Contemporary suicide prevention strategies: biological, technological & policy advancements

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Disclosure statement.

No interests to declare.

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Today's talk

1. Biological factors associated with suicidal behavior (screening, risk assessment?).
2. Technological means of assessing and addressing cognitive factors.
3. Policy: Zero Suicide in health care settings.

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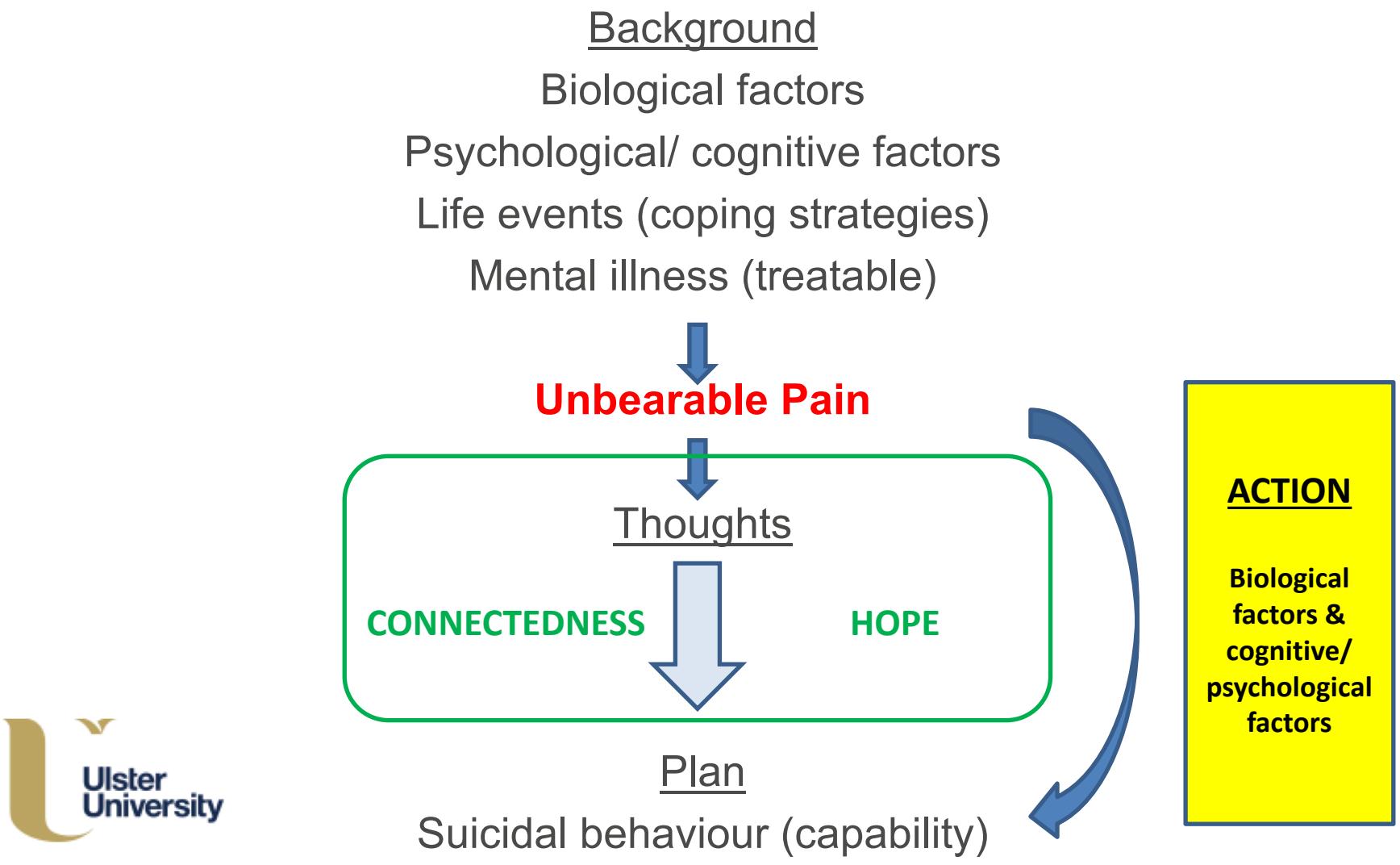
Theories of Suicide
is suicide preventable?



