



Suicide among Veterans Discharged from Veterans Health Administration (VHA) Psychiatric Inpatient Units from 2005-2010

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The views in this presentation are those of the authors and do not necessarily represent the official policy or position of the Department of Veterans Affairs or the United States Government.

Poll Question

- What is your primary role in VA?
 - student, trainee, or fellow
 - clinician
 - researcher
 - manager or policy-maker
 - Other

Inpatient Services and Risk for Suicide

- From 1994 to 1998, the suicide rate in the year after discharge from VHA inpatient psychiatric units was 445/100,000 person-years (SD=319.9) among Veterans with *schizophrenia, major depressive disorder, posttraumatic stress disorder, or bipolar disorder*. (Desai et al., 2005)
- From 1999-2004, the suicide rate in the 12 weeks following discharge from a VHA psychiatric inpatient units was 568/100,000 (95% CI = 493, 651) among Veterans treated for *depression*. (Valenstein, et. al., 2009)

Since then, VHA Suicide Prevention Efforts have Increased

- In the *Joshua Omgig Suicide Prevention Act of 2007*, Congress mandated that VHA should implement a comprehensive suicide prevention initiative.
- In 2008, a prevention strategy that was developed by a Blue Ribbon Panel was implemented across VHA.
 - Universal, identified, and selected

Critical Gaps in the Literature for VHA Policy Makers, Clinicians, and Researchers

- The suicide rate since 2004.
- The suicide rate among ALL discharged Veterans, not just those with schizophrenia, major depression, posttraumatic stress disorder, or bipolar disorder.
- The identification of demographic characteristics and diagnoses that are associated with suicide risk in discharged Veterans.

The purpose of this study is to:

- Describe the suicide rate in the year following discharge from VHA inpatient psychiatric treatment from 2005 to 2010.
- Identify demographic and diagnostic risk factors for suicide in this population.

Data Sources

- Data on predictors were derived from the VHA Corporate Data Warehouse (CDW), which houses administrative data.
- Data on suicides were obtained from the Suicide Data Repository (SDR), a VHA database based on the National Death Index (NDI).
- Index stay was defined as the first acute inpatient stay of the target year. Veterans could be included in different cohorts (e.g., 2005 and 2008).

Statistical Analyses

- Suicide rates were calculated by taking the number of suicides, dividing it by the number of person-years after accounting for death by any cause, and multiplying it by 100,000.
- Confidence intervals of rates were derived using the Poisson distribution. (Ulm et al., 1990)
- Bivariate analyses were used to describe the suicide and non-suicide groups.

Statistical Analyses

- Adjusted proportional hazard regression models (HR) with 95% confidence interval were calculated to estimate risk for suicide within one year following discharge from inpatient hospitalization among males.
- A small percentage of patients were directly transferred to another inpatient hospital setting (e.g., community living center), the period of risk evaluation began once they were discharged from the subsequent hospital setting.

Results

- 347,080 VHA patients discharged from an acute inpatient setting between October 1, 2005 (Fiscal Year 2005) and September 30, 2010 (Fiscal Year 2010).
- 981 (0.28%) died by suicide within a year of discharge.

Table 1. Suicide Rates per 100,000 Person Years among Patients Discharged from VHA Psychiatric Hospitalization: Fiscal Years 2005-2010 ^{a, b}

		2005 Cohort n=51,753		2006 Cohort n=56,252		2007 Cohort n=57,125		2008 Cohort n=57,981		2009 Cohort n=58,938		2010 Cohort n=58,089
	N	Rate (95% CI)										
All	122	236 (196, 281)	167	297 (254, 345)	166	291 (248, 338)	186	321 (276, 370)	175	297 (255, 344)	165	284 (242, 331)
Male	112	234 (192, 281)	157	301 (256, 352)	159	302 (256, 352)	181	339 (292, 392)	165	305 (260, 355)	154	290 (246, 339)

^a Rates are unadjusted.

^b Rates in females not reported due to small cell sizes.

