

TABLE S1. Randomized Controlled Trials of Education for Youth Suicidal Behavior Prevention

Source	Prevention Strategy	Population	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
King et al., 2006(1)	Youth-Nominated Support Team, (YST-1). Training targets adults.	Psychiatrically hospitalized, suicidal adolescents	United States	YST-1 + TAU TAU	N=289 YST-1 + TAU=151 TAU=138	<i>Inclusion</i> 12-17 years of age; SA or significant SI/intent during the past month; 20 or 30 on Self-Harm subscale of Child and Adolescent Functional Assessment Scale; at least one completed baseline measure. <i>Exclusion</i> Severe mental retardation; incapacitating psychosis.	No group differences in SA or SI for total sample. Girls in YST-1, who met specific intervention attendance criteria, saw greater reduction in SI than girls in TAU (p=.013).
Aseltine Jr. et al., 2007(2)	Signs of Suicide (SOS) screening program. Training targets youth.	High school students	United States	SOS Control	N=4133 SOS=2039 Control=2094	<i>Inclusion</i> Attended any of 9 participating high schools in Columbus, Georgia, western Massachusetts, or Hartford, Connecticut during academic years 2001-02 or 2002-03. <i>Exclusion</i> Non-response to screening questionnaire.	Intervention group 40% less likely than controls to report SA at 3-month follow-up (OR= 0.63).
Wilcox et al., 2008(3)	Good Behavior Game (GBG) and Mastery Learning	1 st and 2 nd graders	United States	GBG ML Control	N=2311 GBG=452 ML=520	<i>Inclusion</i> Started first grade in any of 41 participating classrooms in 19	GBG group had reduced rates of SI (RR=.4, p=.008) and SA (RR= p=.041) at

	(ML). Training targets youth.				Control=1339	Baltimore elementary schools during academic years 1985-86 or 1986-87.	age 19-21. Replication trial showed reduced impact of GBG on SA and SI rates.
Diamond et al., 2010(4)	Attachment-Based Family Therapy (ABFT). Training targets adults.	Suicidal adolescents and their families	United States	ABFT EUC	N=66 ABFT=35 EUC=31	<i>Inclusion</i> 12-17 years of age; > 31 on Suicidal Ideation Questionnaire; > 20 on Beck Depression Inventory. <i>Exclusion</i> Needed psychiatric hospitalization; recent discharge from a psychiatric hospital; current psychosis; mental retardation or history of borderline intellectual functioning.	ABFT group had greater reduction in SI than EUC at post-treatment and 6-month follow-up (d=.97). No group differences in SA.
King et al., 2009(5)	Youth-Nominated Support Team, (YST-II). Training targets adults.	Psychiatrically hospitalized, suicidal adolescents	United States	YST-II + TAU TAU	N=448 YST-II + TAU=223 TAU=225	<i>Inclusion</i> 13-17 years of age; significant SI or SA within the past 4 weeks. <i>Exclusion</i> Severe cognitive impairment; direct transfer to medical unit; direct transfer to residential placement; lived > 1-hour drive; no legal guardian available.	No group differences in SA. For individuals with multiple SA, YST-II associated with greater reduction in SI than TAU (p<.01) over 6-week post-treatment period.
Pineda and Dadds, 2013(6)	Resourceful Adolescent Parent Program (RAP-P). Training targets adults.	Suicidal adolescents and their parents	Australia	RAP-P + TAU TAU	N=48 RAP-P + TAU=24 RC=24	<i>Inclusion</i> Adolescents: 12-17 years of age; at least 1 episode of suicidal behavior within last 2 months; reside with at least 1 parent; primary diagnosis of MDD, PTSD, or anxiety disorder. Parents: Primary caregiver of a suicidal adolescent; average or above-average intellectual level; basic English language abilities; consented to the research and intervention. <i>Exclusion</i>	RAP-P group had greater reduction in a measure of SB (combining SI, DSH, and SA) than TAU (p<.05) at posttreatment and 6-month follow-up.

						Adolescents: Psychosis; developmental disorder; poisoning from excessive use of recreational drugs.	
Kerr et al., 2014(7)	Multidimensional Treatment Foster Care (MTFC). Training targets adults.	Girls mandated to out-of-home care	United States	MTFC TAU	N=166 MTFC=81 TAU=85	<i>Inclusion</i> 13-17 years of age; at least one criminal referral in the last 12 months; in out-of-home care within 12 months after referral. <i>Exclusion</i> Pregnant.	Greater reduction in SI for MTFC vs. TAU in Cohort 2, but no group difference for SI or SA for entire sample.
Wasserman et al, 2015*(8)	Mental health campaign targeting pupils (YAM); gatekeeper training targeting teachers (QPR); screening and referral by professionals (ProfScreen).	High school students	European Union	YAM QPR ProfScreen Control	N=11110 YAM=2721 QPR=2692 ProfScreen=2764 Control=2933	<i>Inclusion</i> 14-16 years of age; attended any of 168 eligible public schools in 10 EU countries (schools had at least 40 pupils aged 15 years, more than 2 teachers for these pupils, and no more than 60% of pupils of the same sex) <i>Exclusion</i> Lifetime SA; severe SI in the past 2 weeks before baseline.	YAM associated with lower rate of SA (OR=.45, p=.014) and SI (OR=.50, p=.025) at 12-months compared with controls. No effect of other interventions on SI or SA.

SA=Suicide Attempt; SI=Suicidal Ideation; SB=Suicidal Behaviors; DSH=Deliberate Self-Harm; OR=Odds Ratio; RR=Relative Risk; TAU=Treatment as Usual; EUC=Enhanced Usual Care; YAM= Youth Awareness of Mental Health; QPR= Question, Persuade, and Refer

*Counted as two studies (Table 1) because it includes educational training targeting youth (YAM) and adults (QPR; ProfScreen) compared to a control group.

TABLE S2A. Randomized Controlled Trials of Pharmacotherapy Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Diagnosis/ Clinical Characteristics	Age Group	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Von Knorring et al., 2006(9)	Citalopram	Depression	Pediatric	United States	Citalopram Placebo	N=244 Ci=124 PI=120	<p><i>Inclusion</i> 13-18 years of age; Tanner stage ≥ 3; MDD with current episode 4 weeks to 1 year; ≥ 21 (lowered to ≥ 16 for boys) on Beck Depression Inventory; ≤ 60 on Global Assessment of Functioning.</p> <p><i>Exclusion</i> Bipolar disorder, ADHD, any psychotic disorder, progressive neurological disorder, alcohol abuse problems influencing daily functioning, or primary eating disorder; mental retardation or pervasive developmental disorder; pregnant; use of antipsychotics or antidepressants.</p>	Placebo group more likely to have worsening of SI over 12 weeks (RR=0.43; p =.052). No group differences in SA.
Wagner et al., 2006(10)	Escitalopram	Depression	Pediatric	United States	Escitalopram Placebo	N=264 Es=131 PI=133	<p><i>Inclusion</i> 6-17 years of age; MDD with current depressive episode at least 4 weeks in duration; ≥ 40 on Children's Depression Rating Scale-Revised at screening and baseline; normal results at screening from physical examination, laboratory tests, and electrocardiography.</p> <p><i>Exclusion</i> Primary psychiatric diagnosis other than MDD; psychotic features, severe personality disorder, ADHD, PTSD, bipolar disorder, CD, or ODD; pervasive developmental disorder or mental retardation; pregnant, nursing, or not on birth control; anorexia nervosa, bulimia,</p>	No group differences for SI or SA.

or substance abuse, including alcohol, within the past year; initiation of psychotherapy or behavioral therapy within 3 months before screening; imminent suicide risk, lifetime hospitalization for SA, or serious SA within the past year; use of antidepressant or anxiolytic medication within 2 weeks of baseline; treatment with antipsychotic or stimulant within 6 months before screening; receipt of investigational drug 30 days before study entry; participation in previous study of escitalopram or previous failure of an adequate trial of escitalopram or citalopram or adequate trials of two other SSRIs; concomitant treatment with certain prescription or over-the-counter medications.

