocol number NHRC.2000.0007.



Outline



- Study overview
 - Survey data collection
 - Exposures and respiratory health outcomes
 - Future research directions
-
- Dr. Boyko: VA Cooperative Studies Program #505



Study Objective and Methodology



Prospectively determine the impacts of military deployments, experiences, and exposures on the long-term health of Service members and Veterans

Multiple-panel cohort study of all Services and Components

Enrollment Panels: 2001, 2004, 2007, 2011, 2020

Follow-up every 3-5 years through 2068

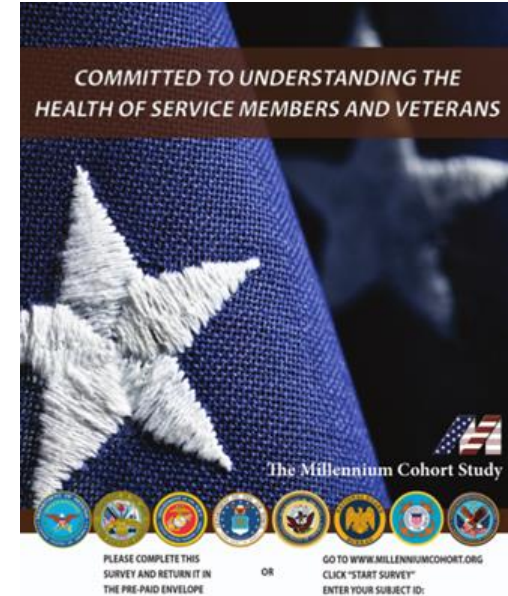
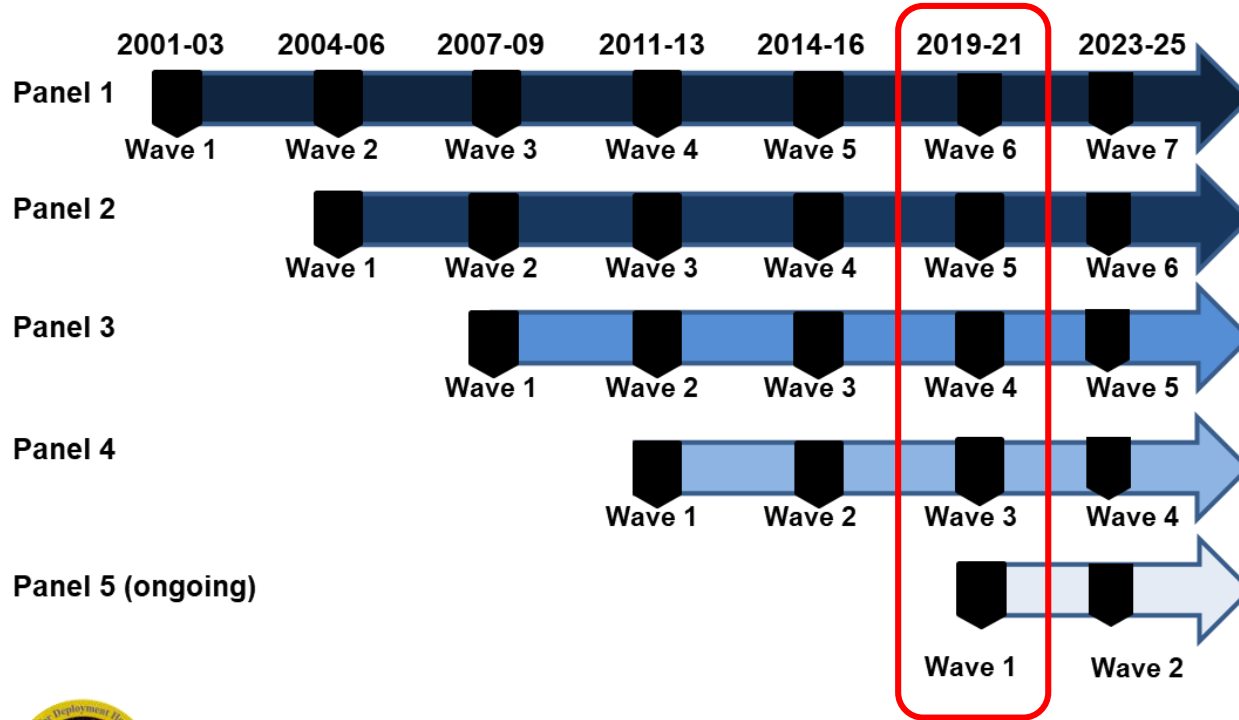
Survey Topics:

