Crucial decision: assessing suicidality in clinical practice

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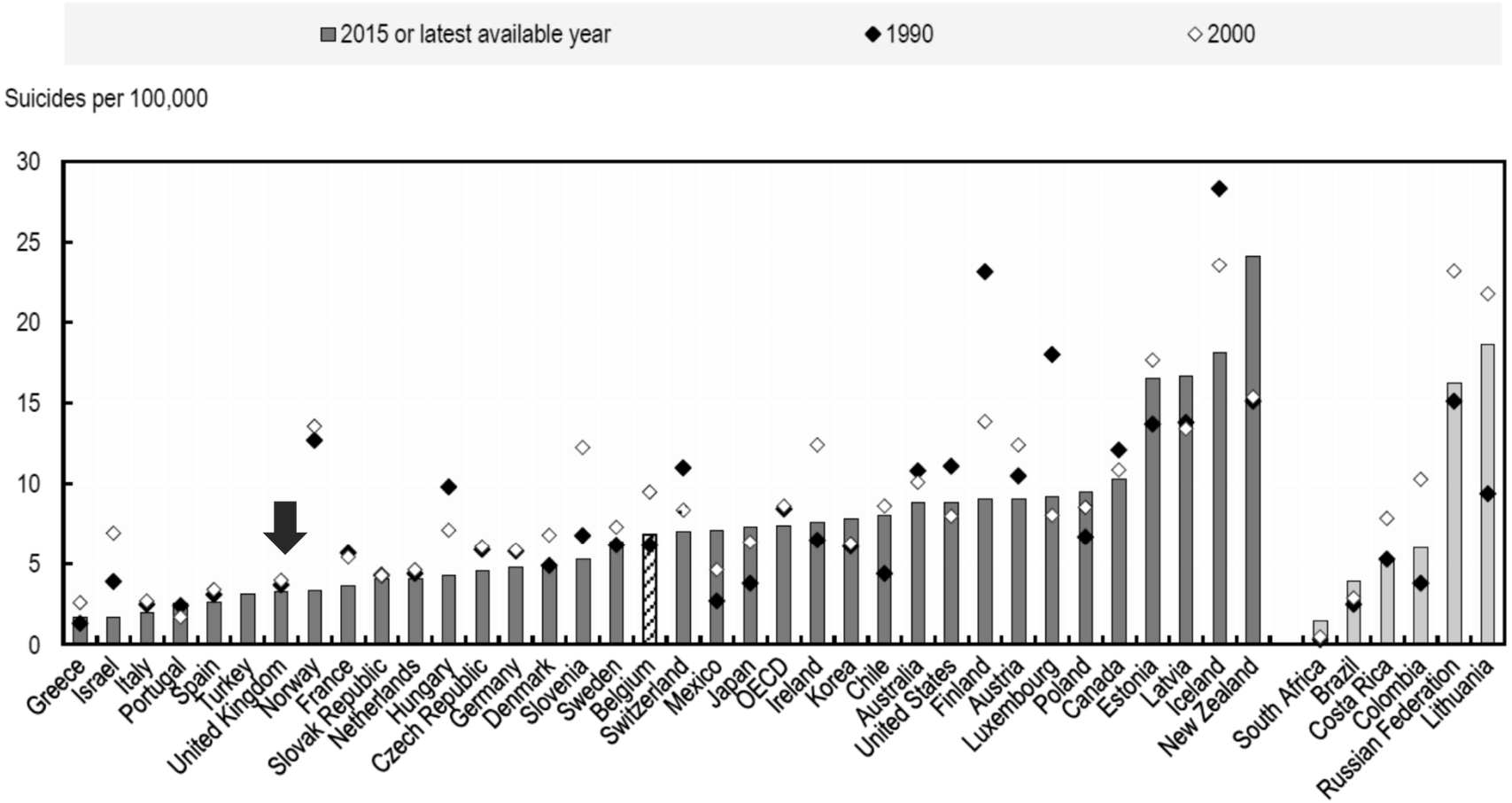
ACAMH, London 2019

Definition

- **Suicide:** act of intentionally ending one's own life.
- **Nonfatal suicidal thoughts and behaviors** ("suicidal behaviors"):
  - **suicide ideation:** thoughts of engaging in behavior intended to end one's life
  - **suicide plan:** formulation of a specific method through which one intends to die
  - **suicide attempt:** engagement in potentially self-injurious behavior in which there is at least some intent to die.

