A Systematic Review of School-based Suicide Prevention Programs

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Disclosures

- None

Conclusions

- Several promising programs, yet more rigorous evaluation needed
  - Inclusion of suicidal behavior outcome
- Evaluation of combination of programs such as SOS and GBG, as one program may not be sufficient
Background

- Suicide is one of the leading causes of death among youth today
- School is most cost-effective way to reach youth
- Comprehensive suicide prevention plan includes health promotion, prevention, intervention and postvention
- Many programs, limited evidence

Objective:

- Identify evidence base for school-based suicide prevention programs
- Recommend programs based on level of evidence, outcomes and cost-effectiveness

Background

- Five types of suicide prevention programs:
  1) Suicide awareness/education curricula
  2) General skills training
  3) Gatekeeper training
  4) Peer leadership training
  5) Screening

Suicide Awareness/Education Curricula

Goal:

- to make students more aware and knowledgeable of warning signs for suicide so that they can recognize them in themselves and others

Underlying premise:

- students more likely to confide in other peers than adults

Limitations:

- knowledge and attitudes are not necessarily correlated with changing suicidal behavior
- At-risk youth don’t usually have extensive peer network

SOS
Screening

- Goal:
  - find all students who are at risk so further treatment can be accessed
- Underlying premise:
  - Screening tools identify risk factors for suicide such as depression, drug and alcohol abuse and past suicidal behavior
  - Screening all students increases likelihood of finding students at risk
- Limitations:
  - Fear of iatrogenic effects
  - Time-dependent
  - Effectiveness dependent on subsequent referral
  - SOS, TeenScreen

Gatekeeper Training

- Goal:
  - To teach school staff to recognize the warning signs of suicide and refer these students for additional help
- Underlying premise:
  - Suicidal youth are under-identified, therefore training school staff to recognize the warning signs should help in identifying more youth at risk
- Limitations:
  - Dependent on subsequent service use
  - QPR

Peer Leadership Training

- Goal:
  - Train peers to recognize warning signs of suicide in their peers and connect those individuals with a trusted adult who can refer for help
- Underlying premise:
  - Peers are more likely to talk to other peers rather than adults
- Limitations:
  - As with gatekeeper training, relies on subsequent use of services
  - Sources of Strength
Skills Training

- **Goal:**
  - Increase protective factors and decrease risk factors
- **Underlying premise:**
  - Teaching life skills, such as coping, problem solving and decision making skills, will reduce risk or suicide
- **American Indian Life Skills Development, CARE/CAST, Reconnecting Youth, The Good Behavior Game**

Method

- MEDLINE, PsychINFO, Scopus search for “youth suicide prevention” and “school-based youth suicide prevention”
- Relevant programs searched manually
- 60 relevant abstracts reviewed
- All studies rated for level of evidence by five independent reviewers (inter-rater agreement rate of 0.80)
- Based on Oxford Centre for Evidence-Based Medicine
- All programs given a grade

Levels of Evidence:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Systematic Review of RCTs</td>
</tr>
<tr>
<td>1b</td>
<td>Individual RCT with narrow confidence interval</td>
</tr>
<tr>
<td>2a</td>
<td>All or None (case series)</td>
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<tr>
<td>2b</td>
<td>Systematic review of cohort studies</td>
</tr>
<tr>
<td>3a</td>
<td>Individual cohort studies (and low quality RCT)</td>
</tr>
<tr>
<td>4</td>
<td>Randomized Controlled Trial (RCT)</td>
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<tr>
<td>5</td>
<td>Expert opinion without critical appraisal</td>
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</tbody>
</table>

**Oxford Centre for Evidence-Based Medicine: Levels of Evidence (updated 2009)**
Method

<table>
<thead>
<tr>
<th>Grades of Recommendation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Consistent level 1 studies</td>
</tr>
<tr>
<td>B</td>
<td>Consistent level 2 or 3 studies or extrapolations from level 1 studies</td>
</tr>
<tr>
<td>C</td>
<td>Level 4 studies or extrapolations from level 2 or 3 studies</td>
</tr>
<tr>
<td>D</td>
<td>Level 5 evidence of troublingly or inconclusive studies of any level</td>
</tr>
</tbody>
</table>

*Adding a minus sign (-) denotes inconclusive answer due to:
- Single result with wide confidence interval
- Systematic review with troublesome heterogeneity
*Inconclusive results can only generate a grade of D recommendations

Results

SOS (Signs of Suicide)

- Underlying principle
  - Promotes concept of suicide as mental illness, not normal response to stress
  - Universal Suicide awareness education + screening
  - Through video and guided classroom discussions, students are taught to recognize signs of suicide and how to respond appropriately
- Evaluation: Aseltine Jr & DeMartino, 2004 (n=200); Aseltine Jr et al., 2007 (n=493)
- Outcomes:
  - Suicide Attempts → B
  - Suicide Ideation → D
  - Help-seeking behavior → D
  - Attitudes and Knowledge → B
**The Good Behavior Game (GBG)**

- Universal, Early elementary school
- Helps children develop intrinsic self-regulation by rewarding teams that meet behavior standards set by each teacher
- Goal: create positive classroom environment where kids are supported by one another and can learn in environment without aggressive and disruptive behavior
- Underlying principle: poor academic achievement has been associated with suicidality and depression
- Hope is to prevent risk factors from developing in future
- Evaluation: Wilcox et al., 2008 (n=1918)
- Outcomes:
  - Suicidal ideation → B
  - Suicide attempts → B