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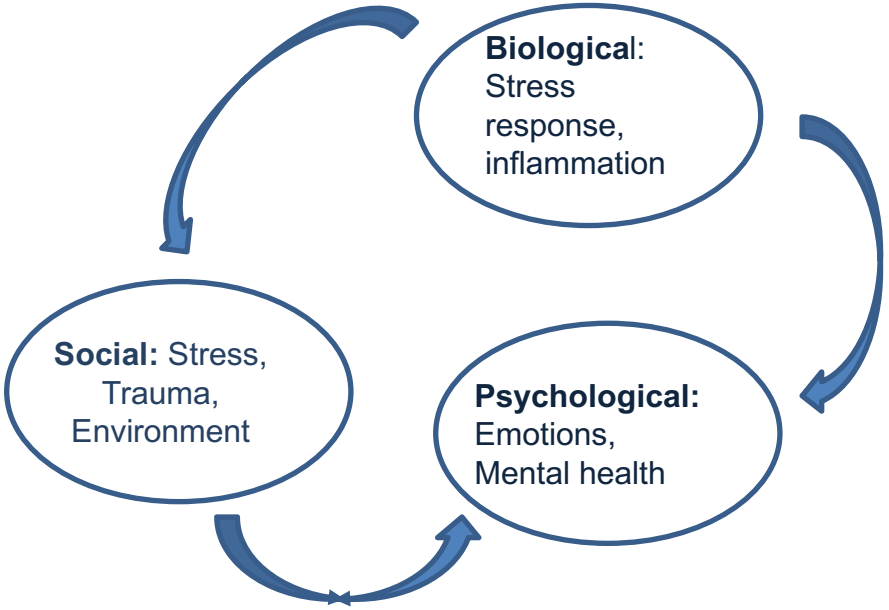
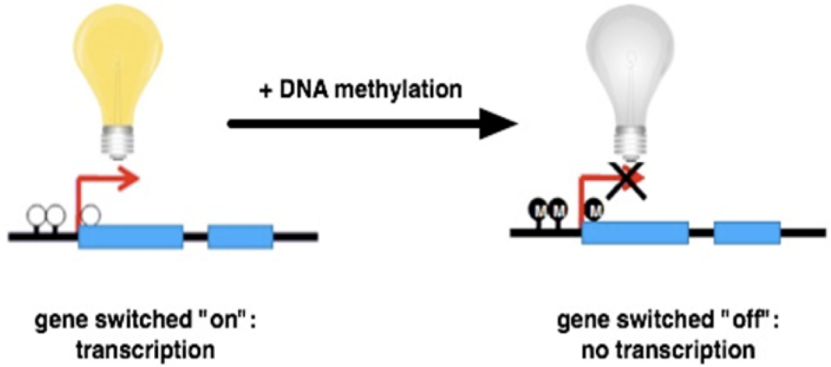
Suicidal behaviour results from a biopsychosocial interaction



Epigenetics: Change in phenotype without a change in genotype

e.g. DNA Methylation



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Ulster University Student Wellbeing study

#SpitForScience #UlsterWellbeing

- Part of the WHO World Mental Health, International College Student Project (WMH-ICP).
- longitudinal study to identify risk and protective factors for mental health and wellbeing in the student population.
- Recruitment at 1st registration across 4 UU campuses (Sep, 2015).
- 1,646 (40%) recruited in year 1 (**739** fully completed).
- On-line survey developed by the WMH consortium.
- DNA collection: A saliva sample was collected from each participant (4ml, using Oragene kits).

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Discussion

- High levels of pre-existing mental health problems were revealed in students commencing first year at Ulster University.
- Adverse early childhood experiences have a very negative impact on mental heath and suicidal behaviour.
- Depression with self harm is associated with significant effects on DNA methylation, and the genes most affected are related to immune function in the female cohort.
- Significant changes in the oral microbiome in individuals with depression, leading to imbalance of microbes associated with inflammation.
- These data suggest an immune component to the aetiology of depression, consistent with the accumulating evidence supporting a relationship between inflammation and depression.

Cortisol levels and suicidal behavior: A meta-analysis

Daryl B. O'Connor, Eamonn Ferguson, Jessica A. Green, Ronan E. O'Carroll, Rory C. O'Connor

DOI: https://doi.org/10.1016/j.psyneuen.2015.10.011 | CrossMark

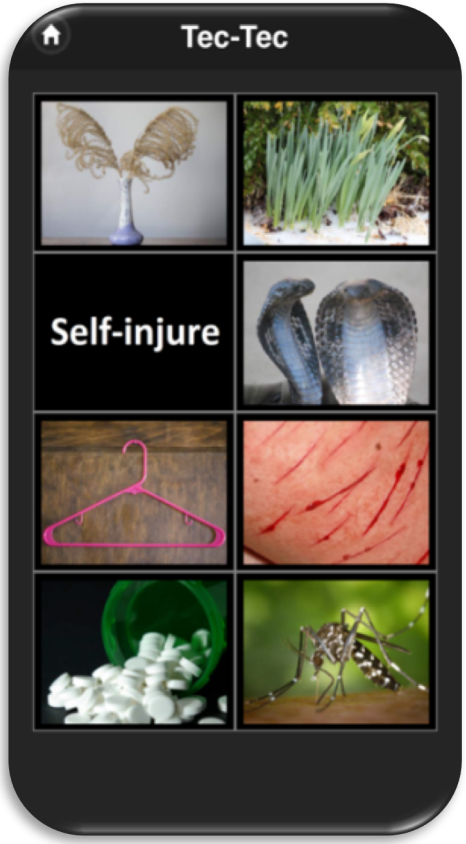
Highlights

- The results show that age moderates the association between naturally occurring cortisol levels and suicide attempts.
- The association between cortisol and suicidal attempt reverses when the mean age of the sample is 40 years or older.
- We feel these findings are exciting, novel and have potential implications for theory and intervention.