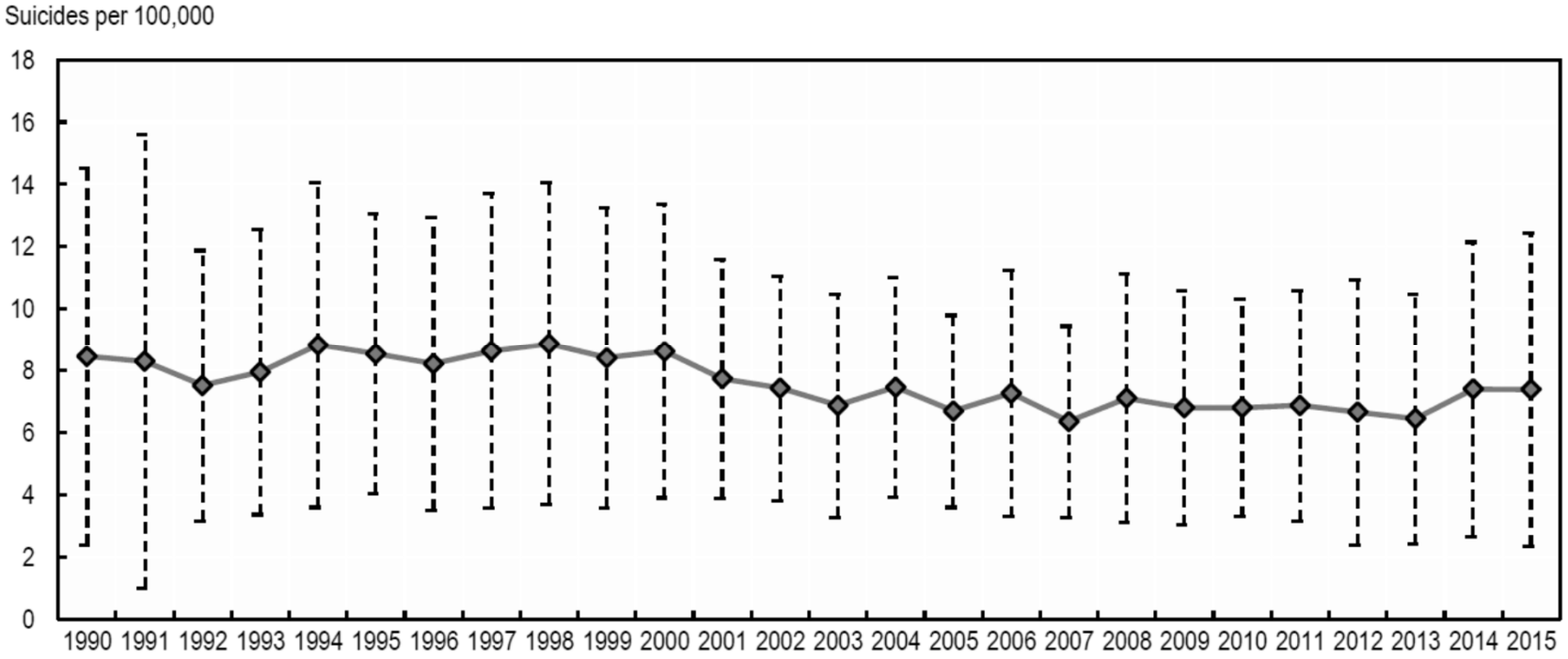
Nock et al., 2008

Epidemiology



OECD Family Data base, 2018

Trends in youth

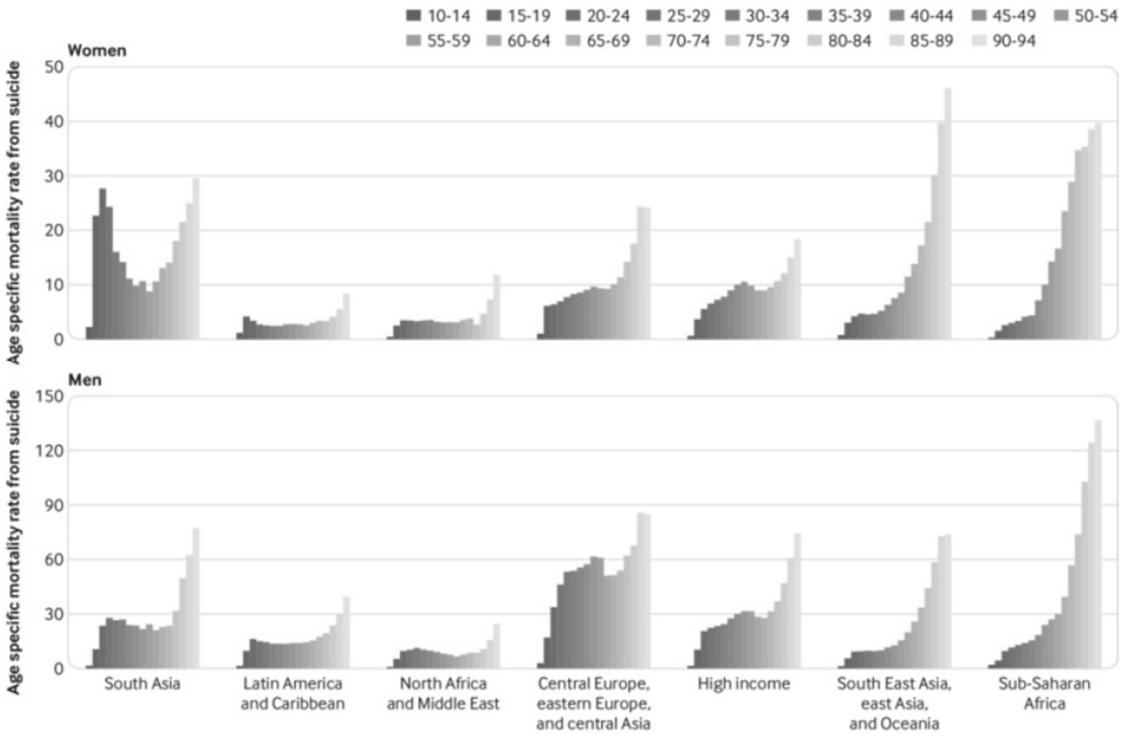


OECD Countries: 15-29a: 1990: 8,5→7,4/100.000

OECD Family Data base, 2018

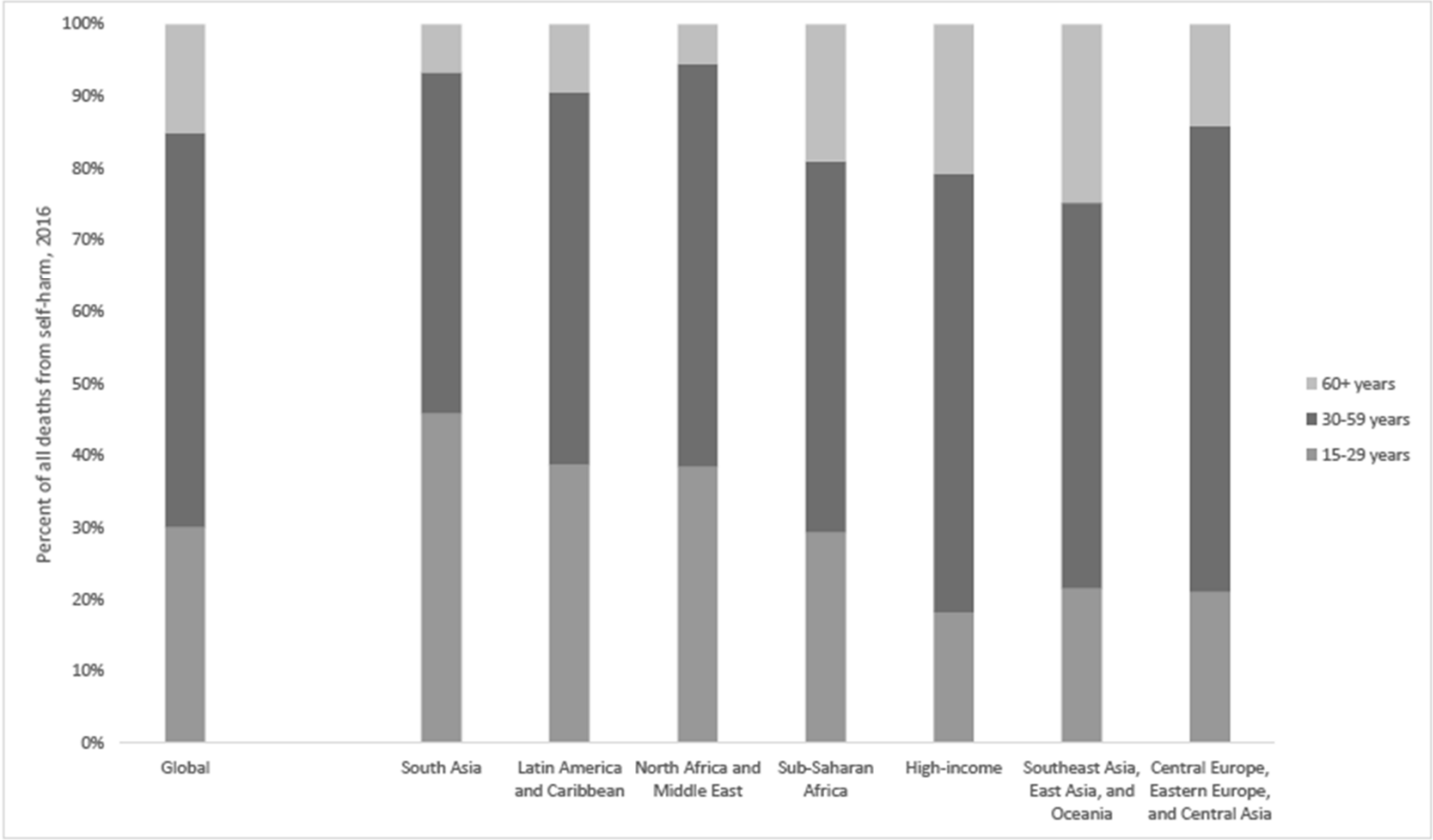
Global picture

- Global Burden of Disease Study 2016 (1990-2016)
- N=195 countries
- 2016: 817.000 suicides
- Age adjusted suicide mortality: 32,7%↓
- Gender: M>F: (15-19y): no s. difference