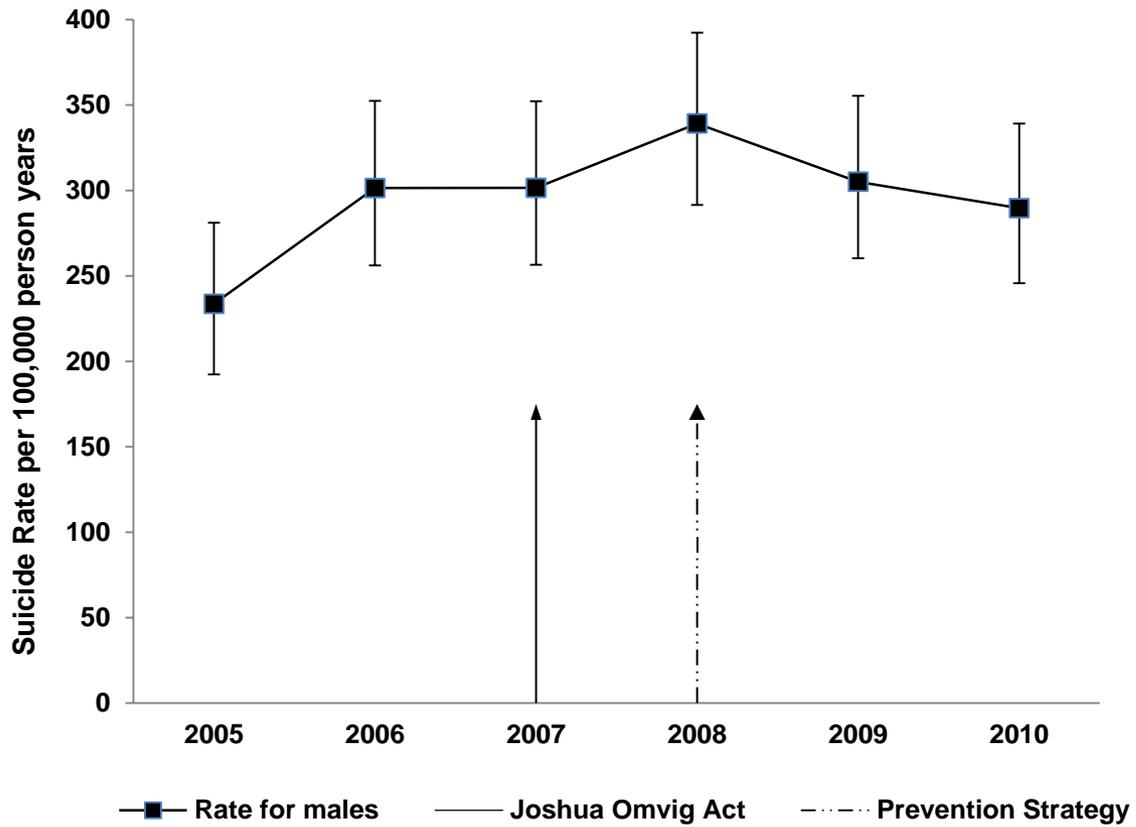


Table 2. Demographics of Suicide Decedents among Patients Discharged from VHA Psychiatric Hospitalization: Fiscal Years 2005-2010			
Group	VHA Inpatient Suicides N (%)	VHA Inpatient PY	VHA Inpatient Suicides /100,000 PY (95% CI)
All	981	340,140	288.41 (270.64, 307.04)
Male	928 (94.6%)	313,343	296.16 (277.41, 315.85)
Female	53 (5.4%)	26,793	197.81 (148.17, 258.74)
Male Age Groups			
18-29	70 (7.5%)	17,765	394.02 (307.16, 497.82)
30-39	96 (10.3%)	25,744	372.9 (302.05, 455.37)
40-49	171 (18.4%)	69,029	247.72 (211.98, 287.76)
50-64	480 (51.6%)	165,896	289.34 (264.03, 316.42)
65 and older	111 (12.1%)	34,908	317.98 (261.58, 382.93)

Table 3. Characteristics of Male Suicide Decedents Discharged from VHA Psychiatric Hospitalization: Fiscal Years 2005-2010

	Variable	All N(% of Total)	Suicides N(% of Suicides)	Non-Suicides N(% of Non- Suicides)	X² p-scores
Living Conditions					
	Rural	124,534 (38.91)	432 (46.55)	124,102 (38.89)	< .001
	Homeless	37,802 (11.81)	62 (6.68)	37,740 (11.83)	< .001
Psychiatric Diagnosis					
	Major Depression	60,970 (19.05)	276 (29.74)	60,694 (19.02)	< .001
	Other Depression	29,740 (9.29)	106 (11.42)	29,634 (9.29)	< .05
	Bipolar	50,555 (15.79)	178 (19.18)	50,377 (15.78)	< .01
	Schizophrenia	62,099 (19.40)	93 (10.02)	62,006 (19.43)	< .001
	Other Psychoses	14,415 (4.50)	50 (5.39)	14,365 (4.50)	0.19
	PTSD	78,960 (24.67)	203 (21.88)	78,757 (24.68)	< .05
	Other Anxiety	19,260 (6.02)	106 (11.42)	19,154 (6.00)	< .001
	Alcohol Use Disorder	151,169 (47.23)	414 (44.61)	150,755 (47.24)	0.11
	Drug Use Disorder	107,382 (33.55)	204 (21.98)	107,178 (33.58)	< .001
	Dementia	8,347 (2.61)	6 (0.65)	8,341 (2.61)	< .001
Somatic Problems					
	Sleep	7,674 (2.40)	26 (2.80)	7,648 (2.40)	0.42
	Pain	95,855 (29.95)	278 (29.96)	95,577 (29.95)	0.99

