Suicide in Children and Adolescents

Donald E. Greydanus, MD
Professor, Pediatrics & Human Development
Michigan State University
College of Human Medicine
Greydanus@kcms.msu.edu
Sigmund Freud and Suicide (Pfeffer, 1986)

- Epidemic of Youth Suicide after publication of:
  - Early 1800s publication
  - Goethe’s: *The Sorrows of Young Werner*
  - Hero shot himself after losing his love

- Vienna Psychoanalysis Society:
  - 1910 Youth Suicide Conference

- Freud: Main risk factor: *Love Conflicts*
Sigmund Freud and Suicide (Pfeffer, 1986)

- Others: School Pressure
- Conclude: Need more research on Youth Suicide
- 1989 Surgeon General Report: Need research
- Feb, 2011 Peds Clinic No Amer: More research!
Suicide: A Global Problem
(Mann, JAMA, 2005)

- 2002: 877,000 suicides in the world
- Up to 200,000 are 15-24 years of age
- Rates from around the world
  - Eastern Europe: 10+: 27+/100,000
  - Latin America + Muslin: Under 6.5
- ’02: 31,655 deaths in the United States
  (11/100,000)
- 2000 are 15-19 years of age + 2000: 20-24
Mental Illness noted in 90% (Depression [MDD, BPD]: 60%)

More teens & young adults die from suicide than from combo:
- Cancer and heart disease
- AIDS, chronic lung disease
- Birth defects, CVA, Pneumonia, FLU

Prevention is the Key Principle:
- Improved Primary Care Screening
- Improved Depression Treatment
**Childhood Suicide Rates: 5-14 Year Olds**

- Has increased over the past 30 years in the US: (doubled from 1979 to 1992)
  - 0.4/100,000 in 1979
  - 0.8/100,000 in the 1990s (0.7 - 0.9)
  - Approximately 300 suicides per year in the 90s (324 suicides in 1998)
**Worldwide**: 0.5/100,000 in females & 0.9 in males

- **10-14 years**: same male as female numbers
- **5-14**: Male to female is 3:1
- **15-24 year olds**: 6:1 ratio
Childhood Suicide

- Limited Research and Discussion
- Data usually looks at adolescent suicide
- Data often hidden in stats on 10-14 or 5 to 14 year olds
- Some conclude children do not commit suicide
- Failure to understand death is final
- Onset of puberty varies widely
Children and Concepts of Suicide (Mishara, 2003)

- Preschool children first feel death is like sleeping
- By 6-7 years of age: 67% know everyone “dies”
- Before puberty, often not clear on finality of death
Children and Concepts of Suicide (Mishara, 2003)

- Often learn of death via death of animals and from relatives
- By age 12: 80% do not know death can occur to healthy person
- 1995 study of 1528 parents: 4% of children threatened suicide
- Greydanus et al, 2010
Cartoon or real character commits suicide after loss of love

Learn suicide is done if one gets angry or frustrated

Suicide is done when one does not get one’s way

Suicide may come out of need for revenge

Depression is not part of suicide
Reasons for Childhood Suicide

- Depression
- Family & Environmental dysfunction
- Disruptive Behavior (males)
- Substance abuse (males)
- Schizophrenia

Suicide behavior as child predicts suicide as teen or adult (3 to 6 times increased risk)

Combo of suicidal ideation and violent behavior
  - Increases suicide risk (Pfeffer, ’86)
Adolescence

THE TIME OF THE MOST EXTRAORDINARY AND UNEXPECTED CHANGE IN LIFE IS JUST BEFORE AND THEN DURING THE YEARS OF ADOLESCENCE
Joy of Being Young

**Longfellow, Morituri Salutamus, 1875**

How beautiful is youth! How bright it gleams
with its illusions, aspirations, and dreams!
Book of beginnings, story without end!
Each maid a heroine, each man a friend!

- Unintentional Injuries: 14,113
- Homicide: 4,939
- Suicide: 3,994
- Malignant Neoplasms: 1,713
- Cardiac Causes: 1,031
- All Causes: 31,307
Adolescent Suicide

Overview: 15-19 year olds

- Third leading cause of death (2000 per year)
- 12% of annual deaths
- Doubled from 1960 to 2001
- 250% increase 1960’s to 1980s (1977)
- Increase in 15-24 year olds born post WWII (Baby Boomer Cohort)

- 2008 rates: 12.9 in males vs. 2.7 in females
Historical Change in Suicide:
15-24 Year Olds

- 1930’s – High rates
- 1940’s to 1950’s – Decreased rates
- Mid 1950’s to 1980’s – Increased rates
- 1990’s to 2004 – “Stable”

