# SBIRT IOWA

## Iowa Army National Guard

**THE IOWA CONSORTIUM FOR SUBSTANCE ABUSE RESEARCH AND EVALUATION**

**Iowa Army National Guard**
**Biannual Report**
**March 2015**

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http://iconsortium.subst-abuse.uiowa.edu/

# EXECUTIVE SUMMARY

Nearly 5,600 Soldiers have undergone SBIRT IOWA screening from the beginning of the project through March 15, 2015. Substance use (AUDIT for alcohol or DAST-10 for drug use) and mental health (PHQ-9) screening scores were present in the majority of the screening records. This report addresses three questions:

- Which Soldiers have higher screening scores (are there common characteristics at initial contact)?
- How do the screening scores relate to PHQ-9 scores and depression symptoms?
- Can we predict soldiers whose AUDIT scores go up or go down over time?

Data were extracted from the SBIRT GPRA data for 5,578 Soldiers. This process differed somewhat from the standard GPRA reporting in order to maximize the number of Soldiers with at least two screenings and to maximize the time between screening sessions. Because of sample sizes, AUDIT and DAST-10 scores were categorized into a Low Risk (AUDIT less than or equal to 4 and DAST-10 = 0) or Unhealthy Use for any higher AUDIT or DAST-10 scores.

Regarding the first question, "Which Soldiers have higher screening scores (are there common characteristics at initial contact)?" three Soldier characteristics showed moderately strong and statistically significant relationships to Unhealthy Use: sex, age, and deployment to Iraq/Afghanistan. Race/ethnicity showed no effect. Being male, between the ages of 20 and 25 years old (high-risk age group), and having been deployed to Iraq/Afghanistan additively increased the chance of Unhealthy Use. Males in the high-risk age group who had been deployed had a high percentage of Unhealthy Use, 15.8%, while females not in the high-risk age group who had not been deployed to Iraq/Afghanistan had a low percentage of Unhealthy Use, 2.5%.

Regarding the second question, "How do the screening scores relate to PHQ-9 scores and depression symptoms?" PHQ-9 scores and depression severity levels were strongly related to Unhealthy Use, at least in the select subgroup of Soldiers who received PHQ-9 screens in the SBIRT program. Increased depression severity dramatically elevated the chances of Unhealthy Use. Unfortunately, there were differences between those who did receive the PHQ-9 and those who did not have recorded PHQ-9 scores. Thus, these results are based on a selective subset of Soldiers. Current data suggests that the PHQ-9 has been more consistently recorded over the past year, so that later analyses may provide results that are more generalizable.

Regarding the third question, "Can we predict soldiers whose AUDIT scores go up or go down over time?" no characteristics were found that predicted changes up or down. Use risk levels and Unhealthy Use declined between the initial and second SBIRT screens. The decline was conspicuous for Soldiers in the Moderate Risk use category, where over 75% of Soldiers remitted to Low Risk. There were low numbers of Soldiers in the higher risk levels, but even here, changes for the better were fairly evident. However, even with the moderately large sample size of 1,273 Soldiers seen at least twice, none of the evaluated predictors statistically distinguished those whose risk level declined or those whose risk level increased. Predicting who will increase or who will decline in use remains difficult.

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# BACKGROUND

In July 2012, the Iowa Department of Public Health (IDPH) received a five-year grant to provide Screening, Brief Intervention and Referral to Treatment (SBIRT) services by the Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Substance Abuse Treatment (CSAT). SBIRT IOWA uses a comprehensive, integrated, public health approach to incorporate universal screening into medical practice and within the Iowa Army National Guard (IAARNG) to identify, reduce, and prevent hazardous alcohol or drug use. Specially trained substance use disorder treatment staff administer prescreening and screening for alcohol and other substance use to Soldiers affiliated with the IAARNG. These staff also conduct brief interventions, brief treatment sessions, and make referrals for substance use disorder treatment. The Iowa Consortium for Substance Abuse Research and Evaluation (Consortium) conducts the evaluation for the SBIRT IOWA project.

The data provided in this report cover the beginning of the project (October 25, 2012) through March 15, 2015.