Predictor		Adjusted HR (95% CI)
Year of Discharge		
	2005	(Reference)
	2006	1.29 (1.01, 1.65)
	2007	1.28 (1.01, 1.63)
	2008	1.44 (1.14, 1.83)
	2009	1.28 (1.01, 1.63)
	2010	1.23 (0.97, 1.58)
Age		
	18-29	1.28 (0.94, 1.74)
	30-39	1.28 (0.96, 1.69)
	40-49	0.97 (0.76, 1.25)
	50-64	1.20 (0.89, 1.36)
	65 and older	(Reference)
Living Conditions		
	Rural	1.18 (1.04, 1.35)
	Homeless	0.56 (0.47, 0.67)

Table 4b. Adjusted Hazards for Suicide Decedents Discharged from US VA Psychiatric Hospitalization: Fiscal Years 2005-2010	
Predictor	Adjusted HR (95% CI)
Psychiatric Diagnosis	
Major Depression	1.58 (1.34, 1.84)
Other Depression	1.34 (1.08, 1.65)
Bipolar	1.28 (1.08, 1.52)
Schizophrenia	0.48 (0.38, 0.60)
Other Psychoses	1.25 (0.92, 1.64)
PTSD	0.66 (0.56, 0.77)
Other Anxiety	1.53 (1.24, 1.87)
Alcohol Use Disorder	0.99 (0.86, 1.13)
Drug Use Disorder	0.63 (0.54, 0.74)
Dementia	0.22 (0.09, 0.45)
Physical Comorbidity	
Gagne index	1.02 (0.95, 1.09)
Somatic Problems	
Sleep	1.00 (0.66, 1.44)
Pain	0.94 (0.81, 1.08)

Key Findings for Discussion

- The suicide rate ranged from 236 to 321/100,000 higher than the rate observed across VHA, but lower than prior analyses among VHA psychiatric inpatients.
- Males accounted for 94.5% of suicides and were at greater risk than female Veterans.
- Among males, the suicide rate was significantly elevated from 2006 to 2009 (e.g., 44% greater odds in 2008 than in 2005), but dropped to a non-significant level in 2010.

Key Findings for Discussion (Males)

- To fully understand how to address risk, we must understand the mosaic. (Caine, 2013)
- Rural residence was associated with 18% higher odds of suicide than urban residence.
- Homeless Veterans had 44% lower odds of suicide than non-homeless Veterans.

Findings for Discussion

- Mood disorders were associated with higher odds of suicide (i.e., major depression 58%, other depression 34%, bipolar disorder 28%, other anxiety 53%).
- Most other psychiatric disorders were associated with lower odds of suicide (i.e., dementia 78%, schizophrenia 42%, drug use disorders 37%, PTSD 34%).

Limitations

- Research targeting women is needed and must be tailored to the population as the number of suicides is small.
- Analyses were descriptive, more sophisticated approaches are needed to understand suicide risk in this population.
- We cannot account for misclassified deaths.
- Analyses were based on administrative data from the VHA CDW that would not include hospitalizations outside of VHA, limiting generalizability to Veterans discharged from VHA facilities.

Questions?

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References

- Blow, F. C., Bohnert, A. S. B., Ilgen, M. A., Ignacio, M. S., McCarthy, J. F., Valenstein, M. M., & Knox, K. L. (2012). Suicide mortality among patients treated by the veterans health administration from 2000-2007. *American Journal of Public Health, 102*(S1), S98-S104.
- Caine, E. D. (2013). Forging an agenda for suicide prevention in the united states. *American Journal of Public Health, 103*(5), 822-829.
- Desai, R. A., Dausey, D. J., & Rosenheck, R. A. (2005). Mental health service delivery and suicide risk: The role of individual patient and facility factors. *American Journal of Psychiatry, 162*(2), 311-318.
- Hoffmire, C., Kemp, J., & Bossarte, R. (Epub ahead of print). Changes in suicide mortality for veterans and nonveterans by gender and history of VHA service use, 2000-2010.
- Ilgen, M. A., Bohnert, A. S., Ignacio, R. V., McCarthy, J. F., Valenstein, M. M., Kim, H. M., & Blow FC. (2010). Psychiatric diagnoses and risk of suicide in veterans. *Archives of General Psychiatry, 67*(11), 1152-1158.
- Kemp, J., & Bossarte, R. M. Suicide data report 2012 final; department of veterans affairs. Retrieved from <https://www.va.gov/opa/docs/Suicide-Data-Report-2012-final.pdf>
- Valenstein, M., Kim, H. M., Ganoczy, D., McCarthy, J. F., Zivin, K., Austin, K. L., . . . Olfson, M. (2009). Higher-risk periods for suicide among VA patients receiving depression treatment: Prioritizing suicide prevention efforts. *Journal of Affective Disorders, 112*(1-3), 50-58.