(Holinger, 1989; Kessler, 2003)
Adolescent Suicide

- 3rd leading cause of death: 15-19 yr. age group

- **Fifth (Sixth)** leading cause of death in 5-14 yr. age group

- Estimated suicide rate in 2000: 10 per 100,000
  - 14.6 in 15-19 yr old males; 2.9 in females
  - 5%-10% of depressed teens complete suicide within 15 yrs
  - 4,135 suicides for 15-24 year olds in 1998
Adolescent Suicide

- See more females with suicide attempts
- See more males with completed suicides
- Choice method with females: pill (s) OD or cut wrist
  - More deadly methods since the mid-1990s
- No national registry for suicide attempts
Adolescent Suicide

- Choice of method with males: gun, hanging, MVAs
- Methods vary around the world: India: well-jumping
- Severe intent is acute problem that can resolve with support
- Population based surveys: 50-500 attempts to 1 suicide (40-60)
Death from Firearms: 49% (most common for both sexes)

Suffocation (mainly hanging): 38%

Poisoning: 7%

Others: Burning, run into traffic, car accidents
Suicide in the World: Ages 15-24 Yrs

- Highest rates: >30/100,000
  - Finland
  - Latvia
  - Lithuania
  - New Zealand
  - Russian Federation
  - Slovenia

Suicide in the World: Ages 15-24 Yrs

- Four times as many males as females:
  - Industrialized nations

- Under-reporting due to religious/social issue

- Japan and most Western European nations
  - relatively low rates: <15/year/100,000

# The Suicide Index

<table>
<thead>
<tr>
<th>Country</th>
<th>Males</th>
<th>Females</th>
<th>M/F Ratio (Rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>15.4</td>
<td>5.6</td>
<td>3</td>
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<tr>
<td>Czech Rep.</td>
<td>16.4</td>
<td>4.3</td>
<td>4</td>
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<tr>
<td>Poland</td>
<td>16.6</td>
<td>2.5</td>
<td>7</td>
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<tr>
<td>Ukraine</td>
<td>17.2</td>
<td>5.3</td>
<td>3</td>
</tr>
<tr>
<td>Hungary</td>
<td>19.1</td>
<td>5.5</td>
<td>3</td>
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</tbody>
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[Http://www.unicef.org/pon96/insucid.htm](http://www.unicef.org/pon96/insucid.htm)
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<tbody>
<tr>
<td>Austria</td>
<td>21.1</td>
<td>6.5</td>
<td>3</td>
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<tr>
<td>Ireland</td>
<td>21.5</td>
<td>2.0</td>
<td>11</td>
</tr>
<tr>
<td>United States</td>
<td>21.9</td>
<td>3.8</td>
<td>6</td>
</tr>
<tr>
<td>Belarus</td>
<td>24.2</td>
<td>5.2</td>
<td>5</td>
</tr>
<tr>
<td>Canada</td>
<td>24.7</td>
<td>6.0</td>
<td>4</td>
</tr>
<tr>
<td>Switzerland</td>
<td>25.0</td>
<td>4.8</td>
<td>5</td>
</tr>
<tr>
<td>Australia</td>
<td>27.3</td>
<td>5.6</td>
<td>5</td>
</tr>
<tr>
<td>Norway</td>
<td>28.2</td>
<td>5.2</td>
<td>5</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>Estonia</td>
<td>29.7</td>
<td>10.6</td>
<td>3</td>
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<td>Finland</td>
<td>33.0</td>
<td>3.2</td>
<td>10</td>
</tr>
<tr>
<td>Latvia</td>
<td>35.0</td>
<td>9.3</td>
<td>4</td>
</tr>
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<td>Slovenia</td>
<td>37.0</td>
<td>8.4</td>
<td>4</td>
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<td>New Zealand</td>
<td>39.9</td>
<td>6.2</td>
<td>6</td>
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<td>Russian Fed.</td>
<td>41.7</td>
<td>7.9</td>
<td>5</td>
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<td>Lithuania</td>
<td>44.9</td>
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<td>7</td>
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<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td>Whites</td>
<td>19.3</td>
<td>3.5</td>
</tr>
<tr>
<td>African-American</td>
<td>15.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13.4</td>
<td>2.8</td>
</tr>
</tbody>
</table>
Suicide Ideations & Attempts: Grades 9-12

- 2009 CDC Youth Risk Behavior Survey

- 19% of teens have suicidal ideation; N= 13,601

- Suicidal ideation: 19.0%; with plan: 14.8%

- Suicide attempt: 8.8%; with med attention: 2.6%

- Suicide attempt: ages 15-19 yrs: 0.008%
Suicidal behavior is a symptom of depression:
- 35-50% of depressed teens make a suicide attempt
- 5-10% of MDD Teens: complete suicide in 15 yrs