Naghavi et al., 2019

Age and suicide



Naghavi et al., 2019

Global picture

- Reason for dying #:
  - 4: Eastern Europe
  - 6: Asia (high income)
  - 7: Australasia
  - 10: Central Europe/ USA

- China and India: 44,2% of alle suicides in2016

- Highest suicide rates:
  - Lesotho: 39
  - Lithuania: 31
  - Russia: 30,6
  - Zimbabwe: 27,8

- Largest decrease:
  - China: 64,1%
  - Denmark: 60%
  - Maldives: 59,1%

Naghavi et al., 2019

From thoughts to action

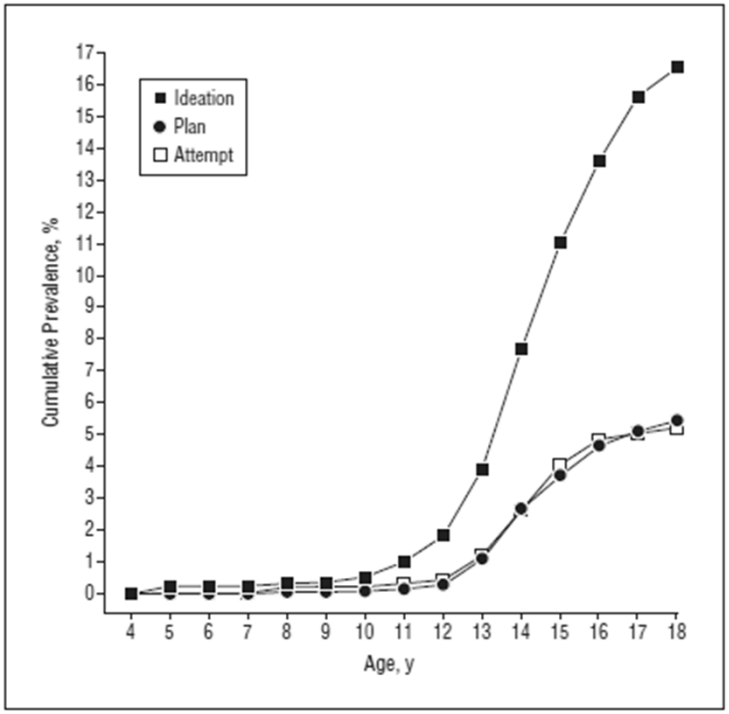


Figure 1. Age-at-onset curves of suicidal behaviors. Values are all 0.0 for children 1 to 4 years of age.

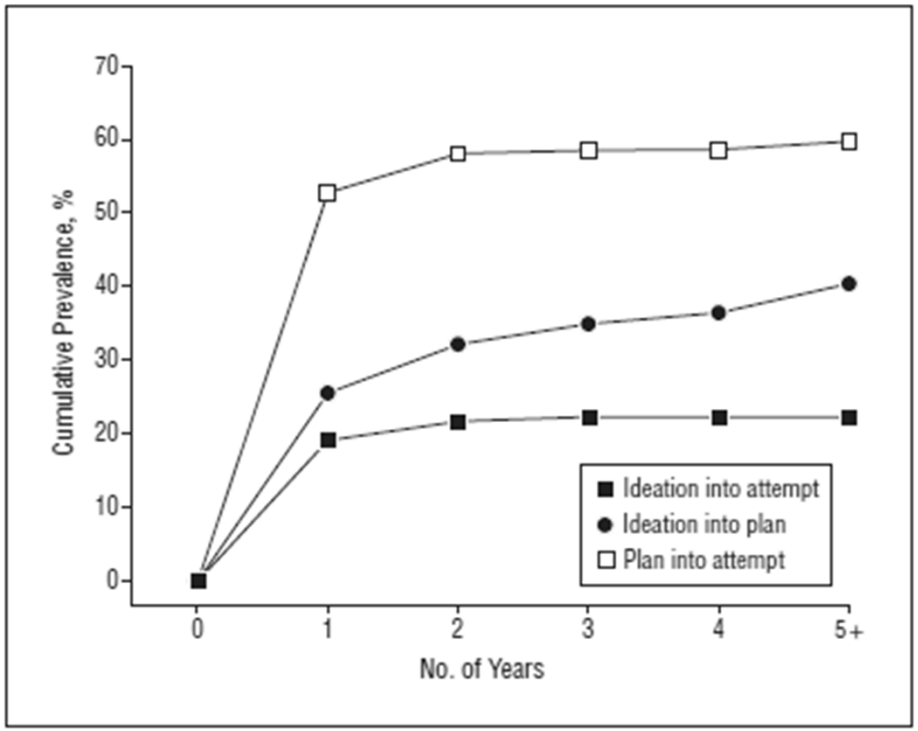


Figure 2. Speed of transition across suicidal behaviors.

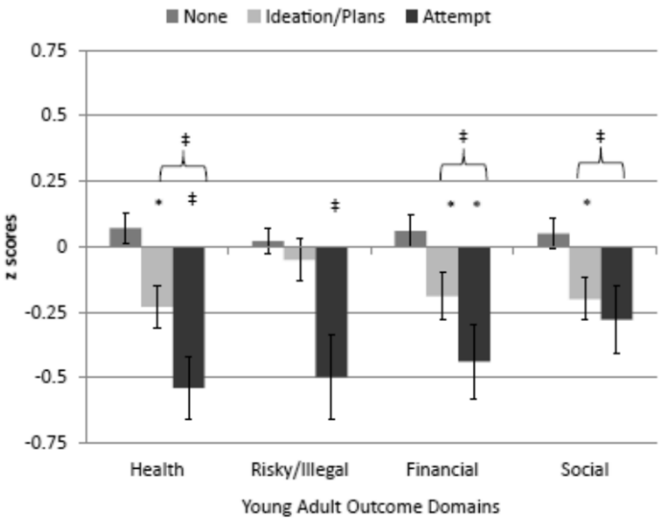
Nock et al., 2013

Suicide attempts in youth

- N=1.420, GSMS: 9y→16y (7x),
- 19 →30y (4x):
- 16y: 4% suicide attempt

- Suicide attempts predicts suicide attempts in adulthood (after controlling for psychiatric disorders): OR: 6.4

