

# Pre-deployment Alcohol Misuse Among Shipboard Active-Duty U.S. Military Personnel



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**Introduction:** The burden of alcohol misuse is unknown among shipboard U.S. Navy and Marine Corps military personnel immediately prior to deployment and may be elevated.

**Methods:** Anonymous survey data on hazardous, dependent, and binge alcohol misuse and involuntary drug consumption were collected during 2012–2014 among shipboard personnel within approximately 2 weeks of deployment. Using the Alcohol Use Disorders Identification Test Consumption (AUDIT-C), hazardous alcohol misuse was defined using two cut-point scoring criteria: (1)  $\geq 3$  for women and  $\geq 4$  for men; and (2)  $\geq 4$  for women and  $\geq 5$  for men; binge drinking as  $\geq 4$  drinks for women and  $\geq 5$  drinks for men on a typical day in past 30 days; and dependent alcohol misuse as an AUDIT-C score of  $\geq 8$ . Demographic- and sex-stratified self-reported alcohol misuse prevalence was reported for analysis conducted during 2014–2015.

**Results:** Among 2,351 male and female shipboard personnel, 39%–54% screened positive for hazardous, 27% for binge, and 15% for dependent alcohol use. Seven percent reported involuntary drug consumption history. A larger proportion of those aged 17–20 years screened positive for dependent alcohol use compared with the overall study population prevalence.

**Conclusions:** A large proportion of shipboard personnel screened positive for hazardous and dependent alcohol use (18% among those aged  $< 21$  years) at deployment onset. These data can inform interventions targeting shipboard personnel engaging in hazardous use before progression to dependent use and enable early identification and care for dependent users. Future studies should include more comprehensive assessment of factors associated with involuntary drug consumption. (Am J Prev Med 2016;51(2):185–194) © 2016 American Journal of Preventive Medicine. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

Hazardous, dependent, and binge alcohol misuse is associated with substantial morbidity and mortality, increased rates of criminal behavior, and increased risk of heart disease, cancer, injuries,

violence, and sexual risk behavior in both U.S. civilian and military populations.<sup>1–7</sup> Within the military setting, alcohol-related incidents can increase accidental injury, reduce operational readiness, decrease unit cohesion because of personnel losses, have negative career impact, or result in involuntary discharge.<sup>1,8–11</sup> Alcohol misuse data during the pre-deployment time period are scarce among U.S. military shipboard personnel, although data from deployment and post-deployment time periods show significant rates of alcohol misuse.<sup>8,12</sup> The pre-deployment period could present a particular risk for alcohol misuse among personnel anticipating the absence of alcohol; U.S. Navy ships have been “dry” since 1914.<sup>13</sup> Data collected under non-deployment conditions show that alcohol use differs significantly by gender and demographic strata, including rank/rate.<sup>1</sup> The pre-deployment period is a time of increased stress,<sup>14</sup> which

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may also increase likelihood of alcohol misuse. In addition, alcohol misuse may be associated with involuntary drug consumption (IDC).<sup>15</sup> Binge drinking is often perceived as less risky than other forms of alcohol misuse but is associated with adverse outcomes among binge drinkers and non-binge drinkers within binge drinking communities.<sup>16–18</sup> Additionally, binge drinking has been linked to elevated rates of suicide attempts in women in the absence of a major depressive episode<sup>19</sup>; in men, alcohol-related problems are an independent risk factor for suicide.<sup>20</sup> Hazardous alcohol use is a pattern of excessive use that increases risk for adverse health events,<sup>21</sup> whereas binge drinking is defined as excessive use that raises blood alcohol level to 0.8 or greater and characterized by drinking several alcoholic beverages within a short period of time.<sup>22</sup> Dependent alcohol misuse is a chronic condition characterized by a physiological craving for alcohol and inability to limit drinking even when it causes adverse physical, psychological, or social consequences.<sup>23</sup>