Emslie et al., 2007(11)	Venlafaxine ER	Depression	Pediatric	United States	Venlafaxine ER Placebo	N=367 Ve=184 Pl=183
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Inclusion
7-17 years of age; current MDD; > 40 on Childhood Depression Rating Scale-Revised with ≤ 30% decrease between pre-study and baseline; ≥ 4 on Clinical Global Impression-Severity subscale at pre-study and baseline; depressive symptoms for at least 1 month before study entry.

No group differences reported for SI or SA.

Exclusion
History of any psychotic disorder or bipolar disorder; MDD with psychotic features, anorexia or bulimia, CD, panic disorder, or OCD; first-degree relative with bipolar disorder; recent drug or alcohol dependence or abuse; acute suicidality; serious medical problem; use of venlafaxine within 6 months or fluoxetine within 21 days; use of investigational drugs, antipsychotics, or

							electroconvulsive therapy within 30 days; use of monoamine oxidase inhibitors, triptans, or herbal products within 14 days; use of any other antidepressants or psychotropic drugs within 14 days from start of treatment; for females, positive test result for β -human chorionic gonadotropin at pre-study.	
March et al., 2007(12)	Cognitive Behavioral Therapy (CBT) vs. Fluoxetine vs. Combination	Depression	Pediatric	United States	CBT Fluoxetine Combination	N=327 CBT=111 Fl=109 Combo=107	<p><i>Inclusion</i> 12-17 years of age; current MDD; > 45 on Childhood Depression Rating Scale at baseline; IQ > 80; antidepressant-free before start of study; outpatient.</p> <p><i>Exclusion</i> Bipolar disorder, severe CD, substance abuse, pervasive developmental disorder, or thought disorder; suicidality or homicidality; concurrent treatment with psychotropic medication or psychotherapy outside study; two previous failed SSRI trials or a failed trial of CBT for depression; intolerance to fluoxetine; confounding medical condition; non-English speaking; pregnant.</p>	CBT and combo group had greater SI reduction compared with fluoxetine (p<.05). Fluoxetine had more than twice as many suicide events as CBT over 36 weeks (OR=2.6, p=.04).
Lauterbach et al., 2008(13)	Lithium	Mood disorder and recent SA	Adults	Germany	Lithium Placebo	N=167 Li=84 Pl=83	<p><i>Inclusion</i> ≥ 18 years of age; SA within 3 months prior to first drug administration; occurrence of SA within the context of a depressive spectrum disorder; ability to complete screening and baseline assessment; ability to understand and provide written informed consent.</p> <p><i>Exclusion</i></p>	Lithium had fewer completed suicides over 12 months (p=.049). No group differences in SA.

Schizophrenia or borderline personality disorder with severe self-harm or substance-related disorders (current addiction); clear indication for long-term lithium treatment, absolute or relative contraindications for lithium treatment.

Brent, Emslie, et al., 2009(14); Vitiello et al., 2011(15)	SSRI or venlafaxine with or without CBT	Treatment-resistant depression	Pediatric United States	SSRI Venlafaxine SSRI + CBT Venlafaxine + CBT	N=334 SSRI=85 Ve=83 SSRI + CBT=83 Ve + CBT=83	<p><i>Inclusion</i> 12-18 years of age; moderate to severe MDD, despite being in active treatment with an SSRI of at least 8 weeks duration (last 4 weeks with dosage \geq 40 mg of fluoxetine); \geq40 on Child Depression Rating Scale-Revised; \geq 4 on Clinical Global Impression-Severity subscale.</p> <p><i>Exclusion</i> Bipolar spectrum disorder, psychosis, pervasive developmental disorder or autism, eating disorders, substance abuse or dependence; hypertension.</p>	<p>In the first 12 weeks, SSRI associated with faster SI reduction than venlafaxine ($p < .05$). No main effects of treatment on suicidal events. Adding CBT to either showed no advantage for SI and SA.</p>	
Perroud et al., 2009(16)	Escitalopram vs. nortriptyline	Mild to moderate depression	Adults	Multi-national	Escitalopram Nortriptyline	N=796 Es=450 No=346	<p><i>Inclusion</i> 18-72 years of age; current major depressive episode of at least moderate severity.</p> <p><i>Exclusion</i> First-degree relative with bipolar affective disorder or schizophrenia; history of hypomanic or manic episode; mood incongruent psychotic symptoms; primary substance misuse or primary organic disease; current treatment with an antipsychotic or a mood stabilizer; pregnancy or lactation.</p>	<p>In men, nortriptyline was associated with greater increase in treatment emergent SI (OR=9.83) and treatment worsening SI (OR=2.47). No group differences in SA.</p>

Thomas et al., 2010(17)	Sertindole vs. risperidone	Schizophrenia	Adults	Multi-national	Sertindole Risperidone	N=9809 Se=4905 Ri=4904	<p><i>Inclusion</i> 18 years of age; schizophrenia; clinical indication for a single new antipsychotic.</p> <p><i>Exclusion</i> Prior treatment with sertindole or risperidone; contraindications to either drug; no history of antipsychotic drug use; prior participation in a sertindole safety study; homeless or considered unsuitable.</p>	Sertindole associated with fewer SA (HR=0.67, p=0.044).
Tourian et al., 2010(18)	Desvenlafaxine	Depression	Adults	Multi-national	Desvenlafaxine Venlafaxine ER Placebo	N=3194 De=1834 Ve=244 Pl=1116	<p><i>Inclusion</i> ≥ 18 years of age with upper limit of 65 years (1 study) or 75 years (5 studies); current MDD with depressive symptoms for at least 30 days; ≥ 20 or ≥ 22 on Hamilton Rating Scale for Depression (7 studies) or ≥ 24 on Montgomery-Asberg Depression Rating Scale (1 study).</p> <p><i>Exclusion</i> Medically instable (e.g., significant risk of suicide).</p>	No group differences in SA or emergence/worsening of SI.
Khan et al., 2011(19)	Citalopram with and without Lithium	Depressive disorder, suicidal symptoms	Adults	United States	Citalopram + lithium Citalopram + placebo	N=80 Ci + Li=40 Ci + Pl=40	<p><i>Inclusion</i> 18-75 years of age; current MDD, dysthymia, or depression not otherwise specified; 8 ≥ on Sheehan-Suicidality Tracking Scale and 15 ≥ on Montgomery-Asberg Depression Rating Scale at screening and baseline; basic English language abilities; provided written and informed consent; for females, willingness to use birth control.</p> <p><i>Exclusion</i> Significant medical comorbidities; abnormal clinically significant laboratory or ECG test results; history of intolerance</p>	Greater proportion of citalopram + lithium group (who achieved therapeutic level of lithium) had complete remission of SI and SB compared with citalopram + lithium (non-therapeutic level) and the citalopram + placebo group (p=.049).