**CARE (Care, Assess, Respond, Empower)/ CAST (Coping and Support Training)**

- CARE:
  - Selected program; identifies at-risk youth through in-depth, computer-assisted suicide assessment interview followed by motivational counseling and support interventions; 1-year follow-up behavior assessment and reassessment
  - Goal: decrease suicidal risk factors and increase personal and social capital
  - Adapted for Aboriginal communities
- CAST:
  - Selected program; Aims to increase life skills and social support in small groups
  - Students are identified through CARE
  - Twelve 55-min sessions over 6 weeks, delivered by trained school staff
  - Goal: increase mood management, academic achievement and decrease drug use
- Evaluation: Eggert et al., 2003 (n=341); Randall et al., 2001 (n=341); Thompson et al., 2001 (n=949); Heeren et al., 2001 (n=685)
- Outcomes:
  - Attitudes and Knowledge → B
  - General Skills → B
  - Suicide ideation → C

**American Indian Life Skills Development**

- Universal, Culturally adapted program designed to reduce suicide risk factors and increase protective factors
- Program has been adapted for 20 different Aboriginal tribes
- Evaluation: LaFramboise & Howard-Pitney, 1995 (n=128)
- Outcomes:
  - General skills → C
  - Suicide ideation → C
QPR (Question, Persuade, Refer)
- Universal Program based on 4 steps:
  1) to recognize suicide warning signs
  2) training of all school staff in QPR
  3) training school counselors to properly assess at-risk students
  4) organizing access to professional assessment and treatment
- Evaluation: Wyman et al., 2008 (n=249); Tompkins et al., 2009 (n=106)
- Outcomes:
  - Gatekeeper behavior change → D
  - Attitudes and Knowledge → B

Sources of Strength
- Universal: Designed to increase eight protective factors among student population and to decrease risk factors for suicide by creating positive coping norms and building protective influences within the school
- Enables positive peer supports in school environment and to create expectation that youth ask trusted adults for help
- Peer gatekeeper + skills training
- Peer leaders meet bi-weekly with trained adult supervisors
- Evaluation: Wyman et al., 2010 (n=453)
- Outcomes:
  - Attitudes and Knowledge → B
  - Gatekeeper behavior → B

Reconnecting Youth
- Selected program: Targets youth with poor academic achievement who are at risk for dropping out of school
- Students taught to build resiliency against risk factors
- Provides social support through bonding activities and parental support
- Limitation: groups at-risk youth together, therefore may strengthen deviant relationships
- Evaluation: Eggert & Hering, 1991 (n=264); Eggert et al., 1994 (n=477); Eggert et al., 1995 (n=105); Thompson et al., 2000 (n=106)
- Outcomes:
  - Attitudes and Knowledge → B
  - General skills → B
TeenScreen

- Universal Self-report tool that assesses important risk factors for suicide
- Evaluation: Scott *et al.*, 2009 (n=1729); Shaffer *et al.*, 2004 (n=641)
- Outcomes:
  - Attitudes and Knowledge $\Rightarrow$ B

Results

<table>
<thead>
<tr>
<th>Program</th>
<th>Attitude/Knowledge</th>
<th>General Skills</th>
<th>Gatekeeper Behavior</th>
<th>Help Seeking Behavior</th>
<th>Suicide Behavior</th>
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<tbody>
<tr>
<td>ASCF</td>
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<td>C</td>
<td>D</td>
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<tr>
<td>CAST/CARE</td>
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<td>D</td>
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<td>C</td>
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<tr>
<td>ASAP</td>
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<td>B</td>
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<td>CD-ROM (Team up to Save Lives)</td>
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<td>ICE</td>
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<td>SEHS</td>
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<td>Sources of Strength</td>
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<td>TeenScreen (Columbia Suicide Screen)</td>
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<td>Yellow Ribbon Suicide Prevention Program</td>
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<td>Youth Suicide Prevention Program (YSPP)</td>
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<td>Zuni/American Indian Life Skills Development</td>
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Discussion- RCT Data

- Ultimate goal of prevention program: to prevent suicide attempts and deaths
  - SOS + GBG are the only programs to demonstrate effectiveness in reducing suicide attempts
  - Differences between SOS and GBG
    - Mechanism of effect
    - Follow-up period
    - Goal of program

- Other Promising Programs:
  - Sources of Strength
    - Only program to change gatekeeper behaviors (peer-leaders)
    - Has not measured suicidal behavior as an outcome (trial currently in progress)
Discussion - Uncontrolled Studies

- American Indian Life Skills Development
  - Positive effect on suicidal ideation
  - Did not measure suicide attempts
  - No RCT data

Discussion

- Limitations:
  1) Heterogeneity in grading of programs due to large variation in programs
     - Not all programs designed with similar goals, outcomes measured differently
     - Must be careful when comparing programs against one another
  2) Lack of evaluation of suicide behavior outcome
     - Could only make recommendations based on the literature available to date
     - Grades reflect this
     - Example: Grade D = lack of conclusive evidence or poorly designed study (not necessarily negative result or bad program)
  3) Mental Health Promotion programs beyond scope of review

Conclusions

- Future research:
  - Several promising programs, yet more rigorous evaluation needed
    - Inclusion of suicidal behavior outcome
  - Evaluation of combination of programs such as SOS and GBG, as one program may not be sufficient