Mental and physical health, health behaviors, military exposures and other experiences (combat, deployment)

Linkage with multiple enterprise military and medical databases



Multiple-Panel Design



Enrollment Panels

(Panel 1-4 N = 201,620)



Panel (Group)	Enrollment Dates	Years of Service at Enrollment	Oversampled Groups	Roster Size (Date)	Total Contacted	Total Enrolled (%)
1	Jul 2001–Jun 2003	Unrestricted	Women Reserves/Guard Prior deployers*	256,400 (Oct 2000)	214,388	77,019 (36%)
2	Jun 2004–Feb 2006	1–2	Women Marine Corps	150,000 (Oct 2003)	123,001	31,110 (25%)
3	Jun 2007–Dec 2008	1–3	Women Marine Corps	200,000 (Oct 2006)	154,270	43,439 (28%)
4	Apr 2011–Apr 2013	2–5	Women Married	250,000 (Oct 2010)	247,266	50,052 (20%)
5	Sep 2020–Aug 2021	1–4	Women Married	500,000 (Jun 2020)	~500,000	TBD

*Deployment to Southwest Asia, Bosnia, and/or Kosovo after August 1997.



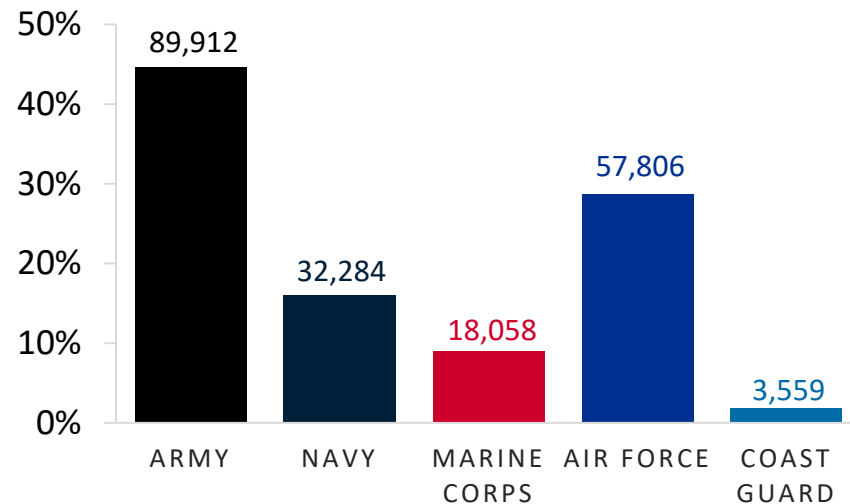
Cohort Profile (N = 201,620)