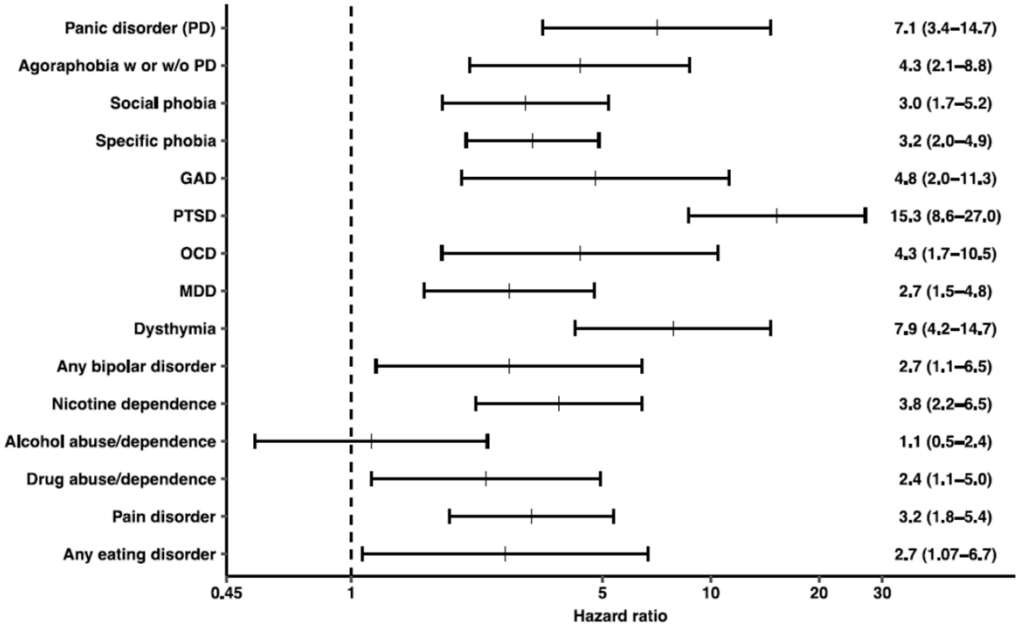
- Suicide attempts: Predictor of anxiety disorders: OR: 2.8

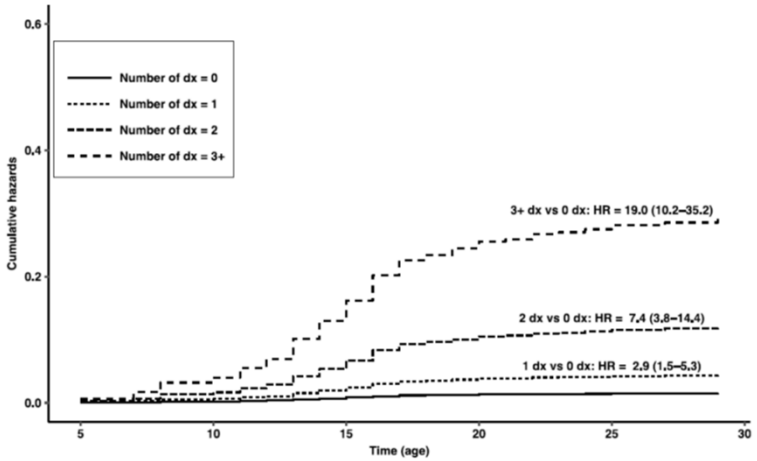


Copeland et al., 2017

Mental health disorders and suicidality

- 10y prospective study (n=3021; 14-24y; EDSP)
- Mental health disorders before suicide attempt
- Incidencerate of SA: 5,5%, mAge: 16.7y
- Highest risk: PTSD, Dysthymia





Miché et al., 2018

Sleep

- Sleeping disorders: predictor for suicidal ideation, attempts and suicide

- 2 prspective studie sin youth (n=392, 6504, 3y FU):
  - Sleep disorders predict Suicidal ideation and attempts
- System. review (n=10 studies): Sleep disorders: mAge: 13-19, FU: 7d-10y
- Predicting suicidal ideation and attempts (3-5y later): after controlling fro mental health disorders. More pronounced in insomnia

Wong et al., 2011, Wong et al., 2012, Goldstein et al., 2008; Kearns et al., Epub2019

Bullying: suicidality

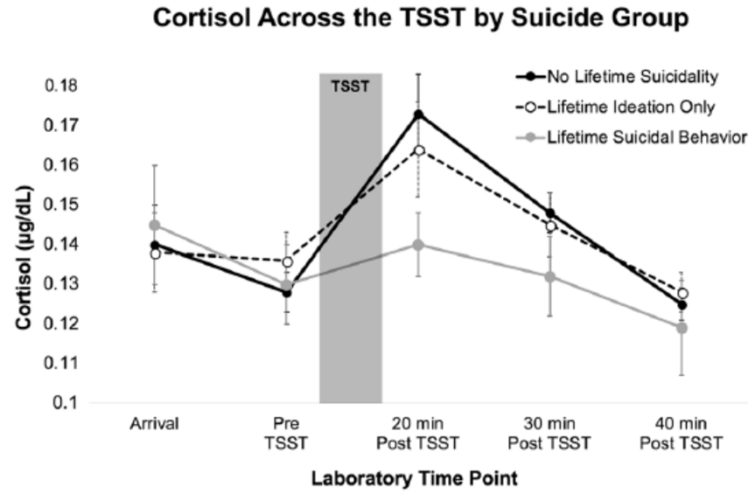
- Victims and bullies: suicidal ideation and attempts↑
- Being bullied at age 13, predicts suicidal ideation (OR: 2,27) and attempts (OR:3,05) at age 15
- German students (n=647, mAage:12,8), 14,4% frequently bullied
  - suicidality: OR: 6,1

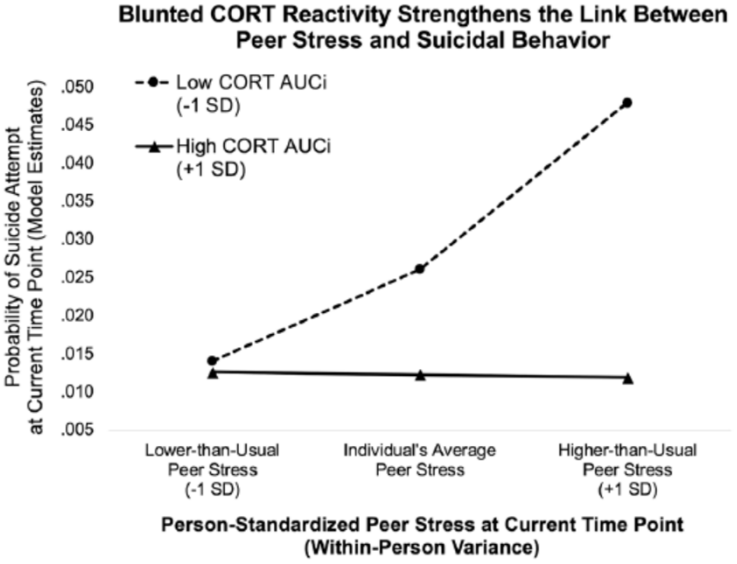
Brunstein Klomek et al., 2010; 2016; van Geel et al., 2014; Geoffroy et al., 2016; Jantzer et al., 2015; Lereya et al., 2013