## Screening/Assessment Tools and Scoring Key

SBIRT IOWA staff at the IAARNG administer the 10-question Alcohol Use Disorders Identification Test (AUDIT) when a Soldier pre-screens positive for risky alcohol use, and the Drug Abuse Screening Test (DAST-10) when a Soldier pre-screens positive for drug use. (See SBIRT IOWA Year Two Annual Evaluation Report for additional information on prescreening questions). The Patient Health Screen (PHQ) is a screening and diagnostic tool used by health care professionals for assessing mental health disorders. The PHQ-9 is the depressive disorders module of the PHQ, and is an optional screening tool for SBIRT providers.

Table 1 on the following page provides the scoring ranges, associated risk levels, and recommended services for the AUDIT, DAST-10, and PHQ-9.

## Data Extraction

Data for these analyses were drawn slightly differently than for the SBIRT annual reports in order to maximize the number of Soldiers with multiple screening opportunities. The Government Performance and Results Act (GPRA) system disallows multiple observations within a year, marking the first offending record as "Inactive". For this report, we took the first record and the second available record for any Soldier with multiple records, to maximize the number of multiple records as well as maximize the length of time between multiple visits. In addition, once an individual was identified as a Soldier in any record, any record from any SBIRT IOWA program (IAARNG or not) was included for that Soldier. For example, a Soldier may receive the first SBIRT screening from IAARNG but then be seen at a later date in one of the federally qualified health care centers participating in SBIRT IOWA. Both of those records would be retained for this report.

One other major difference is present in these data. The GPRA file contains a significant amount of missing deployment information (19.1% of cases). Fortunately, the other SBIRT related data file (SBIRT Activities) contains similar information stored in a different format. Using both files, the missing data fell to less than 1 percent.

**Table 1. Screening Tool Scoring Key**

| Score | Risk Level | Recommended Service |
|---|---|---|
| **AUDIT** | | |
| 0 – 7 | Low Risk/Negative | Encouragement and Education |
| 8 – 15 | Risky or Hazardous | Brief Intervention |
| 16 – 19 | High Risk or Harmful | Brief Treatment |
| 20 – 40 | High Risk | Referral to Treatment |
| **DAST-10** | | |
| 0 | Low Risk | Encouragement and Education |
| 1 – 2 | Moderate Risk | Brief Intervention |
| 3 – 5 | Substantial Risk | Brief Treatment |
| 6 – 10 | Severe Risk | Referral to Treatment |
| **PHQ-9**[1] | | |
| 0 – 4 | Minimal Depression | Patient may not need depression treatment. |
| 5 – 9 | Mild Depression | Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment. |
| 10 – 14 | Moderate Depression | |
| 15 – 19 | Moderately Severe Depression | Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment. |
| 20 – 27 | Severe Depression | |

# RESULTS

## Which Soldiers have higher screening scores (are there common characteristics at initial contact)?

A total of 5,578 Soldiers underwent SBIRT IOWA screening (meaning at least a prescreening) from October 25, 2012 through March 15, 2015. Table 2 on the following page lists the number of Soldiers' screening records with and without AUDIT, DAST-10, and PHQ-9 scores present, and the percentage of total records with those scores present. All data in this section was taken from the initial screening.

[1] UMHS Depression Guideline, August 2011. PHQ-9 Questionnaire for Depression Scoring and Interpretation Guide. Retrieved from http://www.med.umich.edu/1info/FHP/practiceguides/depress/score.pdf

**Table 2. Number and Percent of Soldiers with Scores at First Visit**

| | Score Present | Score Not Present | Percent with Scores |
|---|---|---|---|
| **Prescreen - Alcohol** | 5578 | 0 | 100.0% |
| **Prescreen - Drugs** | 5578 | 0 | 100.0% |
| **AUDIT** | 3082 | 2496 | 55.3% |
| **DAST-10** | 83 | 5495 | 1.5% |
| **PHQ-9** | 3787 | 1757 | 67.9% |

AUDIT and DAST-10 scores are not present when a Soldier pre-screens negative for alcohol or drug use, respectively. Thus, a missing AUDIT score suggests low alcohol use. Similarly, a missing DAST-10 score suggests no drug use. For the remainder of the analyses, in order to best use all of the data, we classified all Soldiers as Low Risk, Moderate Risk, Substantial Risk, or High Risk based on the prescreening questions, AUDIT, and DAST-10. If a Soldier received more than low risk on both the AUDIT and DAST-10, their highest risk category was used.

