Suicide Prediction and Prevention: A Practical Synthesis of the Evidence

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DISCLAIMER

Dr. Rich does not have any industry relationships that would create a conflict of interest.

U.S. Suicide Rates, 1950–2003
(per 100,000 population)

<table>
<thead>
<tr>
<th>Year</th>
<th>All ages, age adjusted</th>
<th>Male, all ages</th>
<th>Female, all ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>13.0</td>
<td>21.2</td>
<td>5.6</td>
</tr>
<tr>
<td>1960</td>
<td>13.2</td>
<td>20.0</td>
<td>5.6</td>
</tr>
<tr>
<td>1970</td>
<td>13.7</td>
<td>19.8</td>
<td>5.7</td>
</tr>
<tr>
<td>1980</td>
<td>13.7</td>
<td>19.9</td>
<td>5.7</td>
</tr>
<tr>
<td>1990</td>
<td>12.5</td>
<td>21.5</td>
<td>5.8</td>
</tr>
<tr>
<td>1995</td>
<td>11.8</td>
<td>20.3</td>
<td>4.8</td>
</tr>
<tr>
<td>2000</td>
<td>10.4</td>
<td>17.7</td>
<td>4.3</td>
</tr>
<tr>
<td>2001</td>
<td>10.7</td>
<td>18.2</td>
<td>4.0</td>
</tr>
<tr>
<td>2002</td>
<td>10.5</td>
<td>18.4</td>
<td>4.2</td>
</tr>
<tr>
<td>2003</td>
<td>10.8</td>
<td>18.0</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Fluoxetine introduced in 1986
Suicide Prediction and Prevention:
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The Plan

1. Review Prediction Situation (briefly)
2. Develop an Accurate Suicide Model
3. Apply the Model to Prevention

Some Factors Correlated with Suicide

Correlations ≠ Predictions
1958 patients evaluated from 1978-1985
1161 scored >9 on 20 point “hopelessness” scale
Included 16 of 17 suicides (high sensitivity)
1145/1161 = 98% False Positive (low/no specificity)

Some Factors Correlated with Suicide

All of these correlates include too many false positives.

Suicide Prediction

Conclusion

No single correlate or combination can be used to predict an individual suicide with clinical (or legal) utility.
Some Factors Correlated with Suicide

Maybe we can put all of these together in a way that “explains” suicide and allows us to successfully intervene.

Suicide Prevention

GOAL

To devise a Representation (MODEL) of suicide

That is the most FACTUALLY COMPREHENSIVE

And CLINICALLY APPLICABLE
The Death from Disease Formula

Susceptibility to illness
↓
Exposure to Pathogen
↓
Development of Illness
↓
Vulnerability to Fatal Outcome
↓
Complications
↓
Death

Consecutive Cases
Systematic Database
Valid Diagnostic Criteria

8 Studies of Consecutive Suicides
Summary

<table>
<thead>
<tr>
<th>Condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Mental or Medical Disorder</td>
<td>5%</td>
</tr>
<tr>
<td>Medically Ill Only</td>
<td>3%</td>
</tr>
<tr>
<td><strong>ANY MENTAL DISORDER</strong></td>
<td><strong>92%</strong></td>
</tr>
<tr>
<td>Any Depression</td>
<td>57%</td>
</tr>
<tr>
<td>Any Substance Abuse</td>
<td>38%</td>
</tr>
<tr>
<td>Depression &amp;/or Substance Abuse</td>
<td>69%</td>
</tr>
<tr>
<td>Adjustment Disorder</td>
<td>10%</td>
</tr>
</tbody>
</table>

≥ 80%
LIFE

SUBSTANCE (AB)USE

DEPRESSION

SUICIDE

LIFE

SUBSTANCE (AB)USE

DEPRESSION

SUICIDE

Substance Abuse and Suicide
The San Diego Study*

Charles L. Rich, M.D., Richard C. Fowler, M.D., and Deborah Young, M.D.

<table>
<thead>
<tr>
<th>Substance Abuse</th>
<th>Substance plus Affective Disorder</th>
<th>Affective Disorder</th>
<th>Other Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>6.2</td>
<td>7.0</td>
<td>3.5</td>
</tr>
</tbody>
</table>

*Including low mood, decreased appetite, weight loss, sleep problems, agitation, withdrawal, decreased libido, low energy, worthlessness, guilt, thoughts of death, talk of suicide, suicide attempt
The relative effect of particular stressors in a population can be estimated, but any individual’s response to a particular stressor at any given time is pretty much unpredictable.
Precipitants: “Why Now?"
1. Can’t always tell (<50% in SDSS)
2. Tend to be recurrent
3. Tend to be mundane
4. Tend to be... precipitous
5. Always determined after the fact

Therefore, not of much clinical utility
Mainly short term studies
Subjects excluded for "suicidality"
So, any provocative effect should be seen – right?
Mainly short term studies
Subjects excluded for “suicidality”
So, any provocative effect should be seen – right?
LIFE
EXISTENTIAL PRESSURES
STRESSORS
SUBSTANCE
(AB)USE
DEPRESSION

SUICIDE

ALLOWING
Defect(s)
Demographics
Genetics
Brain Chemistry
Personality Traits
Defects

PROTECTION
Factor(s)
Demographics
Partner
Children

PRECEPIANT(S)
Time
Place
Method

PHOTO

The Suicide Risk of Discharged Psychiatric Patients
Ting-Pong Ho, M.D.
J Clin Psychiatry 2003; 64:702-707

1. 1997-1999 – Hong Kong
2. 21,921 discharged patients >15 yo
3. 280 suicides in first year after discharge
4. 105 (38%) occurred in first 28 days
"We think the most likely explanation for this finding is that antidepressant treatment may not be immediately effective...."