							or hypersensitivity to citalopram, other SSRIs, or lithium; current treatment with lithium or citalopram; use of psychotropic medications during treatment phase; for females, a positive serum hCG pregnancy test or who were pregnant or lactating.	
Oquendo et al., 2011(20)	Lithium vs. Valproate	Bipolar disorder with prior SA	Adults	United States	Lithium Valproate	N=98 Li=49 Va=49	<i>Inclusion</i> 18-75 years of age; bipolar I or II disorder or bipolar disorder not otherwise specified; in a depressive or mixed episode; at least one past SA.	No group differences in SA or suicide-related events over 2.5 years.
							<i>Exclusion</i> Incapable of providing informed consent; pregnancy or lactation; active medical problems, including substance abuse requiring detoxification; contraindication to use of lithium or valproate; history of nonresponse to adequate dosages of either lithium and valproate in the past 2 years; contraindication to the use of adjunctive antidepressants or adjunctive antipsychotics.	
Weisler et al., 2011(21)	Antidepressant + Aripiprazole vs. Antidepressant + placebo	MDD with inadequate response to 8 weeks of antidepressant treatment	Adults	United States	Adjunctive aripiprazole Adjunctive placebo	N=362 Ar=184 Pl=178	<i>Inclusion</i> 18-65 years of age; current major depressive episode lasting ≥ 8 weeks; inadequate response to at least 1 historical antidepressant treatment;	For individuals over 25 years old, adjunctive aripiprazole associated with improvement in SI compared with placebo ($p < .05$). No difference in SA.
							<i>Exclusion</i> Axis I diagnosis of delirium, dementia, amnesic or other cognitive disorder, schizophrenia or other psychotic disorder, bipolar I or II disorder, eating disorder, OCD, panic disorder, or PTSD; Axis II diagnosis of borderline, antisocial, paranoid, schizoid, schizotypal, or	

Zisook et al., 2011(22)	Escitalopram + placebo vs. bupropion-SR + escitalopram vs. venlafaxine-XR + mirtazapine	Chronic and/or recurrent depression	Adults	United States	Escitalopram + placebo Escitalopram + Bupropion-SR Venlafaxine-XR + mirtazapine	N=665 Es + Pl=224 Es + Bu=221 Ve + Mi=220	<p>histrionic personality disorder; experiencing hallucinations, delusions, or any psychotic symptomatology; substance use disorder within the past 12 month; allergy, hypersensitivity, or previous unresponsiveness to aripiprazole; participation in another clinical trial with aripiprazole or any other investigational product within the past months history of thyroid pathology, neuroleptic malignant syndrome, or serotonin syndrome; history of seizure disorder; positive screen for drug abuse; received adjunctive antipsychotic plus antidepressant for ≥ 3 weeks during current episode; received electroconvulsive therapy for current episode or inadequate response to ECT; suicidal risk; likely to require concomitant therapy; received monoamine oxidase inhibitor within 2 weeks prior to enrollment; hospitalized within 4 weeks of screening.</p> <p><i>Inclusion</i> 18-75 years of age; non-psychotic recurrent or chronic MDD; in the index depressive episode for ≥ 2 months; ≥ 16 on Hamilton Depression Rating Scale.</p> <p><i>Exclusion</i> Pregnant, breastfeeding, or not using adequate birth control; history (lifetime) of psychotic depression, schizophrenia, bipolar (I, II, or NOS), schizoaffective, or other Axis I psychotic disorders; current psychotic symptoms; history (within the last 2 years) of anorexia or bulimia; OCD; substance dependence that requires inpatient detoxification or inpatient</p>	<p>For individuals with SI at baseline, bupropion-SR + escitalopram associated with greatest decrease in SI at 12 weeks ($p < .01$).</p> <p>Escitalopram + placebo and bupropion-SR + escitalopram groups had lower rate of SA ($p = .0162$) than the venlafaxine-XR + mirtazapine group.</p>
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treatment; requiring immediate hospitalization for a psychiatric disorder; history of intolerance or allergy (lifetime) to any protocol medication; history of clear nonresponse to an adequate trial of an FDA-approved monotherapy in the current or any prior MDE; history of clear nonresponse to an adequate trial of any study medication used as a monotherapy, or to one or more of the protocol combinations in the current or any prior MDE; currently taking any of the study medications at any dose; having taken Prozac (fluoxetine) or an MAOI in the 4 weeks before study entry; presence of an unstable general medical condition that will likely require hospitalization or to be deemed terminal; currently taking medications or have GMCs that contraindicate any study medications; epilepsy or other conditions requiring an anticonvulsant; lifetime history of having a seizure including febrile or withdrawal seizures; receiving or have received vagus nerve stimulation, electroconvulsive therapy, repetitive transcranial magnetic stimulation, or other somatic antidepressant treatments; taking exclusionary medications: antipsychotics, anticonvulsants, mood stabilizers, or central nervous system stimulants; uncontrolled narrow angle glaucoma; using agents within the 7 days before study entry that are potential augmenting agents; therapy that is depression-specific.

Grunebaum et al., 2012(23)	Paroxetine vs. bupropion	Depression with past SA/ current SI	Adults	United States	Paroxetine Bupropion	N=78 Pa=38 Bu=40	<p><i>Inclusion</i> 18-75 years of age; current episode of MDD (≥ 16 on the modified 17-item Hamilton Depression Rating Scale); past SA or current SI.</p> <p><i>Exclusion</i> Bipolar disorder; psychosis; anorexia or bulimia nervosa; current SSRI or bupropion use for other indications; drug or alcohol dependence within 6 months; unstable medical illness; contraindication to either drug; nonresponse to three other SSRIs, paroxetine, or bupropion in the past 2 years; pregnancy or lactation; lack of capacity to consent.</p>	Patients with more severe baseline SI showed greater reduction in SI over 8 weeks on paroxetine vs. bupropion, controlling for baseline depression ($p < .001$). No group differences in time to suicidal event.
Yu et al., 2013(24)	Generic escitalopram vs. Lexapro	Depression	Adults	China	Generic escitalopram Lexapro (control)	N=260 Es=130 Le=130	<p><i>Inclusion</i> 18-65 years of age; outpatient psychiatric patient at the participating centers with MDD diagnosis; not currently taking psychoactive medications other than sleeping medications; ≥ 20 on Hamilton Depression Rating Scale at screening and at entry into the treatment phase; ≥ 2 on first HAMD item (depressed affect) of ; ≥ 4 on severity subscale of Clinical Global Impression scale.</p> <p><i>Exclusion</i> Serious SI; serious physical illness; history of epilepsy; history of closed-angle glaucoma; abuse of or dependence on alcohol or any psychoactive drug during the past year; depressive episode induced by other mental or physical illnesses; lactation, current pregnancy, or any possible pregnancy during the trial; history of severe drug allergy; history of poor response to escitalopram.</p>	No group difference in SA.

Girlanda et al., 2014(25)	Lithium	Treatment-resistant depression and deliberate self-harm in past year	Adults	Italy	Lithium + usual care Usual care	N=56 Li + UC=29 UC=27	<p><i>Inclusion</i></p> <p>≥ 18 years of age; unipolar major depression; an episode of deliberate self-harm in the previous 12 months; inadequate response to at least two antidepressants given sequentially at an adequate dose for an adequate time for the current depressive episode; uncertainty about which treatment arm would be best for the participant; signed written informed consent.</p> <p><i>Exclusion</i></p> <p>Primary diagnosis of any concurrent Axis I disorder other than MDD; previous exposure to lithium associated with lack of efficacy or adverse reactions; clinical conditions contraindicating lithium (i.e., thyroid or kidney disease/abnormalities); pregnant/lactating women and women of childbearing potential not practicing a reliable method of contraception.</p>	No group difference in DSH.
Canuso et al., 2018(26)	Esketamine	MDD patients from ED or inpatient psychiatric unit	Adults	United States	Esketamine Placebo	N=66 Es=35 Pl=31	<p><i>Inclusion</i></p> <p>Affirmative response to Mini International Neuropsychiatric Interview questions B5 (“Think about suicide [killing yourself]?”) in the present and B9 (“Intend to act on thoughts of killing yourself?”) in the past 24 hours; clinical need of acute psychiatric hospitalization due to imminent risk for suicide; ≥ 22 on Montgomery-Asberg Depression Rating Scale (MADRS) on day 1 before dosing; agreement to standard-of-care treatment, including hospitalization and initiation or optimization of one or more non-investigational antidepressants.</p> <p><i>Exclusion</i></p>	Greater SI reduction in esketamine group at 4 hours (effect size=0.67, p=.002), but not at 24 hours or at day 25. No group differences in SA.

