# Evidence-based Synthesis Program (ESP)

## Suicide Risk Factors, Suicide Risk Assessment, and Suicide Prevention Interventions

## Systematic Reviews

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# Evidence-based Synthesis Program (ESP)

## Acknowledgements


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## Disclosure

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# Evidence-based Synthesis Program (ESP)

## VA Evidence-based Synthesis (ESP) Program Overview

- Sponsored by VA QUERI Program.
- Established to provide timely and accurate syntheses/reviews of healthcare topics identified by VA clinicians, managers and policy-makers, as they work to improve the health and healthcare of Veterans.
- Builds on staff and expertise already in place at the Evidence-based Practice Centers (EPC) designated by AHRQ. Four of these EPCs are also ESP Centers:
  - Durham VA Medical Center; VA Greater Los Angeles Health Care System; Portland VA Medical Center; and Minneapolis VA Medical Center.

# Evidence-based Synthesis Program (ESP)

- Provides evidence syntheses on important clinical practice topics relevant to Veterans, and these reports help:
  - develop clinical policies informed by evidence,
  - the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
  - guide the direction for future research to address gaps in clinical knowledge.
- Broad topic nomination process – e.g. VACO, VISNs, field – facilitated by ESP Coordinating Center (Portland) through online process:

*http://www.hsrd.research.va.gov/publications/esp/TopicNomination.cfm*

# Evidence-based Synthesis Program (ESP)

- Steering Committee representing research and operations (PCS, OQP, ONS, and VISN) provides oversight and guides program direction.
- Technical Advisory Panel (TAP)
    - Recruited for each topic to provide content expertise.
    - Guides topic development; refines the key questions.
    - Reviews data/draft report.
- External Peer Reviewers & Policy Partners
    - Reviews and comments on draft report
- Final reports posted on VA HSR&D website and disseminated widely through the VA.

*http://www.hsrd.research.va.gov/publications/esp/reports.cfm*

# Evidence-based Synthesis Program (ESP)

## Current Reports:

- Suicide Risk Factors and Risk Assessment Tools: A Systematic Review (March, 2012)
- Suicide Prevention Interventions and Referral/Follow-up Services: A Systematic Review (March, 2012)

Full-length reports available on ESP website:

*http://www.hsrd.research.va.gov/publications/esp/reports.cfm*

# Evidence-based Synthesis Program (ESP)

## Overview of Today's Presentation

- Background
  - Why is this topic of interest, and what was the purpose of the reports?
- Scope of the reviews and methods
  - Synthesizing the best available and most relevant evidence
- Results
  - Veteran/Military and general risk factors
  - Risk assessment tools
  - Pharmacotherapy interventions
  - Psychotherapy interventions
  - Referral/follow-up services
- Limitations, Future Research
  - What studies are needed to make a difference in this complex field?
- Discussion
  - Process of Clinical Practice Guidelines development
  - Update on current research within the VA

# Evidence-based Synthesis Program (ESP)

## Background

- Suicide is a major public health concern in the US, claiming over 36,000 lives each year and nearly 100 lives each day.
- Current or former military represent 20 percent of all known suicides in the US and the rate of suicides among Veterans utilizing Veterans Health Administration (VHA) services is estimated to be higher than the general population.
- Veterans returning from the Iraq and Afghanistan conflicts, referred to as Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Veterans, may be particularly at risk. Many risk factors specific to the OEF/OIF population have yet to be thoroughly evaluated and incorporated into clinical management.

# Evidence-based Synthesis Program (ESP)

## Key Questions:
## Risk Factors and Assessment Tools Report

- Key Question #1. What assessment tools are effective for assessing risk of engaging in suicidal self-directed violence in Veteran and military populations?
- Key Question #2. In addition to the risk factors included by current assessment tools, what other risk factors predict suicidal self-directed violence in Veteran and military populations?

# Evidence-based Synthesis Program (ESP)

## Key Questions: Interventions Report

- Key Question #1. What is the effectiveness of specific interventions for reducing rates of suicidal self-directed violence in military and/or Veteran populations?
- Key Question #2. What lessons can be learned from suicidal self-directed violence prevention intervention research conducted outside of Veteran or military settings that can be applied to Veteran and/or military populations?
- Key Question #3. What is the effectiveness of referral and follow-up services (e.g., strategies designed to provide referrals, improve referral follow-through and attendance, etc.) for reducing rates of suicidal self-directed violence in military and/or Veteran populations?
- Key Question #4. What lessons can be learned from research on suicidal self-directed violence referral and follow-up services conducted outside of Veteran or military settings that can be applied to Veteran and/or military populations?