"It is also possible that...patients [start] to take an antidepressant when their depression is at its worst...."

.......or maybe?

2/3 of people prescribed AD's had negative toxicology

Phase 1 - 151 suicides age 13-21
Phase 2 - 49 investigated thoroughly
   32 had been seen and diagnosed
   14 were prescribed medication
   0 positive on post mortem toxicology
“Our major clinical point, however, was and remains that suicidal individuals – be they old or young, urban or rural – cannot be considered out of harm’s way simply because they do not have access to a gun.”

Rich C, Amer J Psychiatry, Jan 1991

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Suicides and Antidepressant Sales
Summary of Pharmacoepidemiologic Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Age/Gender</th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isacsson, Sweden</td>
<td>all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rihmer, Hungary</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joyce, New Zealand</td>
<td>age 15-24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelly, Northern Ireland</td>
<td>older</td>
<td></td>
<td>younger</td>
<td></td>
</tr>
<tr>
<td>Mocanu, Slovenia</td>
<td>females</td>
<td></td>
<td></td>
<td>males</td>
</tr>
<tr>
<td>Hall, Australia</td>
<td>older</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olfson, USA</td>
<td>males 15-19</td>
<td></td>
<td>females 15-19</td>
<td></td>
</tr>
<tr>
<td>Lodhi, England</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helgason, Iceland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grunebaum, USA</td>
<td>females?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barak, Israel</td>
<td>males 55-74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korkeila, Finland</td>
<td>all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nakagawa, Japan</td>
<td>males &gt; females</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bramness, Norway</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Castelpietra, Italy</td>
<td>all</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lithium Treatment Reduces Suicide Risk in Recurrent Major Depressive Disorder
Francesca Gazzetta, M.D.; Leonardo Tondo, M.D.; Fiesca Cervone, M.D.; and Roan J. Baldessarini, M.D.

Conclusions: This is the first meta-analysis suggesting antisuicidal effects of lithium in recurrent MDD, similar in magnitude to that found in bipolar disorders.

Lithium in drinking water and suicide prevention: a review of the evidence
Antonio Vito, Luca De Peri, and Emilio Sacchetti

7 studies (10 reports) 1990-2012
(Texas, Japan, Austria, England, Greece)

5 Positive (higher lithium, lower suicides rates)
1 Neutral
1 ± Females

Lots of sampling and statistical issues
Known nephro- and thyrotoxic effects
Teratogenicity

Are you ready to have lithium put in your drinking water?
Call me old fashioned, but it’s not like flouride, is it?

Time-Related Predictors of Suicide in Major Affective Disorder
Am J Psychiatry 1990:147:1189-1194
Jim Fava, M.D., William A. Schutte, M.D., Lewis Fogg, Ph.D., David C. Clark, Ph.D.,
Michael A. Young, Ph.D., Dus Holsber, Ph.D., and Robert Gibbons, Ph.D.

NIMH Collaborative Study on the Psychobiology of Depression - 1978

954 depressed patients
10 years
32 suicides (3%) – 13 (41%) in 1st year
No studies confirm that treatment with sedatives/hypnotics reduces suicide risk

Acute Intoxication ➔ Disinhibition (frequently)

Persistent Intoxication ➔ Depression (infrequently)

"The odds of completed suicide were greater among patients who received any anxiety medication, and were further increased among those who received high dose treatment."
100 consecutive suicides age 65+

“We found a four-fold increased suicide risk among elderly using sedatives and/or hypnotics…."

Does Acute Treatment with Sedatives/Hypnotics for Anxiety in Depressed Patients Affect Suicide Risk? A Literature Review

“…alternatives to sedatives/hypnotics should be used if…early adjunctive treatment for anxiety…is thought to be indicated.”

Hydroxyzine
More sedating antidepressant?
Low dose second generation antipsychotic?
(see Roberts et al, Asia Pac Psychiatry. 2015 May 12. doi: 10.1111/appy.12188. Published PMID: 25963405)

No data on actual suicide rates
“Emergent suicidality is a common occurrence [12%] in psychosocial treatment of adolescent depression, with rates similar to those reported in recent antidepressant trials.”

**Suicide Prediction and Prevention**

**Clinical Conclusion**

Growing evidence strongly supports the suicide preventive effect of antidepressant treatment.
After the warning, suicide in this age group increased for 5 consecutive years (60.5%). The increase occurred among individuals not treated with antidepressants.

Thus, a treatment only approach to prevention has limited impact on national rates of suicide....
A Public Health Approach

Prevention of Disease
  Healthy Living
  Healthy Environment
  Vaccination

Detection and Treatment of Disease
  Public Awareness of Diagnosis
  Accessibility to Treatment
  Encouragement of Treatment

“Thus, a treatment only approach to prevention has limited impact on national rates of suicide….”

Treatment is what most of us do for a living, right?
Perspective

Antidepressants' Black-Box Warning — 10 Years Later
Robert A. Freeman, M.D.

“I would therefore argue that the FDA should consider removing the warning entirely.”

Suicide Prediction and Prevention

Clinical Caveat

Because it occurs so rarely, we never know if we prevent an individual suicide.

Therefore: We must have faith in our best efforts.

But: We must also realize we can’t win them all.