SRs down with increase in antidepressant prescriptions
Suicidality in Depressed Children and Teens

At Time of Diagnosis

<table>
<thead>
<tr>
<th>Studies</th>
<th>Subjects</th>
<th>Ideation</th>
<th>Attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1265</td>
<td>60%</td>
<td>30%</td>
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During Follow-up

<table>
<thead>
<tr>
<th>Studies</th>
<th>Subjects</th>
<th>Ideation</th>
<th>Attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>466</td>
<td>___</td>
<td>24%</td>
</tr>
</tbody>
</table>

Andrews & Lewinsohn 1992
## Later Suicide in Teens Hospitalized for Suicide Attempt

<table>
<thead>
<tr>
<th></th>
<th>Studies</th>
<th>N</th>
<th>Average Follow-up</th>
<th>Suicides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>14</td>
<td>2012</td>
<td>3.6 years</td>
<td>1.3%</td>
</tr>
<tr>
<td>Females</td>
<td>14</td>
<td>5189</td>
<td>3.6 years</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

Safer 1997
**Known Attempts Before a Teen Suicide**

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>M</th>
<th>F</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brent et al. 1999</td>
<td>140</td>
<td>37%</td>
<td>62%</td>
<td>41%</td>
</tr>
<tr>
<td>Martunnen et al. 1992</td>
<td>53</td>
<td></td>
<td></td>
<td>34%</td>
</tr>
<tr>
<td>Shaffer et al. 1996</td>
<td>112</td>
<td>28%</td>
<td>50%</td>
<td>33%</td>
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</table>
Suicide Ideations & Attempts: Grades 9-12

<table>
<thead>
<tr>
<th></th>
<th>Deaths</th>
<th>Attempts</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALES</td>
<td>13</td>
<td>6,200</td>
<td>1:470</td>
</tr>
<tr>
<td>FEMALES</td>
<td>3</td>
<td>11,200</td>
<td>1:3,700</td>
</tr>
</tbody>
</table>

(Anderson & Smith, 2003; 2001 YRBS)
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Males % (N=31)</th>
<th>Females % (N=90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major depression/dysthymia</td>
<td>71.0</td>
<td>64.5</td>
</tr>
<tr>
<td>Alcohol abuse/dependence</td>
<td>19.4</td>
<td>14.4</td>
</tr>
<tr>
<td>Drug abuse/dependence</td>
<td>29.0</td>
<td>13.3</td>
</tr>
<tr>
<td>Disruptive behavior disorder</td>
<td>32.3</td>
<td>12.2</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>9.7</td>
<td>18.9</td>
</tr>
<tr>
<td>Adjustment disorder</td>
<td>6.5</td>
<td>10.0</td>
</tr>
<tr>
<td>Eating disorder</td>
<td>0.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Any disorder</td>
<td>87.1</td>
<td>77.8</td>
</tr>
</tbody>
</table>

Andrews & Lewinsohn 1992
Attention Deficit Hyperactivity Disorder Across the Lifespan

Donald E. Greidanus, MD
Helen D. Pratt, PhD
Dilip R. Patel, MD

Mosby
Volume 53 Number 2
February 2007
Pages 85-132
ISSN 0011-5629
The teenage brain – work in progress

- Prefrontal cortex
- Corpus Callosum
- Amygdala
- Basal ganglia
- Hippocampus
- Cerebellum

Stier/Puberty/PAS-meeting 2006
WHO World Mental Health Surveys: ’01-’03 (Mood Dis) 60,463
Adults in 14 Countries: 12 Month Prevalence

- USA: 9.6% (vs. 26.4% for any mental disorder)
- Germany: 3.6% (vs. 9.1%)
- Spain: 5.9% vs. 9.2%
- Netherlands: 6.9% (vs. 14.9%); France: 8.5% vs. 18.4%
- Ukraine: 9.1% vs 20.5%; Italy: 3.8% vs. 8.2%

Prevalence of Mental Disorders, World Mental Health Surveys, JAMA 6/04
Methodology for Epidemiology of Mental Disorders

In Children and Adolescents Study in USA:

- 6.2% have mood disorders
- 13% have anxiety disorders
- 10.3% have disruptive disorders
- 2% have substance abuse disorders
- TOTAL: 20.1% with 1 or more mental health problems

Committee on School Health, Am Acad Pediatrics, Pediatrics, 6/04
Prevalence of Depression

- **MDD (Major Depressive Disorder)**
  - Children about 2.0%
  - Adolescents about 6.0%