# Evidence-based Synthesis Program (ESP)

## Scope of the reports:

- Previous research includes systematic reviews by Hawton et al. (1999), Gaynes et al. (2004), and Mann et al. (2005).
- Recent, similar work includes National Institute for Health and Clinical Excellence (NICE) 2012 systematic review and clinical practice guidelines on self-harm.
- This report: Requested by the Veterans Affairs (VA)/Department of Defense (DoD) Evidence Based Practice Working Group (EBPWG) on suicide prevention.
- Review of previous reviews and of recent literature published through November 18th, 2011.

# Evidence-based Synthesis Program (ESP)

## Scope of the reports:

- Outcomes: The definition of suicidal self-directed violence (Crosby et al. 2011): “Behavior that is self-directed and deliberately results in injury or the potential for injury to oneself. There is evidence, whether implicit or explicit, of suicidal intent."
- Risk factors and assessment tools report: Included reviews on civilian populations, and primary literature on Veterans and members of the military.
- Interventions report: Included reviews and primary literature on civilian populations due to the paucity of primary studies on Veterans and members of the military.

# Evidence-based Synthesis Program (ESP)

## Methods

- Search: PubMed, PsycINFO, the Cochrane Database of Systematic Reviews®, the Cochrane Central Register of Controlled Trials, reference lists, consultation with experts, and web searches
- Search dates: 2005 to November 18, 2011
- Inclusion/exclusion criteria: English language, country (USA, Canada, Great Britain, Australia, New Zealand)
- Reviewed 16,521 titles and abstracts from the electronic and hand searches
  - 30 observational studies and 14 systematic reviews were included in the Risk and Assessment report
  - 38 RCTs and 23 systematic reviews were included in the Interventions report
- Dual, blinded quality assessment of all primary studies and systematic reviews

# Evidence-based Synthesis Program (ESP)

## Key Questions:
## Risk Factors and Assessment Tools Report

- Key Question #1. What assessment tools are effective for assessing risk of engaging in suicidal self-directed violence in Veteran and military populations?
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# Evidence-based Synthesis Program (ESP)

## Review of Existing Systematic Reviews of Risk Factors in Civilian Populations:

- Systematic reviews by Mann et al, Gaynes et al, and NICE 2011.
- Mann and Gaynes did not systematically address individual risk factors.
- NICE report methodology differs from our report in several ways:
  - Only prospective studies evaluating risk of repetition of self harm.
  - Country scope broader
  - Included studies that were minimally adjusted for known risk factors

# Evidence-based Synthesis Program (ESP)

## Review of Existing Systematic Reviews of Risk Factors in Civilian Populations:

- Risk factors for non-fatal self harm:
  - Prior self-harm and depression symptoms
  - Schizophrenia and related symptoms
  - Alcohol misuse
  - Other psychiatric history
  - Unemployment and “registered sick”
  - female gender (mixed and poor quality evidence)
  - Unmarried status (not predictive in pooled analysis)
  - Younger age
- Risk factors for suicide:
  - Suicide intent/intent to die
  - Male gender
  - Psychiatric history
  - Older age
  - Violent methods of self-harm
  - Physical health problems (mixed evidence)
  - Alcohol abuse (mixed evidence)

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## Systematic Review of Primary Literature on Risk Factors: Specific Methods

- New risk factors may act through or as a result of other existing/known risk factors
- Therefore, controlling for know risk factors is essential to identification of new risk factors.
- We included only studies that adjusted for one of the following:
  - Suicidal ideation
  - History of suicide attempts
  - Substance use disorder
  - History of any mental health diagnosis
- Excluded:
  - Studies reporting only rates in a specific population
  - Studies of genetic testing to predict suicide
  - Studies of post-mortem tissue (biochemical/pathologic) factors associated with suicide
  - RCTs that failed to account for treatment allocation.