**Table 3. Risk Level at First Visit**

| Risk Level | Number | Percent |
|---|---|---|
| **Low Risk** | 5205 | 93.3% |
| **Moderate Risk** | 309 | 5.5% |
| **Substantial Risk** | 37 | 0.7% |
| **Severe Risk** | 27 | 0.5% |

The highest two levels of risk are rare. Subsequent analyses focus on identifying those at Low Risk versus Unhealthy Use (Moderate, Substantial, and Severe).

## Demographic Associations

Tables 4 and 5 present screening scores for the instruments by demographic characteristics. The tables provide percentages; statistical significance test values appear below the tables.

Table 4 shows risk level by sex. Males were more than twice as likely as females to be in the Unhealthy Use group.

**Table 4. Risk Level by Sex**

| | Low Risk (n = 5205) | Unhealthy Use (n = 373) |
|---|---|---|
| **Sex**[1] | | |
| Males | 92.8% | 7.2% |
| Females | 96.7% | 3.3% |

[1] $\chi^2 = 16.34$, df = 1, $p < 0.0001$

Table 5 uses the GPRA race and ethnicity categories. These are not mutually exclusive and a Soldier can list more than one race/ethnicity group. There were no significant effects and taken together, race/ethnicity had no significant association with use level.

**Table 5. Risk Level by Race/Ethnicity**

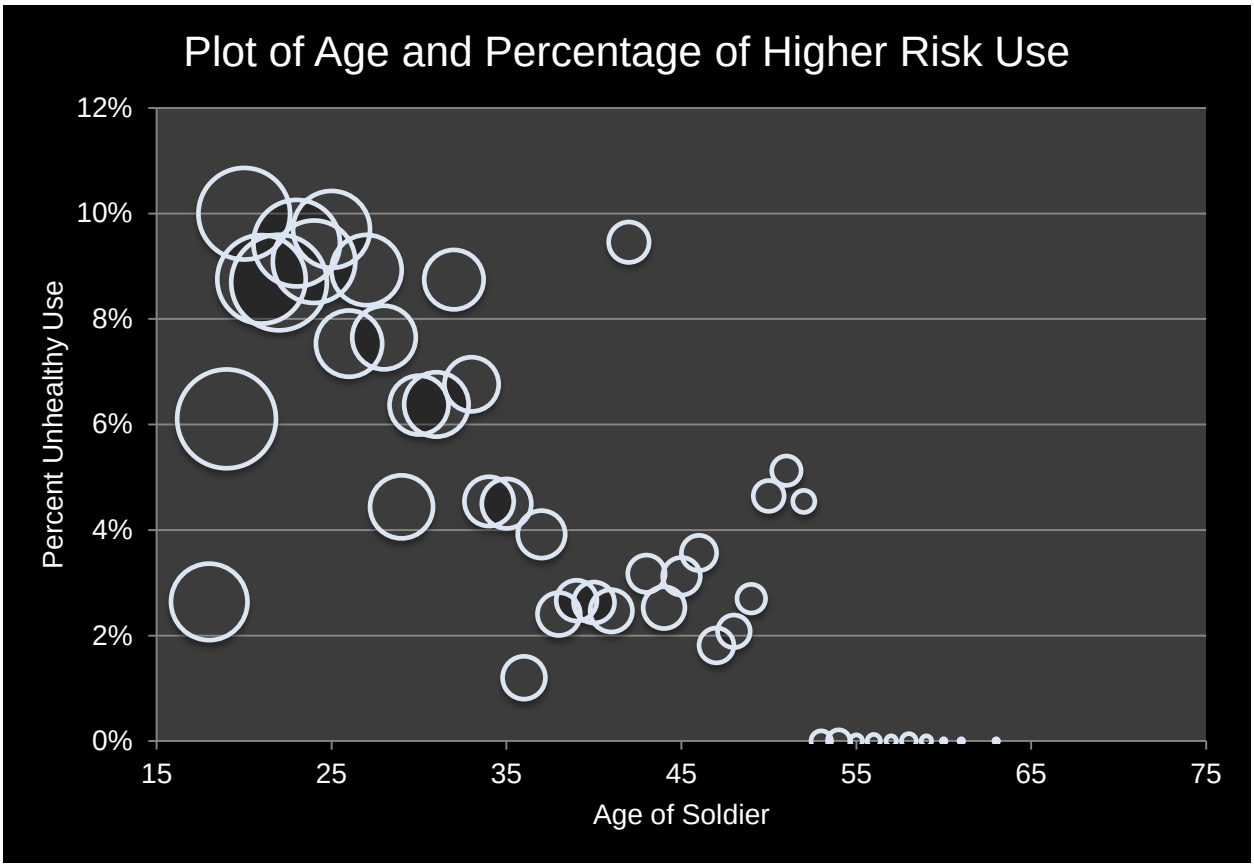
| | Low Risk (n = 5205) | Unhealthy Use (n = 373) |
|---|---|---|
| **Race/Ethnicity**[2] | | |
| White | 92.4% | 7.6% |
| Black/African American | 95.0% | 5.0% |
| Asian | 93.1% | 6.9% |
| Hawaiian or Pacific Island | 100.0% | 0.0% |
| American Indian | 71.4% | 28.6% |
| Hispanic/Latino | 91.0% | 9.0% |