HPA-social stress

- N=220 (f) 18m FU
- Blunted Cortsil response in TSST in suicidal adolescents

- Risk of suicide attempt↑: combinationblunted cortisol response+ peer stress





Eisenlohr-Moul et al., 2018

Risk factors: suicidality

- Approximaetly one third of youth with suicidal ideation: suicide attempt
- ALSPAC study (n=4772): 16y
- Suicidal ideation: 9.6%, suicide attempts: 6.8%

- Risk for suicide attempts (comparison to suicidal ideation):
  - Self-harm in others:
    - family: aOR: 1.95; friends: aOR: 2.61, both: aOR: 5.26
  - Mental health disorder:
    - Depression: aOR: 3.63; Anxiety: aOR: 2.2, Behavioral disorder: aOR: 2.9
  - female
  - Lower IQ
  - Higher impulsivity
  - Lower conscientousness
  - More adverse life events
  - Less satisfaction with body
  - Hopelessness
  - Smoking, illegal substances

Mars et al., 2019

Methods of self harm and suicide

- Link between five Swedish registries
- Methods of self-harm (10-24y): suicide risk

- „violent“ methods: compared to intoxication HR: 7,8
- F: Cutting: HR: 4,0 and „violent“ methods: 3,9
- M: no influence of methods used

Beckman et al., 2018

Suicide prediction: C-SSRS

- Columbia-Suicide Severity Scale
- Four constructs:
  - Suicide ideation severity (1-5)
  - Intensity of ideation: frequency, duration, controllability, deterrents, reasons for ideation (1-5)
  - Behavior: acutal-, aborted-, interrupted attempts, preparatory behavior, NSSI
  - Lethality: for actual attempts (6 point scale, if: 0→potential lethality: 3 point scale)

- Lifetime period (worst point ideation) or current ideation

Posner et al., 2011

C-SSRS

- Study of adolescent suicide attempters (n=124, 12-18y)
  - Baseline, 6, 12, 18, 24 weeks
  - Worst-point suicide ideation (OR: 1.45, p=0.02) and SA history (OR: 1.34, p=0.02) predicted suicide attempts

- Prospective adult (mAge: 33) psychiatric cohort (n=804), 6m FU
  - Worst point suicide ideation intensity (OR:1.2; p=0.048) and C-SSRS total score (OR: 1.08, p<0.001) predictor for SA and suicide
  - Items: frequency, duration and deterrent: elevated risk
  - Prediction:
    - SI intensity: AUC: 0.62: cut-off: 18.5: sensitivity: 59%, specificity: 57%
  - C-SSRS total score: AUC: 0.65, cut-off. 28.5: sensitivity: 69%, specificity: 54%

Posner et al., 2011; Lindh et al., 2018

Prediction

- Systematic review of prediction: SA/ self-harm in adolescents (10-25y), 11 studies on 10 tools
- FU: 3-18m (n=2554)

- Self-harm
  - SI-IAT: n.s.
  - SITBI: 3m: AOR: 1.82, p=0.002
  - SIQ: 6m: sensitivity: 27.3%, specificity: 99.2%, PPV: 85.7
  - SHQ: 3m: sensitivity: 94.7%, specificity: 34.6%, PPV: 25.4

- Suicide attempts:
  - Ask Suicide Questionnaire: 6m: sensitivity: 95.8%, specificity: 5.8%, PPV: 16.8
  - SIQ-Junior: aHR: 1.23, p=0.003
  - C-SSRS: aOR: 1.15-1.51 for 1 point increase in total score (4 studies)
  - SIQ: n.s.
  - BHS: uHR: 1.51 ($p \leq 0.001$) for 5 point increase
  - CDRS-R: uHR 1.29 (p=0.002) for 10 point increase

- Ability to predict: 27%-95%
- *„No single tool is suitable for predicting a higher risk of suicide or self-harm in adolescent populations“*

Harris et al., 2019

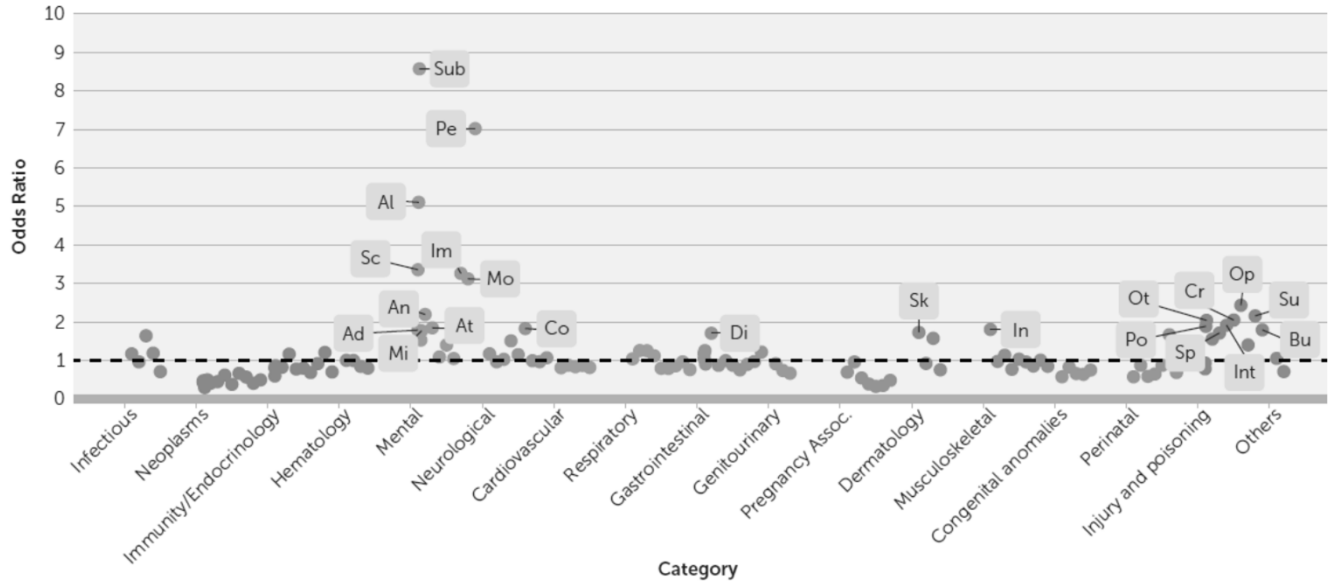
Suicide prediction

- Meta-Analysis n=365 longitudinal studies over last 50 years
- Top 5 Predictors:
  - Suicidal ideation: earlier suicidal ideation, hopelessness, depression, History of CAN, anxiety disorder
  - Suicide attempt: NSSI, earlier suicide attempt, screening instruments, Axis II disorder, earlier psychiatric hospitalization
  - Suicide: earlier suicide attempt, earlier psychiatric hospitalization, earlier suicidal ideation, lowere SES, ACEs
- Prediction: slightly better than chance and not incresaed in last 50 years
- New methods necessary