Although shipboard personnel receive a medical review prior to deployment, they do not complete the more rigorous Pre-Deployment Health Assessment (Pre-DHA), which is administered to land-based deploying personnel and includes the Alcohol Use Disorders Identification Test Consumption (AUDIT-C) for screening hazardous and dependent alcohol use.<sup>24–27</sup> An AUDIT-C score of  $\geq 4$  for women or  $\geq 5$  for men on the Pre-DHA triggers referral for further evaluation at the healthcare provider's discretion. Because the deploying shipboard population does not complete the Pre-DHA, it is unknown what proportion of shipboard personnel would screen positive for alcohol misuse and be identified for potential intervention. A large proportion of individuals who engage in alcohol misuse are not dependent. Screening provides an opportunity to identify and intervene before individuals progress to dependency, which is more challenging to treat.<sup>28</sup> The current study examines the burden of hazardous, dependent, and binge alcohol misuse use among shipboard, active-duty U.S. Navy and Marine Corps personnel prior to deployment.

## Methods

This report presents cross-sectional, anonymous, self-reported alcohol and drug use data collected during 2012–2014 among shipboard personnel (defined as ship-assigned, active-duty deploying U.S. Navy and Marine Corps personnel) at the pre-deployment time point (within 2 weeks before deployment) of a longitudinal study described elsewhere.<sup>29</sup> Personnel were recruited through convenience sampling among U.S. Navy Third Fleet ships, and all departments on the ship were recruited for participation to optimize representation. Survey participation was voluntary, and informed consent was obtained. Participants indicated non-

participation by returning an uncompleted survey in a sealed envelope or departing the survey area.

## Alcohol Use Measures and Definitions

The study employed the AUDIT-C, and standardized questions for various types of self-reported alcohol misuse. The following types of alcohol misuse were measured for men and women: hazardous, dependent, and binge drinking.

Hazardous alcohol use was measured using the first three questions of the AUDIT-C:

1. *How often do you have a drink containing alcohol?*
2. *How many drinks containing alcohol do you have on a typical day when you are drinking?*
3. *How often do you have six or more drinks on one occasion?*

The AUDIT-C has been validated in civilians and veterans,<sup>24–26</sup> showing high diagnostic efficiency for both hazardous and dependent alcohol use. Hazardous alcohol use was defined as AUDIT-C scores of  $\geq 4$  for women and  $\geq 5$  for men, which are cut-points used for the Pre-DHA to trigger referral for further alcohol evaluation within the U.S. military.<sup>26,27</sup>

Additionally, a second definition of hazardous drinking was examined using AUDIT-C scores of  $\geq 3$  for women and  $\geq 4$  for men, which are widely accepted cut-points used among both U.S. military and civilians.<sup>24,25,30,31</sup>

Binge drinking was defined as women who reported four or more drinks and men who reported five or more drinks on a typical day in the past 30 days<sup>8,18,20,32</sup> using this question, *Think about the days when you drank alcoholic beverages (such as beer, wine, or hard liquor) in the past 30 days. How many alcoholic beverages did you usually drink on a typical day when you drank?* The proportion of personnel who had ever blacked out was determined using the question *Have you ever drank until you "blacked out" or you didn't remember what happened?*

Screening positive for dependent alcohol use was defined as an AUDIT-C score of  $\geq 8$  for both men and women, which screens for active alcohol abuse or dependence<sup>25</sup>; this cut-point serves as a trigger within Department of Defense/Veteran's Administration guidelines to refer personnel for specialty care at the healthcare provider's discretion.<sup>30,31,33</sup>

This study defined IDC as responding affirmatively to the question *Have you ever been given a drug without your knowledge or consent? (In other words, do you think you have ever been "roofied" or had your drink spiked?).* Only a single exploratory IDC question was included in the survey.

Information on recreational drug consumption was captured by the question *Have you used any recreational substances listed below?* The list of recreational drugs is included in the [Appendix](#) (available online).

## Statistical Analysis

Data were analyzed from 2014 to 2015 using SAS, version 9.2. Percentages were calculated for categorical variables. Pearson chi-square tests for categorical variables (or Fisher's exact test where expected count was  $< 5$ ) were used to assess whether there was a significant difference for each demographic and alcohol misuse variable by sex and IDC. [Appendix Table 1](#) (available online)

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