How are Interventions Being Evaluated?
How Can Evaluation Be Improved?

C Hendricks Brown
Hendricks.brown@northwestern.edu
Outline Mental Health and Violence

1 Evaluate What:
   a. Could a program work:
   b. Does a program work:
   c. Making a program work:

2 Science-Driven Programs
   a. Prevent Violence and Promote Mental Health
   b. Prevent Suicide by Referral & Treatment for MH
   c. Trauma Treatment + Violence Prevention

3 Cheap(er) Evaluation Designs
   a. Administrative Records
   b. Rollout Randomized Designs
   c. Minimal Evaluation for an Evidence-Based Program

4 Community Driven Intervention: Partnerships for Evaluation
   a. Community Board
   b. Faith Community in Chicago
   c. Israeli Trauma Center & US Prevention System
1. Designs to Evaluate… Different Program Evaluation Questions

• Could program work under optimal conditions?
• Does program work under realistic conditions?
  For whom does it help or harm?
  How does it work?
• Making the program work by implementing effectively.
• Can we improve program and/or its delivery? Quality Improvement

Communities of Color Concerned about Evaluation Costs, especially for NGOs often prohibitive
1. Designs to Evaluate
Three Stages of Evaluation  IOM 2009

Dissemination and Implementation Studies

Exploration
Adoption / Preparation
Implementation
Sustainment

Effectiveness Studies

Efficacy Studies

Preintervention

Does a Program Work?
Could a Program Work?

Making a Program Work
2. Randomized Designs for “Science-Based”

There are not that many Broad Street Pump Handles Left to Remove

John Snow’s Map of London

1849 proposed

1854 500 deaths to ~ 0

Removal of Pump Led to Immediate Reduction in Colera Deaths
Numerous Science-Based Interventions: Randomized Evaluations of Efficacy/Effectiveness

FIGURE 1-1 Growth in randomized controlled trials.

IOM Preventing MEB Disorders 2009
Across the Life Course IOM 2009

Interventions by Developmental Phase

Prior to Conception - Prenatal - Infancy - Early Childhood - Childhood - Early Adolescence - Adolescence - Young Adulthood

- Pregnancy prevention
- Prenatal care
- Home visiting
- Early childhood interventions
- Parenting skills training
- Social and behavioral skills training
- Classroom-based curriculum to prevent substance abuse, aggressive behavior, or risky sex
- Prevention of depression
- Prevention of schizophrenia
- Prevention focused on specific family adversities (Bereavement, divorce, parental psychopathology, parental substance use, parental incarceration)
- Community interventions
- Policy

FIGURE II-1 Interventions and their targeted developmental stages.
Mental Health and Violence Program Strategies

Prevention

1. Early intervention to prevent both violence and mental health problems / drug disorders in youth
   Good Behavior Game Kellam et al., 2008

2. Prevent ongoing risk of suicide, especially among those with mental disorders
   Sources of Strength – Wyman et al., 2010

Treatment

1. Trauma and PTSD from violence exposure
   NATAL multilevel Trauma focused system
## Using Randomized Designs to Evaluate Do Programs Work

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outcome</th>
<th>What was Randomized</th>
<th>Outcome Measures</th>
<th>Evaluation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Family Partnership (Olds)</td>
<td>Child Maltreatment NOT IPV</td>
<td>Pregnant women</td>
<td>Adolescent follow up interviews</td>
<td>$$$$</td>
</tr>
<tr>
<td>Good Behavior Game (Kellam)</td>
<td>Violence, arrests Suicide attempts EtOH/Drug Dx, ASPD</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Grade Classroom</td>
<td>Adult Follow up interviews</td>
<td>$$$$</td>
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<tr>
<td>QPR/Sources of Strength (Wyman)</td>
<td>Suicide behavior, MH referral</td>
<td>Schools &lt;em&gt;and&lt;/em&gt; Time</td>
<td>School district records, web surveys</td>
<td>$$</td>
</tr>
<tr>
<td>Triple P (Prinz)</td>
<td>Child abuse</td>
<td>County</td>
<td>Administrative records</td>
<td>¢</td>
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<tr>
<td>Communities that Care (Hawkins)</td>
<td>Violence, drugs</td>
<td>County</td>
<td>Youth, community surveys</td>
<td>$$</td>
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</table>
Evaluation with “Low” Baserate in Violence
Magnitude of the Trials Depends Heavily on Rate of Outcome

Figure 1. Person-Years Required to Achieve 80% Power by Intervention Effect and Population Suicide Rate

Adolescents
Rural Youth
A Few Depr Sx
Hospitalized Attempters

Rate Per 100,000
10
20
100
1000
5000

Total Person Years
1K
2K
5K
10K
50K
100K
500K
1M
2M
5M

20% 30% 40% 50%
Message

• Very large trials needed to evaluate effectiveness on “low base rate” outcomes, homicide, suicide, AIDS