Franklin et al., 2017

Big data: prediction

- Dataset: 2 hospitals: 15a, (N=1.728.549: 8,9 Mio. pat.y.)
- Sensitivity: 45%; Specificity: 90%
- Prediction of suicide attempts and suicides: 3,5 years before in almost half of the cases.
- Strongest predictors:
  - Substance misuse and earlier psychiatric disorders
  - Chronic diseases (hepatitis C), Osteomyelitis, injuries



Barak-Corren et al., Am J Psychiatry 2017

Machine learning: Adolescents

- N: 974 youth with suicide attempts, 496 youth with self-harm, 7059 depressive youth, 25.081 controls: hospital

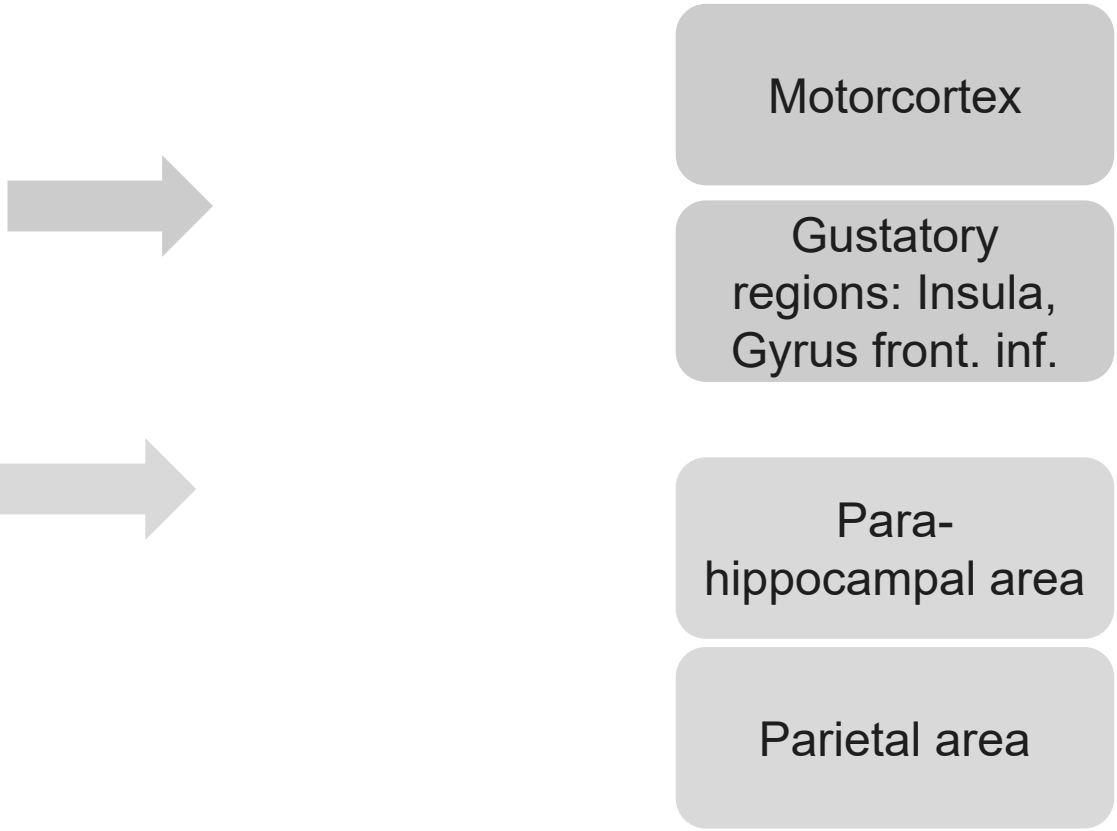
20 Predictors:

- BMI
- Age
- Pain medication (e.g. Ibuprofen);
- NSAID
- SSRI
- MDD
- Episodic affective disorders
- Number of ER admissions
- In- and outpatient psychiatric treatment in the last year
- Intoxication in the last year
- Antipsychotic medication
- Intoxication with pain medication
- Repetitive depressive episodes with psychotic phenomena
- PTSD
- opioid medication
- Intoxication with psychotropic substances
- ADHD
- Benzodiazepines
- gender

Walsh et al., 2018

Suicide prediction: fMRI

- Machine learning: neuronal signatures of specific concepts



Just et al., 2017

Suicide prediction: fMRI

- N=17 with suicidal ideation vs. 17 HC
- 30 concepts presented: Suizid, pos./ neg. Affekt
- 6 concepts and 5 brain regions: best differentiation: HC vs. SI (and in SI +/- SA)

- Trainig of ML Algorithm with 6 concepts:
- Correct identification of 15/17 (SI group) and 16/17 HC (sensitivity = 0.88, specificity = 0.94, PPV = 0.94, NPV = 0.89).

Stimulus concepts

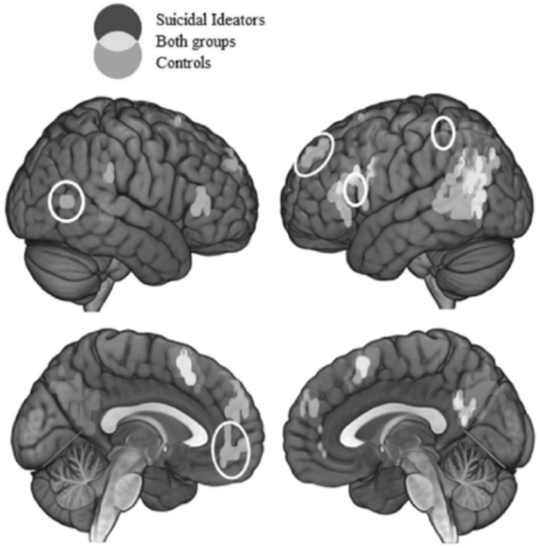
Suicide	Positive	Negative
apathy	bliss	boredom
death	carefree	criticism
desperate	comfort	cruelty
distressed	excellent	evil
fatal	good	gloom
funeral	innocent	guilty
hopeless	kindness	inferior
lifeless	praise	terrible
overdose	superior	trouble
suicide	vitality	worried

Just et al., 2017

Suicide prediction: fMRI

- Test at an independent sample (n=21):
  - accuracy: 0.87 ($p < 0.000002$)
  - sensitivity: 0.81; specificity: 0.94; PPV: 0.94: NPV: 0.8

- Brain regions with best discrimination:
  - superior, frontomedial left
  - medial frontal/anterior cingulum
  - mediotemporal right
  - Inferioparietal left
  - Inferiofrontal left



Just et al., 2017

Brave new world?