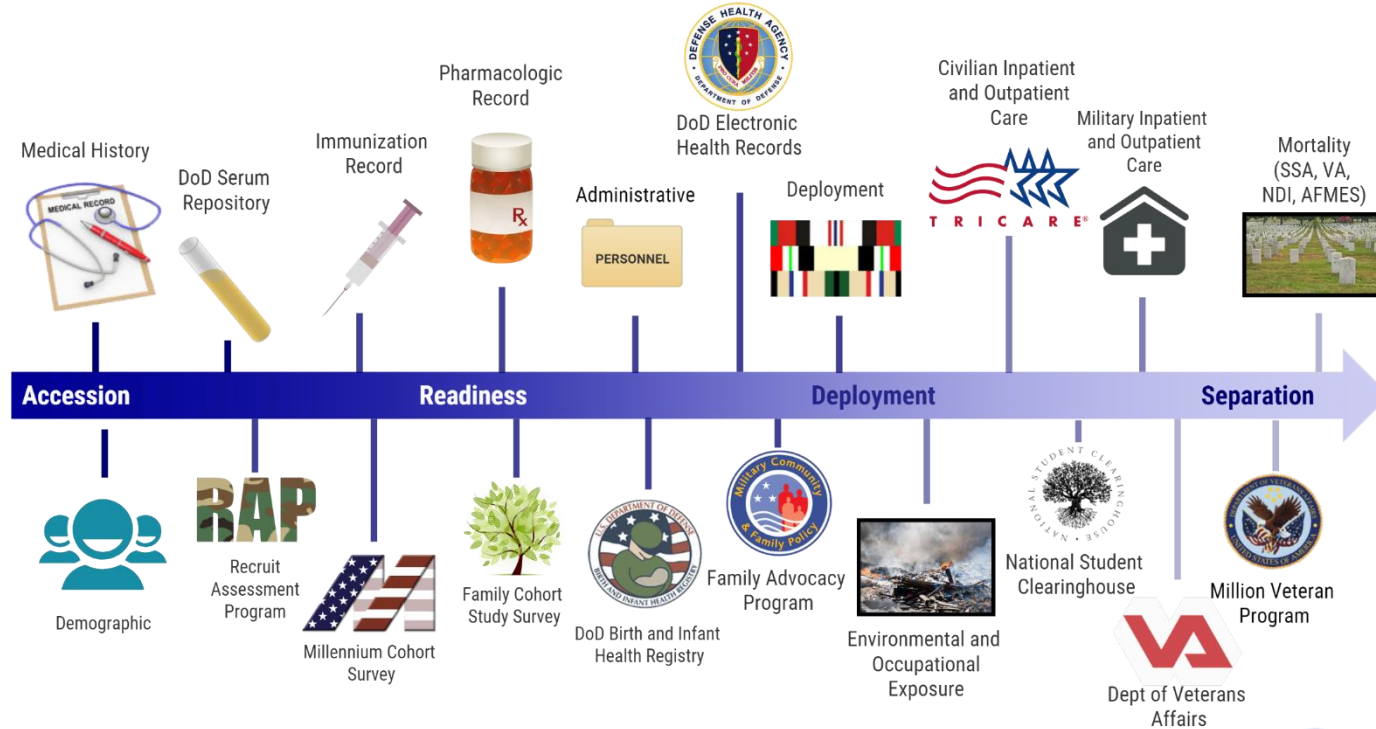
Baseline Characteristics	%
Female	31
Non-Hispanic White	70
Enlisted	83
Active component	67

Current Status	%	Mean Current Age (SD)	
Ever deployed	65	Panel (Year)	2021
Separated	73	1 (2001)	54 (9)
Deceased	1.5	2 (2004)	41 (5)
		3 (2007)	39 (4)
		4 (2011)	37 (5)

SERVICE BRANCH



Complementary Data



Burn Pit Deployment Proximity



- Defense Manpower Data Center (DMDC) identified personnel deployed within 3 and 5 miles of 3 documented burn pits in Iraq between 2003-2008
 - Joint Base Balad, Camp Taji, Camp Speicher
 - MilCo Panels 1-2, Army or Air Force:
 - Approx. 22,300 deployed
 - Approx. 3,500 deployed within 3 mi of burn pit site



Smith et al. J Occup Environ Med. 2012. PMID: 22684321.



Respiratory Outcomes



- Self-reported physician-diagnosed
 - Sinusitis
 - Asthma
 - Frequency and severity of asthma symptoms (new for 2019-21)
 - Chronic bronchitis
 - Emphysema
- Baseline: “Has your doctor or other health care professional ever told you that you have [condition]?”
- Follow-up: “In the last 3 years, has your doctor or other health care professional told you that you have [condition]?”
- Also assessed persistent or recurring cough or shortness of breath



Future research directions



- Extended follow-up of health outcomes using surveys linked with MDR, VA, and mortality data
 - Focus on smoking as a potential effect modifier of deployment-related environmental exposures
 - Focus on specific occupations (self-reported and MOS)
 - Current survey includes items on frequency and severity of asthma symptoms
 - Additional outcomes for focused research: mortality, cancer
 - Next follow-up survey scheduled for 2023



Future research directions



- Future access to DoD/VA Individual Longitudinal Exposure Record (ILER) with declassified deployment locations and dates
 - Comprehensive assessment of exposures beyond limited proximity data for 4 sites provided by DMDC in 2010
 - Potential application of historical PM_{2.5} concentrations generated using remote sensing (Li et al., 2021; PMID: 33618328)





www.millenniumcohort.org

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