Alternative Strategy

• Two Stage Effectiveness Evaluation Strategy
  A) Evaluate using a more frequent intermediary suicide attempts rather than suicide
  B) Evaluate more distal outcomes by combining data across trials and synthesizing findings

Brown et al., 2007, 2013, Perrino et al., 2013
For Group-Based Interventions:

- Randomize groups to new intervention/usual care
- Evaluate on existing, population-based administrative records

Child maltreatment: Triple-P (Prinz et al., 2008)
Suicide or Homicide: National Death Index+ (NDI+)
National Violent Death Reporting System (NVDRS)
Randomized Designs Can Be Accepted by Communities and Sometimes Easy and Inexpensive

- Randomizing groups, rather than individuals, often lower community concerns
- **Roll-Out Designs** for new interventions delivered to a group (e.g., School)
  
  Randomly assign schools to when they receive a violence intervention

  Group randomized -- Brown et al., 2008, 2009
  Time randomized -- Brown et al., 2006, 2009

  Dynamic wait-list design
  Stepped wedge design
Roll-Out Evaluation Design

• Randomize when schools receive suicide gatekeeper training preventive intervention: QPR in 32 schools
• In each quarter of a year, add a randomly selected small number of schools to be trained
• Get all school trainings on master calendar
## Wait-Listed versus Roll-Out (Dynamic Wait-Listed Design)

<table>
<thead>
<tr>
<th>Year</th>
<th>Time Block</th>
<th>Wait-Listed Design</th>
<th>Dynamic Wait-Listed Design</th>
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<tr>
<td></td>
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<td>Time</td>
<td>Intervention</td>
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<td>1</td>
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</table>
Rollout Design: Community Advantages

1. What Needs to be done in a roll-out design

Roll-out implies that community already decided all groups will get this.
Only need to add:

- Permission to do an evaluation and hold design in place
- Randomly order the training of groups
- Collect # outcome events at each interval of time, all groups

2. Everyone gets intervention

- Just as quickly as without random assignment

3. Ordering is Fair, especially for serious outcomes

- Early trained schools get intervention immediately
- Later trained schools may get a better intervention

4. More complete and efficient training
Roll-Out Designs from Research Standpoint

• Improvements in statistical power over wait-listed designs
• Less sensitive to external factors
• Can be used for effectiveness (Brown et al., 2006) and for implementation (Chamberlain et al. 2008)
4. Community/NGO Delivered Programs

• We can’t afford or manage a traditional, large Randomized Trial for effectiveness
  Randomized trial not always the right thing to do.
  West et al., 2007
• We can’t afford any evaluation of anything

Two Reasons for Evaluation

1. How many have heard:
The Path to Heaven is Paved by Good Intentions
The Path to **Hell** is Paved by Good Intentions
Second Reason for Evaluation

- Accountability: Self-Evaluation = Monitoring and Feedback: Some systems work (others don’t!)

Partnerships around evaluation/implementation
Brown et al., 2012
How do you know that you are doing good, or better?

Minimum to Evaluate

• If you use an “Evidence-Based” Program - You should still require evaluation of:
  participant engagement
  program fidelity
How do you know that you are doing good, or better?

Minimum Needed to Evaluate
- If you use an “Evidence-Based” Program / Principles-
  Still require:
    - participant engagement  Attend, Satisfaction
    - program fidelity  Ratings

SAMHSA’s National Registry of Evidence-Based Programs and Practices (NREPP)
http://www.nrepp.samhsa.gov/
• Statistical Control Charts
Problematic for Low Rates
Number of Youth Suicide Deaths from 1988 to 2002 in County

Number of deaths

Years

Doing Better: Quality Improvement Strategies

• Statistical control

Monitor One of the Key Hypothesized Change Factors

Gatekeeper Training: Attitudes and Self-Reported Behaviors
<table>
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<tr>
<th>Improvements from Training and Time</th>
<th>Null</th>
<th>Low</th>
<th>Med</th>
<th>High</th>
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<tbody>
<tr>
<td>Knowledge of Warning Signs and QPR behaviors</td>
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<td>0.46</td>
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<td>Attitudes about Suicide Prevention</td>
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<td>Self-Evaluation of Suicide Prevention Knowledge</td>
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<tr>
<td>Knowledge of Clinical Resources</td>
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<td>0.99</td>
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<tr>
<td>Efficacy to Perform Gatekeeper Role</td>
<td></td>
<td>1.22</td>
<td></td>
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<tr>
<td>Reluctance to engage with suicidal students</td>
<td>0.29</td>
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</tbody>
</table>
Control Chart
Self Efficacy for Gatekeeper Role