[2] Logistic Regression, Wald $\chi^2 = 9.15$, df = 5, $p > 0.10$

Figure 1 shows the percentage of Soldiers reporting Unhealthy Use by age. The size (area) of the circles represents the number of Soldiers at that year of age. There is a highly significant nonlinear relationship between age and Unhealthy Use.[2] The peak Unhealthy Use occurs from the age of 20 to 25 and then declines almost steadily. There is one outlying high percentage at age 42, however the sample sizes are smaller and the estimates are unstable. There also may be a slight increasing trend beginning around age 44. After age 53, Unhealthy Use was not reported. Almost all ages between 19 and 33 (except for age 29) showed more than 6% Unhealthy Use. Between age 20 and 25, Unhealthy Use was greater than 8%. For all of the following analyses, Soldiers in the 20 to 25 years of age were classified in the high-risk age group.

[2] -2LogLikelihood $\chi^2 = 25.92$, df = 3, $p < 0.0001$ comparing a linear logistic regression to one containing linear, quadratic, cubic, and quintic terms.

**Figure 1. Soldier's Age and the Percentage of Higher Risk Use**




## Deployment

Deployment history was recorded for most Soldiers. Table 6 on the following page displays percents of Soldiers in the Low Risk and Unhealthy Use categories, no deployment versus any deployment, and site of deployment. Deployed Soldiers were more likely than non-deployed Soldiers to be in the Unhealthy Use category; of those deployed, Iraq/Afghanistan veterans were more likely to be in the Unhealthy Use category than those deployed to other areas.

Deployments also vary considerably by age and sex, both of which are related to Unhealthy Use prevalence. Further analyses discussed in the next section attempt to assess how these other factors are independently associated with Unhealthy Use.

**Table 6. Risk Level by Deployment**

| Deployment Status/Location | N= | Low Risk (n = 5205) | Unhealthy Use (n = 373) |
|---|---|---|---|
| **Not Deployed** | **2924** | **94.1%** | **5.9%** |
| Deployed | 2624 | 92.4% | 7.6%* |
| **Deployment:** | | | |
| Iraq/Afghanistan | 2484 | 92.1% | 7.9%** |
| Persian Gulf | 163 | 94.5% | 5.5% |
| Vietnam/SE Asia | 22 | 95.5% | 4.5% |
| Korea | 25 | 96.0% | 4.0% |
| WWII | 12 | 91.7% | 8.3% |
| Not Listed | 345 | 95.4% | 4.6% |