# Evidence-based Synthesis Program (ESP)

## Results of Systematic Review of Primary Literature on Risk Factors in Veteran and Military Populations:

- 26 studies identified, 22 with unclear or low risk of bias.
- Generally longitudinal studies are more valid than cross-sectional studies for prediction.
- Outcomes included suicide and suicide attempts (self-report and objective)

| | **Suicide Attempts** | **Suicide** |
|---|---|---|
| Longitudinal | Self-report - 2 | 11 |
| Cross-sectional | Self-report - 5 | 0 |
| Retrospective | Objective - 2 | 2 |

# Evidence-based Synthesis Program (ESP)

## Results of Systematic Review of Primary Literature on Risk Factors in Veteran and Military Populations:

- Risk factors for suicide:
  - Demographic: male, younger age, white race, education, smoking
  - Psych: number of conditions, PTSD (mixed), depression, anxiety, bipolar, schizophrenia, alcohol, substance abuse, inpatient hospitalization
  - Military factors: TBI
  - Other: diabetes, CV disease, lower mental health functioning (SF-12), severe pain, activity limitations

- Risk factors for suicide attempt:
  - Demographic: marital status (mixed)
  - Psych: presence of conditions, PTSD, depression, bipolar, prior suicide attempt, social phobia, alcohol abuse, substance abuse (mixed), negative life events
  - Military factors: multiple specific types of trauma

# Evidence-based Synthesis Program (ESP)

## Results: Assessment Tools

- Three systematic reviews find insufficient evidence for existing tools predicting suicidal self-directed violence
- Two broadly scoped, non-systematic reviews highlight the Scale for Suicidal Ideation and the Beck Hopelessness Scale as two measures that have shown associations with death by suicide
- Five primary studies researched assessment tools in Veteran/military populations
  - Addiction Severity Index is no longer used in VA settings
  - Personality Assessment Inventory is lengthy, complex to interpret and score
  - Interpersonal Psychological Survey is not well researched
  - Beck Depression Inventory-II and Affective States Questionnaire are potentially useful as brief screening tools in primary care settings
  - Overall very limited evidence

# Evidence-based Synthesis Program (ESP)

## Key Questions: Interventions Report

- Key Question #1. What is the effectiveness of specific interventions for reducing rates of suicidal self-directed violence in military and/or Veteran populations?
- Key Question #2. What lessons can be learned from suicidal self-directed violence prevention intervention research conducted outside of Veteran or military settings that can be applied to Veteran and/or military populations?
- Key Question #3. What is the effectiveness of referral and follow-up services (e.g., strategies designed to provide referrals, improve referral follow-through and attendance, etc.) for reducing rates of suicidal self-directed violence in military and/or Veteran populations?
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# Evidence-based Synthesis Program (ESP)

## Results from the Interventions Report: Pharmacotherapy in Previous Reviews

- Findings based on few studies with small sample sizes, short term follow-up assessment periods, and methodological quality concerns
  - Antidepressant trials do not show a benefit for suicide reduction, but rates of suicide may have been too low to detect an effect. Observational studies show a correlation between increasing prescription rates and decreasing suicide rates, but this evidence is considered lower strength than evidence obtained from RCTs or meta-analyses
  - Positive findings from trials of the antipsychotic medications flupenthixol, clozapine, and fluphenazine, though findings are based on small samples of patients in very few studies
  - Mixed results related to mood stabilizing medications. Gaynes et al. report no reduction in suicide rates based on one trial of lithium, whereas Mann et al. and NICE report some non-significant reductions in suicide rates for patients receiving lithium

# Evidence-based Synthesis Program (ESP)

## Results from the Interventions Report: Pharmacotherapy in Primary Studies

- Antidepressant medications: Insufficient evidence to make a strong conclusion about the effectiveness of antidepressants in reducing suicides and suicide attempts from 9 trials
- Antipsychotic medications: Three trials provided insufficient evidence for the effectiveness of quetiapine (1 trial) or adjunctive aripiprazole (2 trials) in reducing suicidal self-directed violence
- Mood stabilizers: One trial of lithium versus valproate and one trial of lithium versus citalopram provided insufficient evidence
- Omega-3 supplements: One trial provided insufficient evidence

# Evidence-based Synthesis Program (ESP)

## Results from the Interventions Report: Psychotherapy in Previous Reviews

- Previously published systematic reviews all report an overall insufficient to low strength of evidence for the effectiveness of any psychotherapeutic interventions
  - Cognitive therapies: Mixed results
  - Dialectical Behavior Therapy: Positive results for patients with Borderline Personality Disorder
  - Interpersonal Psychotherapy: Positive findings
  - Outpatient Day Hospitalization: Null findings
  - Problem-Solving Therapy: Positive findings
  - Psychoanalytically oriented partial day hospitalization: Positive results for patients with Borderline Personality Disorder
  - Transference-focused Psychotherapy: Positive findings