- Short term prediction: escalation of
  - Emotional stress
  - Social dysfunction (rejection, bullying)
  - Sleep disorders

- Use of: Smartphones, Wearables, smart homes
- Algorithms for pattern recognition

- Emotional stress:
  - Analysing voice
  - Language used (texts, social media)
  - facial expression
  - heart rate
  - choice of music

- Social dysfunktion:
  - Online communication
  - Movements (geographic)

- Sleep disorders:
  - Wearables with Actigraphy, Hf, light sensors

Allen et al., 2019

First: Relax! There is no way of getting this wrong

- Whether using self-report measures (Gould et al., 2005), nor using personalized interviews (Crawford et al., 2011) will cause harm

- Asking seems to be relieving to those with a lived history (Gould et al., 2005)

SAFE-T

Suicide Assessment Five-step Evaluation and Triage

1
IDENTIFY RISK FACTORS
Note those that can be modified to reduce risk

2
IDENTIFY PROTECTIVE FACTORS
Note those that can be enhanced

3
CONDUCT SUICIDE INQUIRY
Suicidal thoughts, plans, behavior, and intent

4
DETERMINE RISK LEVEL/INTERVENTION
Determine risk. Choose appropriate intervention to address and reduce risk

5
DOCUMENT
Assessment of risk, rationale, intervention, and follow-up

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
www.samhsa.gov

AMERICAN ASSOCIATION OF SUICIDOLOGY

Warning Signs of Acute Suicide Risk

IS PATH WARM?

Ideation
Substance Abuse
Purposelessness
Anxiety
Trapped
Hopelessness
Withdrawal
Anger
Recklessness
Mood Changes
? You must ask

Look for personal risk factors

Risk factors	risk↑
age	• ≥15y
gender	• male
partnership	• single
sexual orientation	• Non-heterosexual
social support	• Low social support
psychological	• Rigid thinking (hopelessness) • Low stress tolerance • Low emotional regulation skills
social skills	• Low coping skills • Deficient problem solvnig skills

adapted from Chehil & Kutcher, 2012

Risk factors in the family

Risk factors	risk↑
Family history of suicide	• Suicide in close relatives
Family history	• Mental health disorders in close relatives
Family situation	• Loss of parent (divorce, death,…) • Severe family conflicts • Inadequate parental support • Frequently moving/ changing homes

adapted from Chehil & Kutcher, 2012

Risk factors: mental health

Risk factors	risk↑
disorders	• Severe depression/ depression in bipolar disorder • Acute psychotic state • Substance misuse • BPD • Schizophrenia
Psychiatric/ cognitive symptoms	• Hopelessness • Low self-esteem • Deficient reality control • Commanding voives
Affective symptoms	• Low mood • Severe anxiety/ panic attacks • Intensive feelings of loneliness
Behavioral symptoms	• Severe, repetitive NSSI • Restlessness, agitation • Impulsivity • Aggression • Alcohol- and drug misuse

Adapted from Chehil & Kutcher, 2012

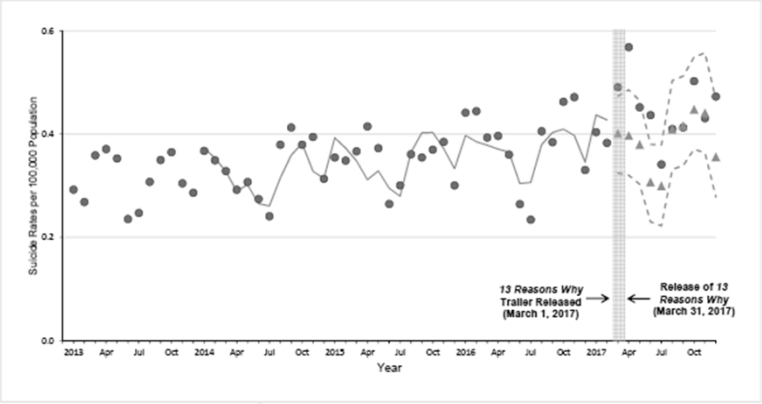
Risk factors: stressors

Risk factors	risk↑
Stressors	• Financial problems • Legal problems • Loss of schooling/ work • Grief (romantic grief) • Bullying • Social rejection
Medical history	• Severe sleeping disorder • Chronic pain • Physical impairment • Cognitive impairment • Loss of sight or hearing • mutilations • Feelings of being a burden to others
CAN	• History of CAN

adapted from Chehil & Kutcher, 2012

Assess media use

- Increase in google searches since start
- 95% peditaric ERs(n=14): increase in admissions for suicidality in comparison to teh year before
  - In 40%: copy suicide attempts 30 days after series started
- Suicidality in US ERs: 2012-2017: sign. Increase since March 2017
- 29% increase in suicide rate in April 2017 in the age group 10-17y
- April 2017: highest suicide rate in 5 years in the US in adolescents: since December 2017 imcrease in suicide: + 195 cases
- Not in higher age groups, increase also in males



Ayers et al., 2017; Feuer & Havens, 2017; Cooper et al.,2017; 2018, Bridge et al. ,2019

Current and past suicidality

Risk factors	risk↑
Suicidal ideation	• Persistent, over a long tim • Intensive, very recent • uncontrollable
Suicidal intention	• Strong wish to die • Strong will to take action • Expecting death
Suicide plans	• Well planned • Method with high potential lethality • Access to means
Past suicidal behavior	• Suicide attempt in recent past • Multiple suicide attempts in history • Low risk of detection • Well organised suicide attempt • Methods with high lethality • Regret having survived

adapted from Chehil & Kutcher, 2012

Evaluate recent suicidaliy

- Triggers for suicidality
- Suicidal ideation
- Suicidal intention
- Suicide plans
- Suicide motivation
- Deterrents/ puffers

Chehil & Kutcher, 2012

Evaluate past suicidal behavior

- What happened
- How often (frequency)?
- In which context (triggers, emotions, place, circumstances,…)?
- How high was the potential lethality?
- What kept them alive?

Chehil & Kutcher, 2012

Risik factors (possibility to modify)

Demographic	Male, increasing age, single
Psychosocial	Low social support, unemployment, decrase in SES, access to means
Mental health	Mental health disorder
Somatic health	Untreatable cancer, HIV/AIDS, hemodialysis, SLE, chron. Pain,…
Psychological dimensions	Hopelessness, psychache, decreased self-esteem, narcisstic traits, perfectionism
Behavioral dimension	Impulsivity, aggression, panic attacks, agitation, intoxication, past suicide attempt
Cognitive dimension	Black/ white and rigid thinking
Trauma	CAN, loss of parents
Family history	Familiy history of mental health disorders and suicidality

Specific stressors for adolescents

- Feelings of shame
- Bullying, social ostracism
- Feelings of being a failure
- Fear to loose a loved person

Chehil & Kutcher, 2012

AACAP Parameters

Checklist for Assessing Child or Adolescent Suicide Attempters in an Emergency Room or Crisis Center

Attempters at Greatest Risk for Suicide

Suicidal history
- Still thinking of suicide
- Have made a prior suicide attempt

Demographics
- Male
- Live alone

Mental state
- Depressed, manic, hypomanic, severely anxious, or have a mixture of these states
- Substance abuse alone or in association with a mood disorder
- Irritable, agitated, threatening violence to others, delusional, or hallucinating

Do not discharge such patients without psychiatric evaluation.