* $\chi 2 = 6.15$, df = 1, $p < 0.05$

** $\chi 2 = 9.43$, df = 1, $p < 0.01$

## Multivariate Analyses Predicting Unhealthy Use

More sophisticated analyses (logistic regression) predicted a Soldier's likelihood of Unhealthy Use based on the previous factors. In a preliminary analysis, we assessed whether to use deployment versus no deployment or a specific deployment. These preliminary analyses controlled for age cohort and found that deployment to Iraq/Afghanistan was the primary factor predicting Unhealthy Use.[3] No other deployments significantly contributed to the prediction. Age was categorized as High Risk Age (20 – 25 years of age) versus Other Age.

Results of the logistic regression predicting Unhealthy Use were highly significant.[4] Being a male, in the high-risk age group, and deployment to Iraq/Afghanistan all independently contributed to being in the Unhealthy Use group. The odds ratios appear in Table 7.

**Table 7. Odds Ratios Predicting Unhealthy Use**

| | Odds Ratio | 95% Confidence Interval |
|---|---|---|
| **Male** | 2.15 | 1.43 - 3.24 |
| **High Risk Age Group (20 – 25)** | 2.27 | 1.81 - 2.84 |
| **Deployed: Iraq/Afghanistan** | 1.68 | 1.34 - 2.10 |

Being a male more than doubles the chance of being in the Unhealthy Use group, as does being aged 20 to 25 years old (High Risk Age Group). Deployment to Iraq/Afghanistan increases the chance by more than one and a half times. These effects appear to be additive.[5] This means the chance of being in the Unhealthy Use group increases for each risk factor present in the Soldier (e.g. Male, Aged 20-25, Deployed: Iraq/Afghanistan).

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[3] Wald $\chi 2 = 29.04$, df = 1, $p < 0.0001$

[4] Likelihood ratio $\square 2 = 76.10$, df = 3, $p < 0.0001$

[5] All tests of 2-way interactions were not significant.

Finally, Table 8 shows the raw percentages of Soldiers reporting Unhealthy Use broken down by sex, age group, and whether or not they were deployed to Iraq/Afghanistan. Some of the individual rows represent smaller numbers of Soldiers. For example, only 48 female Soldiers in the High Risk Age Group were deployed to Iraq/Afghanistan. The small subgroups will be reflected by broad 95% confidence intervals, e.g., the group of females in the high-risk age group who were deployed to Iraq/Afghanistan. Shaded cells in Table 8 indicate non-high risk characteristics.

**Table 8. Risk Level by Deployment**

| Sex | High Risk Age Group | Deployment to Iraq/Afghanistan | Percent Unhealthy Use | 95% Confidence Interval |
|---|---|---|---|---|
| Male | Yes | Yes | 15.8% | 12.8% - 19.3% |
| Male | Yes | No | 8.1% | 6.7% - 9.8% |
| Male | No | Yes | 6.3% | 5.2% - 7.5% |
| Male | No | No | 4.5% | 3.5% - 5.8% |
| Female | Yes | Yes | 2.1% | 0.3% - 13.6% |
| Female | Yes | No | 4.6% | 2.7% - 7.7% |
| Female | No | Yes | 3.2% | 1.3% - 7.4% |
| Female | No | No | 2.5% | 1.2% - 5.2% |

### Answer to: *Which Soldiers have higher screening scores (are there common characteristics at initial contact)?*

Higher scores on the substance screening questions can be identified with some success. Male Soldiers between 20 and 25 years of age deployed to Iraq/Afghanistan have dramatically higher levels of Unhealthy Use than other Soldiers. Sex (Male), age (aged 20 – 25 years), and deployment to Iraq/Afghanistan all additively contribute to this high rate.

## How do the screening scores relate to PHQ-9 scores and depression symptoms?

### PHQ-9 and Depressive Symptoms

PHQ-9 information was not available for nearly a third of the Soldiers (32.1%). Unfortunately, the presence or absence of data was significantly related to Unhealthy Use.[6] Soldiers who had a PHQ-9 score entered into the SBIRT data were less likely (5.8%) to report Unhealthy Use compared to Soldiers who did not have a PHQ-9 score (8.5%). Since those with a score were less likely to have Unhealthy Use, the PHQ-9 scores represent a biased sample; therefore, the following analyses do not reflect all Soldiers screened in SBIRT.