Current diagnosis of bipolar disorder, moderate to severe substance use disorder, intellectual disability, antisocial personality disorder, borderline personality disorder, or a current or past diagnosis of a psychotic disorder.

SA=Suicide Attempt; SI=Suicidal Ideation; DSH=Deliberate Self-Harm; RR=Relative Risk; HR=Hazard Ratio; OR=Odds Ratio

TABLE S2B. Randomized Controlled Trials of Brain Stimulation Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Diagnosis	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Keshtkar et al., 2011(27)	ECT vs. rTMS	Depression	Iran	ECT rTMS	N=75 ECT=40 rTMS=35	<p><i>Inclusion</i> Primary diagnosis of MDD.</p> <p><i>Exclusion</i> Previous experience with transcranial magnetic stimulation; implanted devices such as a cochlear implant or pacemaker; history of seizures; bipolar disorder; substance or alcohol abuse; history of significant head trauma; severe medical conditions such as hypothyroidism; a history of nonresponse to earlier ECT; pregnancy or planning to become pregnant during the study period; lack of provision of written informed consent.</p>	ECT associated with greater reduction of SI than rTMS (p<.001).
Weintraub et al., 2013(28)	DBS vs. BMT; STN vs. GPi DBS surgery	Parkinson's disease	USA	DBS BMT STN GPi	<p>N (phase 1)=255 DBS=121 BMT=134</p> <p>N (phase 2)=299 STN=147 GPi=152</p>	<p><i>Inclusion</i> ≥ 21 years of age; idiopathic Parkinson's Disease; classified as Hoehn and Yahr stage 2 or greater while not taking medication; responsive to levodopa; had persistent disabling symptoms despite medication; experienced 3 or more hours per 24-hour period with poor motor function or symptom control; were receiving stable medical therapy for 1 month or longer.</p> <p><i>Exclusion</i> Atypical syndromes; previous surgery for PD; surgical contraindications, active alcohol or drug abuse; dementia; pregnancy.</p>	No group differences in SI or SA.

SA=Suicide Attempt; SI=Suicidal Ideation; ECT= Electroconvulsive Therapy; rTMS=Repetitive Transcranial Magnetic Stimulation; DBS=Deep Brain Stimulation; BMT=Best Medical Therapy; STN=Bilateral Subthalamic Nucleus; GPi=Bilateral Globus Pallidus Internal

TABLE S3A. Randomized Controlled Trials of Psychotherapy Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Diagnosis/ Clinical Characteristics	Age Group	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Brown et al., 2005(29)	Cognitive therapy (CT) for the prevention of suicide	Suicide attempters presenting to ED	Adults	United States	CT + usual care Usual care	N=120 CT + UC=60 UC=60	<p><i>Inclusion</i> ≥ 16 years of age; SA within 48 hours prior to being evaluated at the emergency department; ability to speak English; ability to complete baseline assessment; ability to provide at least 2 verifiable contacts to improve tracking for subsequent assessments; ability to understand and provide informed consent.</p> <p><i>Exclusion</i> Medical disorder that would prevent participation in an outpatient clinical trial.</p>	Patients in CT were 50% less likely to attempt suicide (HR=.51) vs. E-TAU during 18-month follow-up.
Donaldson et al., 2005(30)	Skills-based treatment vs. supportive relationship treatment	Presenting to ED/inpatient unit post-SA	Pediatric	United States	Skills-based Supportive relationship	N=31 SB=15 SR=16	<p><i>Inclusion</i> 12-17 years of age; presented to a general pediatric emergency department or inpatient unit of an affiliated child psychiatric hospital in the Northeast after a SA.</p> <p><i>Exclusion</i> Primary language other than English; psychosis; intellectual functioning precluding outpatient psychotherapy.</p>	No group differences in SI or SA.
Davidson et al., 2006(31) & 2010(32); Norrie et al., 2013(33)	Cognitive Behavioral Therapy for Personality Disorders (CBT-PD)	Borderline personality disorder	Adults	United Kingdom	CBT-PD + TAU TAU	N=106 CBT-PD + TAU=54 TAU=52	<p><i>Inclusion</i> 18-65 years of age; met criteria for at least 5 items of borderline personality disorder on the Structured Clinical Interview for DSM IV; received either in-patient psychiatric services or an assessment at accident and emergency services for an episode of deliberate self-harm in the</p>	CBT-PD showed greater reduction in mean number of SA per individual over two-year period (Mean diff=-.91, p=.02). Mean difference 2-3 times greater when session

previous 12 months; able to give informed consent. quantity and therapist competence are high.

Exclusion

Receiving in-patient treatment for a mental state disorder; receiving systematic psychological therapy or specialist service; insufficient knowledge of English; temporarily resident in the area; evidence of organic illness, mental impairment, alcohol or drug dependence, schizophrenia or bipolar affective disorder.

Linehan et al, 2006(34)	Dialectical Behavior Therapy (DBT)	Borderline personality disorder	Adults	United States	DBT CTBE (control)	N=111 DBT=60 CTBE=51	<p><i>Inclusion</i> 18-45 years of age; female; BPD; current and past suicidal behavior (at least 2 suicide attempts or self-injuries in the past 5 years, with at least 1 in the past 8 weeks).</p> <p><i>Exclusion</i> Lifetime diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, psychotic disorder not otherwise specified, or mental retardation; seizure disorder requiring medication; mandate to treatment; need for primary treatment for another debilitating condition.</p>	DBT group half as likely to attempt suicide (HR= 2.66).
March et al., 2007(12)	Cognitive Behavioral Therapy (CBT) vs. Fluoxetine vs. Combination	Depression	Pediatric	United States	CBT Fluoxetine Combination	N=327 CBT=111 Fl=109 Combo=107	<p><i>Inclusion</i> 12-17 years of age; current MDD; > 45 on Childhood Depression Rating Scale at baseline; IQ > 80; antidepressant-free before start of study; outpatient.</p> <p><i>Exclusion</i> Bipolar disorder, severe CD, substance abuse, pervasive developmental disorder, or thought disorder; suicidality or homicidality; concurrent treatment with psychotropic medication or psychotherapy</p>	CBT and combo group had greater SI reduction compared with fluoxetine (p<.05). Fluoxetine had more than twice as many suicide events as CBT over 36 weeks (OR=2.6, p=.04).