- **Dysthymia**
  - Children about 1.0%
  - Adolescents about 5.0%

- **Bipolar Disorder**
  - about 1%
Major Depressive Disorder

- 2-3% of children and 5-8% of Teens
- 70% with recurrence within 5 years
- Persistent post-recovery impairment
- 5-10% of MDD Teens: complete suicide in 15 yrs
- 20% develop Bipolar disorder (BAD)
- 70% of dysthymia becomes MDD
New York Psychological Autopsy Study (Shaffer, 1988)

- Evaluation of 173 youth suicides

- Risk Factors for Males
  - Previous Suicide Attempt: ↑↑↑
  - Major Depression: ↑
  - Substance Abuse: ↑
New York Psychological Autopsy Study (Shaffer, 1988)

- **Risk Factors for Females**
  - **Major Depression**: ↑↑↑↑
  - **Substance Abuse**: ↑

- **Family History** of Suicide
  - 5 Times increase in males
  - 3 times increase in females
Adolescent Suicide: Many Risk Factors

- Acceptability of suicide
- Social isolation and rejection (homosexual youth, bullying)
- Community dysfunction
- Stressful life events
- Substance abuse
- Widespread availability of firearms and suffocation methods
Mental Illness

- Depression
- Schizophrenia (delusional or hallucinating)
- Violent youth
- Severe irritability or agitation
- Psychiatric hospital (33% pre-teens and young teens had suicide attempt) (Pfeffer, 2002)
Risk Factors for Youth Suicide

- Previous attempt (30 fold+ increase in males)
- Depression
- Substance abuse
- Aggressive or disruptive behaviors (conduct)

**Females**: Depression (20 fold increase) and previous attempt

- See clustering of risk factors & copy cat suicides
Natural Course of Depression

- 7-9 months: average duration (Elliott, 2006)

- 90% have remission in 2 years

- Up to 50% relapse in first year
  - 40% in 2 years
  - 70% in 5 years

- 6-19%: chronic course (Weissman, ’99; Greydanus, 2011)
Risk factors during depression:

- Chronic depression
- History of abuse (sexual or physical)
- Same-sex attraction + sexually active
- Increases with increased youth population (? Increased competition)
- Increases with firearm availability
Suicide Risk Factors During Depression:

- Co-morbid substance abuse
- Impulsivity and aggression
- Previous personal or family history of suicide (attempt)
- Access to guns or other final means
- Psychiatric hospital (9 times increased suicide over general community)
Other Suicide Risk Factors (Edelsohn, 2006)

- Personality disorder (borderline, antisocial)
- Non-adherence with mental health treatment
- Academic failure
- Family history for completed suicide
- Positive family history for mental illness
- Psychosis
Suicide w/o Psychiatric DXs

- Legal problems
- Narcissistic traits
- Recent withdrawal from milieu
- Intense personality conflicts
- Firearm availability

(Marttusen, 1993)
Homosexual male (20% to 42% attempt suicide)

- Abuse or neglect
- Social isolation
- CNS damage
  - Chemotherapy
  - Trauma
  - Infection
  - Seizures
- Other Chronic Illnesses
Evaluation: Adolescent Suicide

- Not all have depression hx: **ALWAYS ASK**!
- Asking can prevent, not precipitate suicide (Elliott, 2006)
- Teens w/ suicidal ideation oft relieved with ask/education (“Someone does care!”)
- Ask about **Guns** + **Drugs** in the house; most fail to ask (Greenhill, 1997)
Adolescent Suicide

- Recruit parents/legal guardians as allies

- Best RX: protect the teen and start therapy

- <10% of teens complete suicide post 1st attempt
  - Risk increased with presence of major affective disorder

- Symptom (not a psychiatric diagnosis)
Evaluation

Hospitalization:

– acutely suicidal

– substance abuse

– unable to comply with outpatient management

– psychosis present

– manic
Hospitalization Role

- No evidence hospitalization stops **serious** suicide
- Agitated, manic, intoxicated, unmanageable
- Psychotic teen
- Often done for medical-legal issues
- Best option for some families to provide education
Teen Suicide Attempt: When to Hospitalize

- Medical necessity
- Abnormal mental state
- History of active attempt to avoid being found
- Persistent death wish
- Suicide method was highly lethal or unusual
Adolescent Attempters: Repeat Often

- 2001 CDC Youth Risk Behavior Survey; N=13,601

- 1 attempt per year: 53%

- 1 attempt increases risk of another by 15-fold

- 2 or 3 attempts/year: 30%

- 4 or More/year: 17%
Adolescent Suicide: Repeat Attempters

- 5% of teens report over one suicide attempt a year
- Increased rates of depression (13x vs if 1 attempt)
- Increased rates of sexual assault (7 times)
- Increased rates of substance abuse
- Increased violent behavior noted in boys
- Report increased weight problems