Whether or not a Soldier's PHQ-9 score was present also depended on his or her age and deployment. Significantly more Soldiers in the High Risk Age group were missing a PHQ-9

[6] $\chi 2 = 13.70$, df = 1, $p < 0.001$

(35.8%) compared to other ages (29.9%).[7] Similarly, more Soldiers who were deployed to Iraq/Afghanistan had missing PHQ-9 entries (34.3%) compared to those not deployed (30.4%).[8] Again, analyses based on PHQ-9 scores will not be representative of the total group.

PHQ-9 scores were coded as levels of severity: None (0 – 4), Mild (5 – 9), Moderate (10 – 14), Moderately Severe (15 – 19), and Severe (20 – 27). Both PHQ-9 scores and the depression severity coding were used.

Neither PHQ-9 scores nor the severity level was associated with the Soldier's sex.[9] Similarly, being in the High Risk Age group was not associated with PHQ-9 scores or severity.[10] Deployment to Iraq/Afghanistan was also not associated.[11]

Within this special subset of Soldiers, PHQ-9 severity level was a good indicator of Unhealthy Use.[12] Table 9 shows the relationship of PHQ-9 depression severity and being in the Unhealthy Use group. Note the lower sample size in Table 9 compared to all other analyses.

**Table 9. Risk Level PHQ-9 Severity**

| PHQ-9 Severity[1] | N= | Low Risk (n = 3566) | Unhealthy Use (n = 221) |
|---|---|---|---|
| **None** | 3614 | 94.8% | 5.2% |
| **Mild** | 109 | 84.4% | 15.6% |
| **Moderate** | 44 | 84.1% | 15.9% |
| **Moderately Severe** | 12 | 50.0% | 50.0% |
| **Severe** | 8 | 50.0% | 50.0% |

[1]Jonckheere-Terpstra test, z = 8.02, p < 0.0001

Follow-up analyses using logistic regression and including the Soldier's sex, age group, deployment status and PHQ-9 continued to support this as a predictor of Unhealthy Use among those select Soldiers who had PHQ-9 scores. Substantially increased unhealthy drinking emerges even in the Mild Severity group. The very highest two groups have very small numbers of Soldiers, but these groups also exhibited very high chances for Unhealthy Use. Again, this reflects a subsample of Soldiers who differ from the full sample in important ways (i.e., had higher percentages of unhealthy use).

The Evaluators held discussions with the SBIRT IOWA Steering Committee and IAARNG staff to explore possible sources of this bias. There was no selective bias inherent in the IAARNG SBIRT screening process and speculations that the PHQ-9 screening may have been inadvertently omitted at some annual Periodic Health Assessment events proved to be unfounded. Currently, the PHQ-9 is recorded in SBIRT more consistently. In 2013, 45.5% of intakes were missing the PHQ-9, while in 2014 and 2015, the percentages of missing data were 6.7% and 1.8%, respectively. When examining the data for the most recent two quarters, the

[7] $\chi 2 = 20.52$, df = 1, p < 0.0001

[8] $\chi 2 = 9.12$, df = 1, p < 0.01

[9] Mann-Whitney z = 0.09, p > 0.46; Jonckheere-Terpstra test z = 1.66, p > 0.09

[10] Mann-Whitney z = 1.93, p > 0.05, Jonckheere-Terpstra test z = 1.06, p > 0.28

[11] Mann-Whitney z = 0.17, p > 0.86, Jonckheere-Terpstra test z = 1.06, p > 0.39

[12] Jonckheere-Terpstra test, z = 8.02, p < 0.0001

bias is not present. Continuing the trend of more consistent PHQ-9 data collection will reduce the bias in the data overall in future years.