							outside study; two previous failed SSRI trials or a failed trial of CBT for depression; intolerance to fluoxetine; confounding medical condition; non-English speaking; pregnant.	
Bateman et al., 2008(35)	Mentalization-based treatment (MBT)	Borderline personality disorder	Adults	United Kingdom	MBT TAU	N=41 MBT=22 TAU=19	<p><i>Inclusion</i> Borderline personality disorder (≥ 7 on Structured Clinical Interview for DSM IV, also assessed using Diagnostic Interview for Borderline Patients).</p> <p><i>Exclusion</i> Schizophrenia, bipolar disorder, substance misuse, mental impairment, or evidence of organic brain disorder.</p>	At five-year follow-up, MBT group had fewer SA (d=1.4).
Bateman et al., 2009(36)	Mentalization-based treatment (MBT) vs. Structured clinical management (SCM)	Borderline personality disorder	Adults	United Kingdom	MBT SCM (control)	N=134 MBT=71 SCM=63	<p><i>Inclusion</i> 18-65 years of age; borderline personality disorder; SA or episode of life-threatening self-harm within last 6 months.</p> <p><i>Exclusion</i> In long-term psychotherapeutic treatment; psychotic disorder or bipolar I disorder; opiate dependence requiring specialist treatment; mental impairment or evidence of organic brain disorder.</p>	MBT had fewer SA at treatment-end (d=0.65).
Arnevik et al., 2009(37)	Day hospital psychotherapy (DHP) vs. outpatient individual psychotherapy (OIP)	Personality disorders	Adults	Norway	DHP OIP	N=114 DHP=60 OIP=54	<p><i>Inclusion</i> Personality disorder(s).</p> <p><i>Exclusion</i> Schizotypal PD or antisocial PD; ongoing alcohol or drug dependence; psychotic disorders; bipolar I disorder; untreated ADHD (adult type); pervasive developmental disorder; organic syndromes; being homeless.</p>	No group differences in SI or SA.

Brent, Emslie, et al., 2009(14); Vitiello et al., 2011(15)	SSRI or venlafaxine with or without CBT	Treatment-resistant depression	Pediatric	United States	SSRI Venlafaxine SSRI + CBT Venlafaxine + CBT	N=334 SSRI=85 Ve=83 SSRI + CBT=83 Ve + CBT=83	<p><i>Inclusion</i> 12-18 years of age; moderate to severe MDD, despite being in active treatment with an SSRI of at least 8 weeks duration (last 4 weeks with dosage \geq 40 mg of fluoxetine); \geq40 on Child Depression Rating Scale-Revised; \geq 4 on Clinical Global Impression-Severity subscale.</p> <p><i>Exclusion</i> Bipolar spectrum disorder, psychosis, pervasive developmental disorder or autism, eating disorders, substance abuse or dependence; hypertension.</p>	In the first 12 weeks, SSRI associated with faster SI reduction than venlafaxine ($p < .05$). No main effects of treatment on suicidal events. Adding CBT to either showed no advantage for SI and SA.
Cottraux et al., 2009(38)	CT vs. Rogerian Supportive Therapy (RST)	Borderline personality disorder	Adults	France	CT RST	N=65 CT=32 RST=33	<p><i>Inclusion</i> 18-60 years of age; BPD diagnosis on Mini International Neuropsychiatric Interview, confirmed by \geq 8 on Interview for Borderline Personality Disorder-Revised.</p> <p><i>Exclusion</i> Living too far from treatment centers; psychotic disorders with current delusions; significant drug or alcohol addiction in the foreground; antisocial behaviors; receiving psychotherapy.</p>	No group difference in SA.
McMain et al., 2009(39)	DBT vs. general psychiatric management (GPM)	BPD and history of SB/NSSI	Adults	Canada	DBT GPM (control)	N=180 DBT=90 GPM=90	<p><i>Inclusion</i> 18-60 years of age; borderline personality disorder; at least two episodes of suicidal or non-suicidal self-injurious episodes in the past 5 years, at least one of which was in the 3 months preceding enrollment.</p> <p><i>Exclusion</i> Psychotic disorder, bipolar I disorder, delirium, dementia, or mental retardation or a diagnosis of substance dependence in the preceding 30 days; having a medical</p>	No group differences in suicidal and non-suicidal episodes.

							condition that precluded psychiatric medications; living outside a 40-mile radius of Toronto; having any serious medical condition likely to require hospitalization within the next year; and having plans to leave the province in the next 2 years.	
Doering et al., 2010(40)	Transference-focused psychotherapy (TFP)	Borderline personality disorder	Adults	Germany and Austria	TFP Experienced community psychotherapists (control)	N=104 TFP=52 Control=52	<p><i>Inclusion</i> 18-45 years of age; female gender; borderline personality disorder; sufficient knowledge of the German language.</p> <p><i>Exclusion</i> Antisocial personality disorder; schizophrenia; bipolar I and II disorder with a major depressive, manic, or hypomanic episode during the previous 6 months; substance dependency (including alcohol) during the previous 6 months; organic pathology; or mental retardation.</p>	TFP group had fewer SA over the course of treatment (d= 0.8, p= 0.009).
Esposito-Smythers et al., 2011(41)	Integrated CBT (I-CBT)	Alcohol/cannabis use disorder and past SA/current SI	Adolescents	United States	I-CBT E-TAU	N=40 I-CBT=20 E-TAU=20	<p><i>Inclusion</i> 13-17 years of age; SA within the prior 3 months or reported clinically significant SI during the past month (≥ 41 on the Suicide Ideation Questionnaire); alcohol or cannabis use disorder; lived in the home with a parent/ guardian willing to participate.</p> <p><i>Exclusion</i> Verbal IQ estimate < 70 (as per Kaufman Brief Intelligence Test); actively psychotic; homicidal; bipolar disorder; dependent on substances other than alcohol and marijuana.</p>	Fewer SA in I-CBT vs. E-TAU over 18 months (Cohen's $h=.82$), no group difference in SI.

Harned et al., 2014(42)	DBT Prolonged Exposure (DBT PE) vs. Standard DBT	Borderline personality disorder and PTSD	Adults	United States	DBT PE Standard DBT	N=28 DBT PE=17 DBT=9	<p><i>Inclusion</i> 18-60 years of age; female; BPD; PTSD (and can remember at least some part of the index trauma); recent and recurrent intentional self-injury (at least two suicide attempts or NSSI episodes in the last 5 years, with at least one episode in the past 8 weeks); lives within commuting distance of the clinic.</p> <p><i>Exclusion</i> Psychotic disorder, bipolar disorder, or mental retardation; legally mandated to treatment; required primary treatment for another debilitating condition.</p>	SA 2.4 times less likely in DBT-PE group.
Mehlum et al., 2014(43)	DBT for adolescents (DBT-A)	Recent, repetitive DSH	Adolescents	Norway	DBT-A EUC	N=77 DBT-A=39 EUC=38	<p><i>Inclusion</i> At least 2 episodes of self-harm, at least 1 within the last 16 weeks; at least 2 criteria of borderline personality disorder (plus the self-destructive criterion), or, alternatively, at least 1 criterion of BPD plus at least 2 subthreshold-level criteria; fluency in Norwegian.</p> <p><i>Exclusion</i> Bipolar disorder (except bipolar II), schizophrenia, schizoaffective disorder, psychotic disorder not otherwise specified, intellectual disability, or Asperger syndrome.</p>	Greater reduction in SI over 19 weeks in DBT-A vs. EUC group (Δ slope=-0.62 per week, $p=.010$). DBT group had larger decrease in frequency of self-harm behaviors (NSSI and SA) from first interval (baseline-9 weeks) to second interval (10-15 weeks) than TAU (Δ slope=-.92; $p=.02$).
Morley et al., 2014(44)	Opportunistic Cognitive Behavioral Intervention Package (OCB)	Substance use and past SA/current SI	Adults	Australia	OCB TAU	N=185 OCB=122 TAU=63	<p><i>Inclusion</i> 18-65 years of age; alcohol or other drug misuse; SA in the last 3 months and/or current SI/plan; willingness to give informed consent.</p> <p><i>Exclusion</i></p>	No group differences in SI or SA.