# Evidence-based Synthesis Program (ESP)

## Results from the Interventions Report: Psychotherapy in Primary Studies

- Moderate strength evidence for problem-solving treatment in addition to usual care compared to usual care alone for patients with recent, repeated suicide attempts.
  - No significant benefit of the intervention compared to usual care for the overall group of patients. Significant benefit noted for a sub-population of patients who had multiple hospitalizations for self-harm prior to the intervention.
- The other trials provided insufficient or low strength evidence
  - Limitations in quality
  - Insufficient statistical power to detect intervention effects on low base-rate outcomes
  - Other promising results: DBT and CBT targeting suicidal behavior

# Evidence-based Synthesis Program (ESP)

## Results from the Interventions Report: Referral & Follow-up Services

- Previous reviews have highlighted postcard interventions as showing promise, though results are mixed and provide low strength evidence.
- Findings from primary studies:
  - Three studies of postcard interventions showed mixed results.
  - Two studies of Youth-Nominated Support Team interventions, one study of assertive community treatment, and one trial of a depression care management program yielded non-significant results
  - All these studies provided low strength evidence

# Evidence-based Synthesis Program (ESP)

## Overview of Results

- Risk Factors:
  - Suicide predicted by demographics, military factors, psych and other
  - Suicide attempts predicted by psych and trauma experiences
- Assessment tools:
  - Overall limited evidence
  - Scale for Suicidal Ideation, Beck Hopelessness Scale, Affective States Questionnaire, Beck Depression Inventory-II, and Patient Health Questionnaire-9 need investigation in Veteran/military populations
- Interventions:
  - Best available evidence for Problem-Solving Therapy
  - Promising interventions: Dialectical Behavioral Therapy and Cognitive Behavioral Therapies targeting suicidal self-directed violence

# Evidence-based Synthesis Program (ESP)

## Limitations and Future Research Priorities

- Low base-rates present the largest challenge
- Risk factors:
  - Evaluate new risk factors with accounting for known risk factors
  - Additional studies in Veteran and military populations
- Assessment tools:
  - Reclassification analysis is the gold standard
  - Examine brief, easy to administer assessment tools in Veteran/military populations
- Interventions:
  - Instead of small-scale trials of multiple new and slightly different interventions, fewer, methodologically sound, very large-scale trials of the most promising interventions

# Evidence-based Synthesis Program (ESP)

## Discussants:

John Bradley, Lisa Brenner, and Marcia Valenstein

- Describe the process of creating Clinical Practice Guidelines
  - Why are clinical practice guidelines important?
  - How is the process unique for the topic of suicide prevention?
  - How does the CPG writing group use the evidence to inform the guidelines?
  - What is the status of the clinical practice guidelines development process currently?

# Evidence-based Synthesis Program (ESP)

## Discussants:

John Bradley, Lisa Brenner, and Marcia Valenstein

- How do we take current, limited research and implement changes in policy, research, and practice?
  - How should we design and disseminate research to address the gaps in our knowledge (risk factors, risk assessment tools, and interventions)?
  - What does VA leadership need to do to encourage VA work that builds the evidence base?
  - What research in this area is ongoing in VA/military settings (risk factors, risk assessment tools, and interventions)?

# Evidence-based Synthesis Program (ESP)

## Questions?

If you have further questions,
feel free to contact:

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The full report and cyberseminar presentation is available on the ESP website:

*http://www.hsrd.research.va.gov/publications/esp/*

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|---|---|---|---|---|
| 6/11/2012 | 1:00pm | Suicide Prevention Interventions and Suicide Risk Factors and Risk Assessment Tools | Spotlight on Evidence-based Synthesis Program | Bradley, John<br>Brenner, Lisa<br>Haney, Elizabeth<br>O'Neil, Maya<br>Valenstein, Marcia |

Questions Submitted:

Can you tell us more about problem-solving therapy, such as a reference?

**Response**: Of course—see the Hatcher et al. article available at http://bjp.rcpsych.org/content/early/2011/07/30/bjp.bp.110.090126.

Just a note that caution should be taken with using the BDI-II to predict suicidal behavior: scores on question 9 (suicide) to NOT increase monotonically with total score. If you rely on that question, you could be easily misled.

**Response**: Yes, this is a great point, and one that we hope primary authors are considering. In our report, we described the measures as they were reported in the primary studies. For future research, we agree that this BDI-II total scores should be evaluated in addition to only the BDI-II item related to suicidal ideation.

What is a postcard intervention?

**Response**: There have been a few studies investigating the effectiveness of postcards (or other caring mailings) mailed to patients following psychiatric hospitalization. On recent example can be found at http://www.ncbi.nlm.nih.gov/pubmed/20592434.