### Answer to: *How do the screening scores relate to PHQ-9 scores and depression symptoms?*

PHQ-9 scores and depression symptoms appear to have a strong influence increasing the chances of unhealthy drinking in this subgroup of Soldiers with PHQ-9 scores. The effect of depressive symptom severity is large and apparent even in the Mild group. Unfortunately, these results are based on a biased sample, which includes the historical data. Soldiers without PHQ-9 scores had much higher levels of Unhealthy Use than those analyzed.

## Can we predict Soldiers whose AUDIT scores go up or go down over time?

Of the 5,578 Soldiers who underwent SBIRT IOWA screening (meaning at least a prescreening), 1,273 have been screened twice between October 25, 2012 through March 15, 2015. The median number of days between the two screenings is 423 days (approximately 14 months).

Table 10 shows the second screen's use risk level percentages for Solders at each risk level on their initial SBIRT screen. For example, for Soldiers who initially screened as Low Risk, 95.8% again screened in the Low Risk level on their second screen. Of these initially Low Risk Soldiers, 2.7% moved into the Moderate Risk level. More importantly, of those who initially screened in the Moderate Risk level, 76.5% of those Soldiers moved down into the Low Risk level. There is a highly significant reduction in risk levels over the two screenings.[13]

**Table 10. Percentage of Soldiers at Each Initial Use Risk Level and Their Risk Levels on the Second Screen**

| First Screen | | Second Screen | | | |
|---|---|---|---|---|---|
| **Risk Level** | **Number** | **Low Risk** | **Moderate Risk** | **Substantial Risk** | **Severe Risk** |
| **Low Risk** | 1173 | 95.8% | 2.7% | 1.1% | 0.1% |
| **Moderate Risk** | 85 | 76.5% | 16.5% | 5.9% | 1.2% |
| **Substantial Risk** | 9 | 33.3% | 22.2% | 22.2% | 22.2% |
| **Severe Risk** | 6 | 66.7% | 0.0% | 16.7% | 16.7% |

Bowker test for symmetry $\chi 2 = 19.67$, df = 6, $p < 0.004$ (exact permutation $p < 0.001$)

Using the definition of Unhealthy Use, Table 11 shows a similar pattern. While only 7.2% of Soldiers who initially screened in the Low Risk group increased their use to Unhealthy Use, 72% of those who initially were in the Unhealthy Use group reduced their use to Low Risk. This again showed a significant reduction in use.[14] While 49 Soldiers increased their risk level, 72 reduced their level.

[13] Bowker test for symmetry $\chi 2 = 19.67$, df = 6, $p < 0.004$ (exact permutation $p < 0.001$)

[14] McNemar's test $\chi 2 = 4.37$, df = 1, $p < 0.04$ (exact $p < 0.05$)

**Table 11. Initial and Second Screen Unhealthy Use**

| First Screen | Second Screen | |
|---|---|---|
| | Low Risk | Unhealthy Use |
| **Low Risk** | 95.8% | 7.2% |
| **Unhealthy Use** | 72.0% | 28.0% |

McNemar's test $\chi 2 = 4.37$, df = 1, $p < 0.04$ (exact $p < 0.05$)

We attempted to find correlates or predictors of change in risk level using a variety of techniques (univariate and multivariate). We also contrasted those who increased versus those who decreased as well as including all Soldiers who went up, stayed the same, or went down. We used the Soldier's age, sex, deployment status, and PHQ-9 scores. There were no indications of any characteristic predicting a change in risk level.

For example, 40.8% of those Soldiers who increased their risk were in the high-risk age group. Similarly, 43.1% of those Soldiers who decreased their risk were in the high-risk age group. While 36.7% of those who increased to Unhealthy Use and 47.2% of those who decreased to Low Risk were deployed to Iraq/Afghanistan, this difference was not statistically significant.[15]

The only variable that had a marginal correlation was the time between the initial and second screening.[16] For example, splitting the sample into those who decreased their use in one group and those who increased their use in the other group, there was a difference in time to rescreen. Those Soldiers who decreased their use to Low Risk were rescreened a median of 496 days after their first screen. Those who increased their risk level were seen a median of 377 days after the first screen. This significant correlation to the time span between first and second SBIRT screenings became even more significant once the Soldier's sex, age, deployment, and PHQ-9 score was controlled.[17]

## Answer to: *Can we predict soldiers whose AUDIT scores go up or go down over time?*

The simple answer is - No. Using the available information, there were no indications that information at the initial screening predicted whether AUDIT scores and risk levels increased or decreased. Most Soldiers either maintained their Low Risk status or reduced their risk level by the time of the second SBIRT screening. Those in the Moderate Risk initially showed the most marked change, with 76.5% becoming Low Risk at the second screening. However, the numbers of Soldiers in the Substantial and Severe risk groups are very small. Overall, those who increased or decreased appeared evenly spread out over sex, deployment status, age, and PHQ-9 levels.