							Inability to speak or understand English; organic brain disease; intellectual impairment; psychotic disorder; homelessness.	
Rudd et al., 2015(45)	Brief CBT (BCBT)	Active-duty soldiers with SA in past month or ≥ 5 on Beck Scale for Suicide Ideation	Adults	United States	BCBT TAU	N=152 BCBT=76 TAU=76	<p><i>Inclusion</i> ≥ 18 years of age; presence of SI with intent to die during the past week and/or SA within the past month; active-duty military status; ability to speak English; ability to understand and complete informed consent procedures.</p> <p><i>Exclusion</i> Medical or psychiatric condition that would preclude informed consent or participation in outpatient treatment.</p>	SA was 60% less likely in CBT group (HR=.38, $p=.02$) during 24-month follow-up. CBT associated with greater reduction in worse-point SI ($g=-.42$, $p=.02$) and current SI ($g=-.37$, $p=.05$) at 6-month follow-up.
Goodman et al., 2016(46)	DBT	Veterans with "high-risk for suicide" status	Adults	United States	DBT TAU	N=91 DBT=46 TAU=45	<p><i>Inclusion</i> 18-55 years of age; veteran; receiving mental health services; "high-risk for suicide" status, defined by any of the following criteria: (1) recent SA or SI resulting in psychiatric hospitalization or emergency department presentation within the previous 3 months, (2) chronic SI > 3 months, (3) assignment to the James J. Peters VA Medical Center "high risk" suicide list maintained by the suicide prevention coordinator.</p> <p><i>Exclusion</i> Schizophrenia or any schizophrenia-related psychotic disorders; current evidence or history of clinically significant organic brain impairment.</p>	No group differences in SI or SA.
Gysin-Maillart	Attempted suicide short intervention	High-risk patients hospitalized	Adults	Switzerland	ASSIP TAU	N=120 ASSIP=60 TAU=60	<p><i>Inclusion</i> Recent SA, defined as "self-inflicted, potentially injurious behavior with a</p>	ASSIP associated with 80% reduced risk of SA (HR=.17, $p< 0.001$)

et al., 2016(47)	program (ASSIP)	following SA						nonfatal outcome for which there is evidence (either explicit or implicit) of intent to die."	during 24-month follow-up. No group difference in SI.
								<i>Exclusion</i> Habitual self-harm; serious cognitive impairment; psychotic disorder; insufficient mastery of the German language; residency outside the hospital catchment area.	
Asarnow et al., 2017(48)	SAFETY Program (CBT & DBT informed)	SA or NSSI in the past 3 months	Adoles- cents	United States	SAFETY Enhanced care	N=42 SAFETY=20 EC=22	<i>Inclusion</i> 11-18 years of age; recent (past 3 months) SA, or NSSI as the primary problem, with additional requirement of repetitive self-harm (≥ 3 lifetime episodes); living in a stable family situation (no plans for residential placement); at least one parent willing to participate in treatment.	<i>Exclusion</i> Symptoms interfering with participation in assessments or intervention; inability to speak English.	Intervention group less likely to have SA at 3-month follow-up (p=.02)
Jobes et al., 2017(49)	Collaborative Assessment and Management of Suicidality (CAMS)	Active-duty soldiers with significant SI	Adults	United States	CAMS E-CAU	N=148 CAMS=73 E-CAU=75	<i>Inclusion</i> ≥ 18 years of age; active-duty U.S. Army Soldiers; English-speaking; significant SI (≥ 13 on the Scale for Suicidal Ideation–Current).	<i>Exclusion</i> Inability to understand, consent, or benefit from study procedures due to significant psychosis, paranoia, cognitive impairment, or where psychosocial therapeutic care was otherwise contraindicated; judicial order to treatment; separation, change of station, or deployment expected in the next 12 weeks; in the Warrior Transition Unit; pregnant.	CAMS groups had lower SI at 3-months vs. E-TAU (d=0.93, p=.028), but no group difference at 6 or 12-months. No group difference in SA.

McMain et al., 2017(50)	Brief DBT skills training	High-risk suicidal individuals with BPD	Adults	Canada	DBT Waitlist	N=84 DBT=42 Waitlist=42	<p><i>Inclusion</i> 18-60 years of age; borderline personality disorder; 2 suicidal and/or NSSI episodes in the past 5 years, with one occurring within 10 weeks prior to enrollment; able to understand written and spoken English.</p> <p><i>Exclusion</i> Psychotic disorder, bipolar I disorder, or dementia; evidence of an organic brain syndrome or mental retardation; participation in a DBT program within the past year.</p>	Greater reduction in SB (suicidal and self-harm episodes) in DBT group at 32 weeks (p<.04).
Sinniah et al., 2017(51)	Individual cognitive behavior therapy (ICBT)	Outpatients with mood disorders and SI	Adults	Malaysia	ICBT + TAU TAU	N=69 ICBT + TAU=33 TAU=36	<p><i>Inclusion</i> 18-75 years of age; unipolar mood disorder(s).</p> <p><i>Exclusion</i> Any other psychiatric diagnoses beside unipolar mood disorder(s); prior treatment with CBT or other psychological intervention; not able to read, write or speak either Bahasa Melayu or English.</p>	Greater decrease in SI symptoms in ICBT (p<0.001) than TAU. No group difference in SA.
Ward-Ciesielski et al., 2017(52)	Dialectical behavior therapy brief suicide intervention (DBT-BSI)	Suicidal patients who were non-treatment-engaged	Adults	United States	DBT-BSI Relaxation training (control)	N=93 DBT-BSI=46 RT=47	<p><i>Inclusion</i> ≥ 18 years of age; SI in the last week (≥ 10 on the Scale for Suicidal Ideation); no mental health treatment in the month prior to screening; lived within commuting distance to the research office; willing to consent to study procedures.</p> <p><i>Exclusion</i> Non-English speaking; significant cognitive impairment (≥ 8 on the 6-item Cognitive Impairment Test).</p>	No group differences in SI or SA.

Ducasse et al., 2018(53)	Acceptance and commitment therapy (ACT)	Patients hospitalized for current SI or SA	Adults	France	ACT PRT + TAU (control)	N=40 ACT=21 PRT + TAU=19	<p><i>Inclusion</i> 18-65 years of age; current suicidal behavior disorder; able to speak, read, and understand French.</p> <p><i>Exclusion</i> Lifetime history of schizophrenia; current alcohol/illicit drug use disorder; current manic or hypomanic episode; lifetime history of severe brain injury or neurologic disease; pregnancy.</p>	Higher rate of SI reduction in ACT vs. PRT+TAU from baseline to posttreatment ($\beta = -1.88$ vs. -0.79 ; $p=.03$). No group differences in SA.
Högberg et al., 2018(54)	Mood-regulation focused cognitive behavioral therapy (MR-CBT)	Depressed patient at outpatient units	Adolescents	Sweden	MR-CBT TAU	N=32 MR-CBT=17 TAU=15	<p><i>Inclusion</i> Depression (≥ 8 on the short version of the Mood and Feelings Questionnaire).</p> <p><i>Exclusion</i> Need of translator, refugee lacking residency permit.</p>	No group difference in suicidal events.
LaCroix et al., 2018(55)	Post-admission cognitive therapy (PACT)	Military members hospitalized for recent SA (with PTSD)	Adults	United States	PACT + EUC EUC	N=36 PACT + EUC=18 EUC=18	<p><i>Inclusion</i> ≥ 18 years of age; military service members and adult beneficiaries; psychiatrically hospitalized due to recent SA; documented inpatient admission record of diagnosed acute stress disorder or PTSD.</p> <p><i>Exclusion</i> Admitted for self-inflicted harm with no intent to die by suicide; did not have medical capacity to participate; active state of psychosis.</p>	No group differences in SI or SA.