Benneyan et al., 2003
Vigilance in Mental Health Care for Suicide Risk Among Adolescents in Mental Health Inpatient Units
Ex: 15 year follow-up of Suicidal Ideation and Behavior in Hospitalized Adolescents (Goldston, personal communication)

Class 1 = 16%
Class 2 = 19%
Class 3 = 29%
Class 4 = 36%
Triangle = Mean Growth Curve
Evaluate a Large-Scale, Long-Term Health Service Strategy where Vigilance Depends on “Risk”

• Repeated phone/email monitoring of those in “higher risk” categories to date
• Low or negligible monitoring of those in “lower risk” categories
• Evaluate if this “works” compared to Standard

<table>
<thead>
<tr>
<th>Strategy 1</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>National Death Index</th>
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<tr>
<td>High Risk</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>x</td>
<td>Proportion 1 S1</td>
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<tr>
<td>Low Risk</td>
<td>X</td>
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<td></td>
<td>x</td>
<td>Proportion 2 S2</td>
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<tr>
<td>Strategy 2</td>
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<td>All</td>
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<td></td>
<td></td>
<td></td>
<td>x</td>
<td>Proportion S2</td>
</tr>
</tbody>
</table>
Making a Program Work

• Research: Implementation Science
  – Generalizability
• Practice: Quality Improvement
  – Local Evaluation

NIDA funded Center for Prevention Implementation Methodology (Ce-PIM)
Landsverk et al., 2012, Brown et al., 2014, Cheung & Duan 2013
Making a Program Work:
1. RE-AIM Perspective for a Program to Succeed

- **Reach** – % community who receive program
- **Effectiveness** – does program have benefit
- **Adoption** - bring into host organizations/service delivery systems
- **Implementation with Fidelity**
- **Maintenance** (Sustainability)

Succeeding means all have to be high. Glasgow et al. 2001
Violence Focus in Bronzeville Community of Chicago

• Violence is the Community’s Identified Priority
• Trauma for victims and their families
• Treatment as Prevention
  Reduce Retribution
  ➢ Delivery of trauma treatment through faith based organizations -- NATAL

Prevention targeting youth and families in the community is a complementary strategy. -- Communities that Care -- Hawkins et al., 2014
Partnerships around Violence in Chicago

Bright Star Church – Pastor Chis Harris

Communities that Care (CTC) – Process to have communities decide what Preventive Interventions would be appropriate

NATAL – War/Terror Related Trauma Prevention and Treatment

Technical Support – Northwestern Hospital, U of Chicago
NATAL’s Trauma Focused Intervention

NATAL
Services for war and terror-related Trauma, for Israeli society
• Serve as a training center
• Serve as a Trauma Research and Knowledge Center.
• Is an apolitical, non profit organization

• Helps all Israeli citizens regardless of age, gender, religious affiliation, ethnicity and socio-economic status

• Over 150 therapists working all across Israel
• 200 volunteers in routine and emergencies
• NATAL has touched the lives of over 160,000 people to date
Why Evaluate in Bronzeville?

Quality Improvement
• Communities Deserve Programs that Work and Don’t Do Harm
• Sustainability
• Exportability and Scaling Up
Summary

• There are diverse programs addressing mental health and violence
  • Early Prevention Programs (Good Behavior Game)
  • Communities that Care
  • Trauma treatment as prevention

• There are low burden evaluation approaches that communities could support
  – Roll-out randomized design
  – Administrative Records for Outcomes
  – Minimum Needed to Evaluate fidelity and participation


• Berger, R., Gelkopf, M., & Heineberg, Y., & Zimbardo, P. Developing resiliency and promoting tolerance toward the other among Jewish Israeli elementary school students facing ongoing rocket shelling (submitted).


• Gelkopf, M., Berger, R., & Roe, D. Soldiers perpetrating or witnessing acts of humiliation: A quantitative study. (submitted).

• Gelkopf, M., Haimov, S., & Lapid, L. A community long-term hotline therapeutic intervention model for coping with the threat and trauma of war and terror. (submitted).


*All files are available in pdf format upon request.*
Other References


Where Do You Find Evidence-Based Interventions?

- Blueprints Center for Study and Prevention of Violence – no Self-Directed Violence
  
  http://www.colorado.edu/cspv/blueprints/

- SAMHSA’s National Registry of Evidence Based Prevention Programs (NREPP)
  
  http://www.nrepp.samhsa.gov/

- Violence Prevention Evidence Base- WHO Regions
  
  http://www.preventviolence.info/evidence_base.aspx

- Suicide Prevention Resource Center
  
  http://www.sprc.org/bpr

National Child Traumatic Stress Network

http://nctsn.org/