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[15] $\chi 2 = 1.31$, df = 1, $p > 0.25$

[16] Mann-Whitney $z = 2.01$, $p < 0.047$

[17] Wald $\chi 2 = 7.01$, df = 1, $p < 0.01$

# CONCLUSION

Of the 5,578 Soldiers who underwent SBIRT IOWA screening since the beginning of the project 1,273 were screened at least twice. This report addressed three questions:

- Which Soldiers have higher screening scores (are there common characteristics at initial contact)?
- How do the screening scores relate to PHQ-9 scores and depression symptoms?
- Can we predict soldiers whose AUDIT scores go up or go down over time?

There was some success predicting higher screening scores based on sex, age, and deployment. Being male, between the ages of 20 and 25 years old, and having been deployed to Iraq/Afghanistan additively increased the chances of Unhealthy Use. Males in the high-risk age group who had been deployed to Iraq/Afghanistan had a high percentage of Unhealthy Use, 15.8%. In contrast, Females not in the high-risk age group who had not been deployed to Iraq/Afghanistan had a low percentage of Unhealthy Use, 2.5%. Race or ethnicity showed no evidence of affecting these results. Thus, specialized programs further aimed to reinforce SBIRT efforts and reduce unhealthy drinking might target those in the riskiest group.

PHQ-9 scores and depression severity levels were strongly related to Unhealthy Use, at least in the select subgroup of Soldiers who received PHQ-9 screens in the SBIRT program. Unfortunately, there were differences between those who did receive and those who did not receive a PHQ-9 screen in terms of age, deployment status, and Unhealthy Use. Thus, these results came from a selective subset of Soldiers. Current data suggests that the PHQ-9 has been more consistently recorded over the past year, and that the bias does not appear in the data for the most recent two quarters; hence, analyses at a later date may provide results that are more generalizable.

Changes in AUDIT scores and Unhealthy Use were evident in these data. Use risk levels and Unhealthy Use declined between the initial and secondary SBIRT screens. The decline was particularly noticeable in Moderate Risk use category, where over 75% of Soldiers remitted to Low Risk. Yet, even with the moderately large sample size of 1,273, none of the evaluated predictors statistically distinguished those whose risk level declined or those whose risk level increased. Thus, predicting those whose use level will increase or decrease remains elusive.

# APPENDIX A: FIDELITY ASSESSMENT SUBMISSIONS

Assessments of fidelity to the therapy models used for Brief Interventions (Brief Negotiated Interview model) and Brief Treatment sessions (Integrated Change Therapy model) began in October, 2014. Clinicians, Supervisors, and Soldiers are to complete an assessment questionnaire regarding the clinician's approach in one randomly selected session each quarter. Clinician and Supervisor assessments are matched by clinician name, session date, and the Soldier's client identification number for Brief Interventions and by clinician name, session date, client identification number and session number for Brief Treatment sessions.

There currently are not sufficient numbers of matched assessments on which to assess fidelity. The following table presents the number of matched pairs of clinician and supervisor assessments, the number of Soldier assessments, and the number of unmatched clinician and supervisor assessments submitted through March 15, 2015.

**Table 12. SBIRT Fidelity Assessment Submissions**

| SBIRT Therapy Session | Matched Pairs (Clinician and Supervisor) | Soldier Assessments | Unmatched Clinician Assessments | Unmatched Supervisor Assessments |
|---|---|---|---|---|
| Brief Intervention | 6 | 5 | 0 | 0 |
| Brief Treatment | 5 | 6 | 1 | 1 |