(Rosenberg, 2001 New Hampshire YRBS)
Variety of Depression Scales

- Beck
- Zung
- Hamilton
- Childhood Depression Inventory
- Others
Assessment Instruments

- State-Trait Anger Expression Inventory (STAXI)
- Multidimensional Anxiety Scale for Children (MASC)
- Yale-Brown Obsessive/Compulsive Scale for Children (CY-BOCS)
- Pediatric Symptom Checklist (PSC)
- Child Behavioral Checklist (CBCL)
Assessment Instruments

- Child Depression Inventory (CDI)
- Reynolds Childhood Depression Scale (RCDS)
- Reynolds Adolescent Depression Scale (RADS)
- Suicidal Ideation Scale (SIQ) and Suicidal Ideation Scale for Jr. High Students (SIQ-Jr.)
Initial Evaluation in Teen With Suicide Attempt

- Often difficult to clearly establish Intentionality

- Mental status—especially agitation

- Presence of stressors: peers, family, other

- Chain Analysis around the incident
  - What are the stressors
  - What are the teen’s feelings
  - What are the teen’s thoughts
External Factors

- Family separation and divorce
- Death (family, friend, other)
- Loss of a friend (including girl/boyfriend)
- Academic concerns
- Financial concerns
**Internal Factors**

- Feeling of being unloved (family, friend)
- Limited coping skills
- Inappropriate goals
- Others (Greydanus et al, 2010)
Downward Spiral Due To:

- Painful Precipitators
- Limited Coping Abilities
- Negative Thinking
- Failure to Seek Help
- Failure to Be Asked & Offered Help
Biological Factors in Suicide (Pfeffer, 1997; 2002)

- No biological test for suicide
- Low CSF levels of 5-OH-indoleacetic acid (Serotonin Metabolite)
- Low platelet imipramine binding sites
- Non-suppressed plasma cortisol with Dexamethasone challenge test
- Abnormal hypothal-pituitary-adrenal axis
- Abnormal sleep EEG (decreased REM+)
Teen Suicide Attempt: Risk Incr:

- Positive family history for suicide (2 times increases risk)
- Male gender (10 times increases risk)
- Prior attempts (15 times increases risk)
- History of aggressive outbursts
- Substance/alcohol abuse (increases risk for males)
- Inadequate home care/supervision
Teen Suicide Attempt

- 31% of multiple attempters had previously signed a safety contract
- 17% of caregivers buy new firearm after teen’s attempt
- Caregivers 3 times more likely to improve home factors if given education by clinicians
- 16%-59% of SAs do not receive follow-up treatment
- Dialectical-Behavior Therapy best results
Teen Suicide Attempt: Does Medication Help???

- Antidepressant medication if MDD exists
- Antidepressant meds **not** for **acute** RX phase
- Flupenthixol (Navane) used for multiple attempters
- Lithium used for adults with bipolar disorder
- Clozaril used for adults with schizophrenia
Pediatric Psychopharmacology in the 21st Century
GUEST EDITORS
Donald E. Greydanus, MD
Dilip R. Patel, MD
Cynthia Feucht, PharmD, BCPS

PEDIATRIC CLINICS
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Clinical Aspects of Psychopharmacology in Childhood and Adolescence

Donald E. Greidanus
Joseph L. Calles Jr.
Dilip P. Patel
Ahsan Nazeer
Joav Merrick
Editors

Health and Human Development
Joav Merrick (Series Editor)
Management of Depression

- Supportive

- Psychotherapy
  - Cognitive-Behavioral Psychotherapy
  - Behavioral Psychotherapy
  - Psychodynamic Psychotherapy

- Family Therapy

- Pharmacological Management (Greydanus, 2011)
Helping a Friend Who is Suicidal

- Note You are Also Concerned

- Is There a Specific Plan, How Far Advanced

- Get Professional Help Now:
  - Suicide Prevention Hotline
  - Hospital ER (ED)
  - Local Crisis Center

- Make a Contract: No Suicide & Help to be Arranged
**Things Not to Do:**

- Don’t Assume the Situation will Take Care of Itself
- Don’t Leave the Teen Alone
- Don’t be Sworn to Secrecy (Some Friends Do)
- Don’t Act Shocked or Surprised at What a Friend May Do
- Don’t Challenge, Dare or Use Verbal Shock Treatments
- Don’t Argue or Debate Moral Issues
References


http://www.cdc.gov/ncipc