SA=Suicide Attempt; SI=Suicidal Ideation; SB=Suicidal Behaviors; DSH=Deliberate Self-Harm; NSSI=Non-Suicidal Self-Injury; HR=Hazard Ratio; OR=Odds Ratio; TAU=Treatment as Usual; E-TAU=Enhanced Treatment as Usual; EUC=Enhanced Usual Care; E-CAU=Enhanced Care as Usual; CTBE=Community Treatment by Experts; PRT=Progressive Relaxation Training; SAFETY= Safe Alternatives for Teens and Youths

TABLE S3B. Randomized Controlled Trials Comparing Medication and Psychotherapy Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Diagnosis/ Clinical Characteristics	Age Group	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
March et al., 2007(12)	Cognitive Behavioral Therapy (CBT) vs. Fluoxetine vs. Combination	Depression	Pediatric	United States	CBT Fluoxetine Combination	N=327 CBT=111 FI=109 Combo=107	<p><i>Inclusion</i> 12-17 years of age; current MDD; > 45 on Childhood Depression Rating Scale at baseline; IQ > 80; antidepressant-free before start of study; outpatient.</p> <p><i>Exclusion</i> Bipolar disorder, severe CD, substance abuse, pervasive developmental disorder, or thought disorder; suicidality or homicidality; concurrent treatment with psychotropic medication or psychotherapy outside study; two previous failed SSRI trials or a failed trial of CBT for depression; intolerance to fluoxetine; confounding medical condition; non-English speaking; pregnant.</p>	CBT and combo group had greater SI reduction compared with fluoxetine (p<.05). Fluoxetine had more than twice as many suicide events as CBT over 36 weeks (OR=2.6, p=.04).
Brent, Emslie, et al., 2009(14); Vitiello et al., 2011(15)	SSRI or venlafaxine with or without CBT	Treatment-resistant depression	Pediatric	United States	SSRI Venlafaxine SSRI + CBT Venlafaxine + CBT	N=334 SSRI=85 Ve=83 SSRI + CBT=83 Ve + CBT=83	<p><i>Inclusion</i> 12-18 years of age; moderate to severe MDD, despite being in active treatment with an SSRI of at least 8 weeks duration (last 4 weeks with dosage ≥ 40 mg of fluoxetine); ≥40 on Child Depression Rating Scale-Revised; ≥ 4 on Clinical Global Impression-Severity subscale.</p> <p><i>Exclusion</i> Bipolar spectrum disorder, psychosis, pervasive developmental disorder or autism, eating disorders, substance abuse or dependence; hypertension.</p>	In the first 12 weeks, SSRI associated with faster SI reduction than venlafaxine (p<.05). No main effects of treatment on suicidal events. Adding CBT to either showed no advantage for SI and SA.

McMain et al., 2009(39)	DBT vs. general psychiatric management (GPM)	BPD and history of SB/NSSI	Adults	Canada	DBT GPM (control)	N=180 DBT=90 GPM=90	<p><i>Inclusion</i> 18-60 years of age; borderline personality disorder; at least two episodes of suicidal or non-suicidal self-injurious episodes in the past 5 years, at least one of which was in the 3 months preceding enrollment.</p> <p><i>Exclusion</i> Psychotic disorder, bipolar I disorder, delirium, dementia, or mental retardation or a diagnosis of substance dependence in the preceding 30 days; having a medical condition that precluded psychiatric medications; living outside a 40-mile radius of Toronto; having any serious medical condition likely to require hospitalization within the next year; and having plans to leave the province in the next 2 years.</p>	No group differences in suicidal and non-suicidal episodes.
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SA=Suicide Attempt; SI=Suicidal Ideation; SB=Suicidal Behaviors; NSSI=Non-Suicidal Self-Injury; OR=Odds Ratio

TABLE S3C. Randomized Controlled Trials of Group Psychotherapy Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Diagnosis/ Clinical Characteristics	Age Group	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Blum et al., 2008(56)	Systems Training for Emotional Predictability and Problem Solving (STEPPS)	Borderline personality disorder	Adults	United States	STEPPS + TAU TAU	N=165 STEPPS + TAU=93 TAU=72	<i>Inclusion</i> Borderline personality disorder. <i>Exclusion</i> Did not speak English; psychotic or primary neurological disorder; cognitively impaired; current (past month) substance abuse or dependence; participated in STEPPS previously.	No group differences in SA over 12-month follow-up period.
Rabovsky et al., 2012(57)	Mixed-diagnosis psychoeducation (PE) program + corresponding family groups	Inpatients with severe psychiatric disorders	Adults	Switzerland	PE Control	N=87 PE=40 Control=37	<i>Inclusion</i> 18-64 years of age; inpatient of the Psychiatric Hospital of the University of Basel with one of the following diagnoses: Schizophrenia or psychotic disorder (ICD-10 F2: F20–schizophrenia, F22–persistent delusional disorder, F23–acute psychotic disorder, F25–schizoaffective disorder), affective disorder (F31–bipolar disorder, F32–depressive episode, F33–recurrent depression), or another severe psychiatric disease like anxiety or personality disorder (F4: neurotic, stress related and somatoform disorders, F60/61: personality disorders). <i>Exclusion</i> Organic brain disorder or IQ < 80; severe addiction disorder; severe physical comorbidity; pregnancy; lack of competence in German; ongoing disturbance of the study program.	Completed suicide rate lower in PE group (p=.038) over 12 months.

SA=Suicide Attempt; TAU=Treatment as Usual

TABLE S4. Randomized Controlled Trials of Contact and/or Active Outreach Following a Suicide Attempt or Suicidal Ideation Crisis for Suicidal Behavior Prevention

Source	Prevention Strategy	Population	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Vaiva et al., 2006(58)	Telephone contact (1- or 3-months following emergency department (ED) discharge)	Patients discharged from ED following SA by self-poisoning	France	1-month contact 3-month contact No contact	N=605 1M=147 3M=146 No=312	<i>Inclusion</i> 18-65 years of age; SA by drug overdose; examined by a psychiatrist who agreed to their discharge from the emergency department; gave name of their general practitioner; could be contacted by telephone; gave written consent for being contacted. <i>Exclusion</i> Homeless; addicted to illegal drugs.	Telephone contact at 1-month associated with lower rates of SA than controls (p=.03) over 12-month follow-up. No group differences in SA when contacted at 3 months.
Carter et al., 2007(59)	Postcard (8 over 12-month period)	Patients presenting to ED for deliberate self-poisoning	Australia	Postcards + TAU TAU	N=772 P + TAU=378 TAU=394	<i>Inclusion</i> ≥ 16 years of age; self-poisoned and presented to the Hunter Area Toxicology Service during the recruitment period; capable of informed consent; sufficient English to complete a structured interview. <i>Exclusion</i> Considered to pose a threat to an interviewer; no fixed address.	Reduction in the rate of SA repetition in intervention group (IRR= 0.49) versus TAU, but no reduction in the number of individuals who engaged in self-poisoning.
Fleischmann et al., 2008(60)	Brief Contact Intervention (BIC), information session + phone/in-person contact (9 over 18 months)	Suicide attempters presenting to EDs	Multi-national	BIC TAU	N=1867 BIC=922 TAU=945	<i>Inclusion</i> Suicide attempters seen at any of the 5 participating emergency care departments. <i>Exclusion</i> Inadequate recording of ED visits; intentional misreporting of SA as accidental; failure of ED staff to notify research staff; rapid departure of	BIC had fewer completed suicides than TAU (p<.001) at 18-month follow-up.