AACAP, 2001

Level of risk

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
www.samhsa.gov

Risk level	Risk-/ protective factor	Suicidality	Possible interventions
moderate	Multiple risk factors, low protective factors	Suicidal thoughts with intention to die but no concrete plan	Inpatient admission may be indicated depending on accumulation of risk factors. Safety planning in case of discharge.
low	Modifiable risk factors, strong protective factors	Suicidal thoughts without intention, plan or behaviors	Outpatient treatment, safety planning

Documentation

- Risik Level
- Reasons fro choosing risk level
- Treatment plan to reduce risk

Example.:

The 17y old patient has lost his job two months ago and can be diagnosed with a major depressive disorder (F32.2). Although he states having no suicidal ideation, his risk is seen as moderate to high, given that he was brought to the ED after an interrupted suicide attempt through hanging and his mentioned hopelessness as well as severe alcohol and THC consumption. The patient will be admitted to the inpatient ward with constant surveillance. Re-Evaluation tomorrow morning.

Safety planning

SAFETY PLAN

Step 1: Warning signs:

1. _____
2. _____
3. _____

Step 2: Internal coping strategies - Things I can do to take my mind off my problems without contacting another person:

1. _____
2. _____
3. _____

Step 3: People and social settings that provide distraction:

1. Name_____ Phone_____
2. Name_____ Phone_____
3. Place_____
4. Place _____

Step 4: People whom I can ask for help:

1. Name_____ Phone_____
2. Name_____ Phone_____
3. Name_____ Phone_____

Step 5:Professionals or agencies I can contact during a crisis:

1. Clinician Name_____ Phone_____
   Clinician Pager or Emergency Contact #_____
2. Clinician Name_____ Phone_____
   Clinician Pager or Emergency Contact #_____
3. Suicide Prevention Lifeline: 1-800-273-TALK (8255)
4. Local Emergency Service _____
   Emergency Services Address_____
   Emergency Services Phone _____

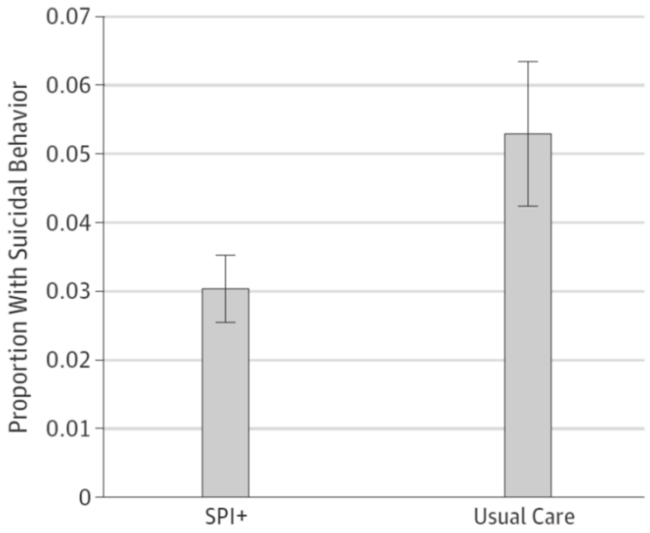
Making the environment safe:

1. _____
2. _____

From Stanley, B. & Brown, G.K. (2011). Safety planning intervention: A brief intervention to mitigate suicide risk. *Cognitive and Behavioral Practice. 19*, 256–264

Safety planning

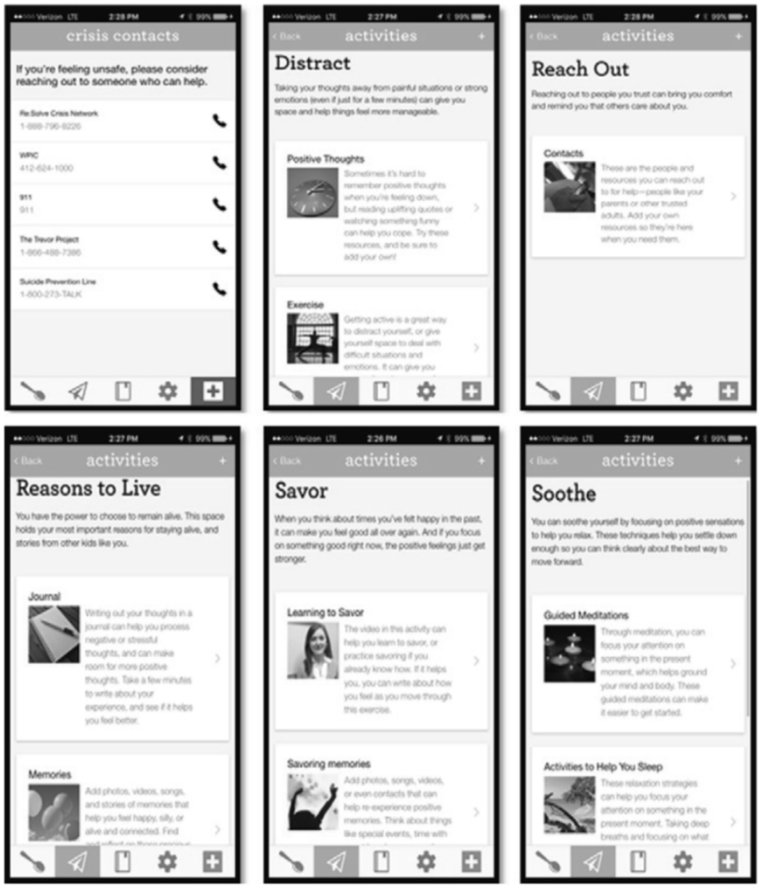
- Safety Planning:
  - RCT in ED (n=1640, 18+y, Intervention: 1186): 6m FU: 2010-2015
  - SPI+: SPI and min. 2 telephone contacts (max. 72h after: risk assessment, revision of SPI, mental health facilitation)
  - Suicidal behavior less likely (3.03% vs. 5.29%)
  - Nearly halving the odds of suicidal behavior (OR: 0.56)
  - Higher odds of attending at least 1 outpatient mental health visit (OR: 2.06)



Stanley et al., 2018

Safety planning

- As Safe As Possible (ASAP), using BRITE app:
  - in suicidal adolescents (n=66: SI: 26, SA: 40)
  - ASAP: 3h intervention at inpatient ward + 2 telephone calls after discharge
  - BRITE App: level of emotional distress and personalized strategies for emotioan regulation and safetyl planning
  - No statistical significant difference (SA in 16.1% vs. 31%)
  - Longer time to suicide attempt
  - High satisfaction reported



Kennard et al., 2018