						patient from the ED; death in the ward; clinical conditions not allowing an interview; leaving against medical order; residence in a different catchment area; language problems.	
Hassanian-Moghaddam et al., 2011(61); Hassanian-Moghaddam et al., 2017 (72)	Postcard (9 over a 12-month period)	Patients who were admitted to hospital following self-poisoning	Iran	Postcards + TAU TAU	N=2300 P + TAU=1150 TAU=1150	<i>Inclusion</i> ≥ 12 years of age; self-poisoning. <i>Exclusion</i> Treatment only in emergency department; incapable of informed consent; psychosis; no fixed address, insufficient Farsi to read a letter; potential threat to an interviewer.	Reduction in SI (RRR=.31), any SA (RRR=.42), and number of SA (IRR=.64) in intervention compared to control group. During 12-24-month follow-up period, intervention associated with reduction in SI (RRR=0.20) and SA (RRR=0.31)
Hvid et al., 2011(62); Lahoz et al., 2016(63)	OPAC, a rapid outreach suicide prevention intervention	Suicide attempters >age 12 without schizophrenia, bipolar disorder, severe/psychotic depression	Denmark	OPAC TAU	N=133 OPAC=69 TAU=64	<i>Inclusion</i> Suicidal behavior (per WHO definition). <i>Exclusion</i> Out of the catchment period; living outside of the catchment area; schizophrenia and psychotic states; bipolar affective disorder and severe and/or psychotic depression; mental retardation; severe dementia.	Intervention group had fewer individuals with SA (p=.04) at 1-year follow-up and fewer total number of SA at 5-year follow-up (p<.05)
Morthorst et al., 2012(64)	AID, an assertive outreach intervention	Suicide attempters >age 12 with a SA in past 14 days	Denmark	AID TAU	N=243 AID=123 TAU=120	<i>Inclusion</i> ≥ 12 years of age; SA within the past 14 days (per WHO definition); able to read and understand the informed consent statement. <i>Exclusion</i>	No group difference in SA.

						Admitted to a psychiatric ward for more than 14 days after index attempt; schizophrenia spectrum disorders; severe depression; severe bipolar disorder; severe dementia; receiving outreach services from social service agencies or living in institutions.	
Robinson et al., 2012(65)	Monthly postcards for one year	At-risk for suicide patients aged 15-24 who were not accepted to mental health services.	Australia	Postcard TAU	N=165 P=82 TAU=83	<i>Inclusion</i> 15-24 years of age; resided in Western or Northwestern metropolitan Melbourne; did not meet entry criteria for the Orygen Youth Health mental health service (either because they were not unwell enough or were receiving treatment elsewhere); a history of suicidal threats, SI, SA, and/or deliberate self-harm.	No group differences in SI or SA.
						<i>Exclusion</i> Known organic cause for presentation; intellectual disability; inability to speak English.	
Chen et al., 2013(66)	Personalized crisis postcard	Suicide attempters identified by gatekeepers	Taiwan	Crisis postcard + case management Case management (control)	N=761 CP + CM=373 CM=388	<i>Inclusion</i> Attempted suicide within the previous month, were found by suicide prevention gatekeepers in medical or non-medical organizations, and whose information was faxed to the suicide prevention center in Kaohsiung.	No group differences in SA. When comparing individuals within the intervention group who read vs did not read postcards, those who read had reduction in SA (HR=.39).
						<i>Exclusion</i> Failed to give consent.	
Bryan et al., 2017(67)	Crisis response plan vs. suicide contract	Active-duty soldiers with an emergency psychiatric appointment at	United States	Enhanced crisis response plan Standard crisis response plan	N=97 E-CRP=33 CRP=32 CFS=32	<i>Inclusion</i> ≥ 18 years of age; SI during the past week and/or a lifetime history of SA; active duty military status; ability to speak English; ability to understand	Crisis response plan associated with fewer SA (p=.028) and faster reduction in SI

		the behavioral health clinic or ED		Contract for safety		and complete informed consent procedures.	(p<.001) during 6-month follow-up.
						<i>Exclusion</i> Medical or psychiatric condition that would preclude informed consent.	
Comtois et al., 2019(68)	Caring contacts (text messages over 1-year)	Active-duty military and marines at elevated suicide risk	United States	Caring contacts + TAU TAU	N=658 CC + TAU=329 TAU=329	<i>Inclusion</i> ≥ 18 years of age; on active duty, in the Reserve, or in the National Guard; English speaking; identified to a behavioral health or medical service with SI or SA; current SI at screening (> 0 on the Scale for Suicide Ideation); in possession of a mobile telephone or pager that could affordably receive 11 text messages in a year.	Intervention group less likely to have SA (OR=.52, p=.03) or report any SI during 12-month follow-up (OR=.56, p=.03). For those with SI during follow-up, no group differences in SI severity.
						<i>Exclusion</i> Too cognitively impaired to consent; determination by a treating clinician that participation would have been contraindicated; prisoner or otherwise under judicial order.	

SA=Suicide Attempt; SI=Suicidal Ideation; IRR=Incidence Rate Ratio; RRR=Relative Risk Reduction; HR=Hazard Ratio; OR=Odds Ratio; TAU=Treatment as Usual; OPAC= Outreach, Problem Solving, Adherence, Continuity; AID=Assertive Intervention for Deliberate Self-Harm

TABLE S5. Randomized Controlled Internet-Based Interventions for Suicidal Behavior Prevention

Source	Prevention Strategy	Population	Location	Arms	Sample Size	Inclusion/Exclusion Criteria	Outcome
Van Spijker et al., 2012(69)	Online self-help intervention for SI	Adults with mild to moderate SI	Netherlands	Online self-help intervention Waitlist	N=236 Intervention=116 Waitlist=110	<i>Inclusion</i> ≥ 18 years of age; access to the Internet and a valid email address; good command of the Dutch language; between 1 and 26 on the Beck Scale for Suicide Ideation; < 40 on the Beck Depression Inventory. <i>Exclusion</i> Intellectual disability; psychotic symptoms; inability to speak English.	Intervention group had greater reduction in SI than waitlist control at 6 weeks post treatment (p=.01).
Hetrick et al., 2017(70)	Reframe-IT, an internet-based cognitive behavioral therapy program	High school students with any SI in past 4 weeks	Australia	Reframe-IT + TAU TAU	N=50 R-IT + TAU=26 TAU=24	<i>Inclusion</i> 13-19 years of age; engaged with a well-being staff member; experienced any level of SI within the past 4 weeks. <i>Exclusion</i> Intellectual disability; psychotic symptoms; inability to speak English.	No group differences in SI or SA.
Van Spijker et al., 2018(71)	Online self-help intervention for SI	Adults experiencing suicidal thoughts (but no SA in past month)	Australia	Online self-help intervention Waitlist	N=418 Intervention=207 Waitlist=211	<i>Inclusion</i> 18-65 years of age; valid email address and access to a reliable internet connection; located in Australia; fluent in English; currently experiencing suicidal thoughts. <i>Exclusion</i> History of psychotic disorder; SA in the past month.	No group differences in SI or SA.

SA=Suicide Attempt; SI=Suicidal Ideation; Treatment as Usual

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