Abstract

Suicide is a major cause of death worldwide, responsible for 1.5% of all mortality. The causes of suicidal behavior are not fully understood. Dysregulated hypothalamic–pituitary–adrenal (HPA) axis activity, as measured by cortisol levels, is one potential risk factor. This meta-analytic review aimed (i) to estimate the strength and variability of the association between naturally fluctuating cortisol levels and suicidal behavior and (ii) to identify moderators of this relationship. A systematic literature search identified 27 studies ($N = 2226$; 779 suicide attempters and 1447 non-attempters) that met the study eligibility criteria from a total of 417 unique records initially examined. Estimates of effect sizes (r) obtained from these studies were analysed using Comprehensive Meta-Analysis. In these analyses, we compared participants identified as having a past history of suicide attempt(s) to those with no such history. Study quality, mean age of sample and percentage of male participants were examined as potential moderators. Overall, there was no significant effect of suicide group on cortisol. However, significant associations between cortisol and suicide attempts were observed as a function of age. In studies where the mean age of the sample was below 40 years the association was positive (i.e., higher cortisol was associated with suicide attempts; $r = .234$, $p < .001$), and where the mean age was 40 or above the association was negative (i.e., lower cortisol was associated with suicide attempts; $r = -.129$, $p < .001$). These findings confirm that HPA axis activity, as indicated by age-dependent variations in cortisol levels, is associated with suicidal behavior. The challenge for theory and clinical practice is to explain the

Therapeutic Evaluative Conditioning



Brief game-like app

Tested in 3 large web-based RCTs

42-49% reduction in self cutting

21-64% reduction in suicide plans

27-57% reduction in suicidal behaviours

psytablab.com/treatments

App store tec.tec

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Franklin et al. (2016). J Consult Clin Psychology.

Zero Suicide

What is Zero Suicide

- An approach
- A concept
- A toolkit
- A target

Zero Suicide is a commitment to suicide prevention in health and behavioural health care systems, and also a specific set of tools and strategies. It is both a concept and a practice.

Fundamental question: Is suicide preventable?

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Last point of service use & service level prior to death

NI (>1600 deaths, O'Neill et al., 2014)

Service profile *n* (%)	Total	Men	Women	χ^2
Last service use				
1–2 weeks	19.5% (326)	18.2% (236)	23.9% (90)	6.12*
2 wks-2 months	9.9% (165)	9.7% (126)	10.4% (39)	0.14
2–6 months	6.8% (113)	7.2% (93)	5.3% (20)	1.58
6 months–1 year	2.8% (47)	3.3% (43)	1.1% (4)	5.41*
1 year>	3.2% (53)	3.5% (46)	1.9% (7)	2.69
None/not known	57.9% (969)	58.1% (753)	57.4% (216)	0.05
Service level				
Primary	50.1% (839)	52.6% (682)	41.8% (157)	13.67*
Secondary	**24.3% (406)**	**23% (298)**	**28.7% (108)**	5.24*
Tertiary	**5.9% (98)**	**5.2% (67)**	**8.2% (31)**	5.01*

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The case for Zero Suicide in healthcare systems

- Many of those who have died by suicide have been in contact with health services.
- Suicidal individuals often fall through multiple cracks in a fragmented health care system.
- Systematic approach to quality improvement.
- Builds on work done in the Henry Ford Health System (HFHS) in Michigan.
- HFHS applied a rigorous quality improvement process to problems such as inpatient falls and medication errors. → Perfect Depression Care
- A comprehensive approach that includes suicide prevention as an explicit goal.
- The approach incorporates both best and promising practices in quality improvement and evidence-based care.
- Demonstrated an 80% reduction in the suicide rate among health plan members.

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Elements of Suicide Prevention in health care systems

Clinical Care and Intervention Task Force of the National Action Alliance for Suicide Prevention

- **LEAD:** Create a leadership-driven, safety-oriented culture committed to dramatically reducing suicide among people under care. Include suicide attempt and loss survivors in leadership and planning roles.
- **TRAIN:** Workforce development and training. Develop a competent, confident, and caring workforce.
- **IDENTIFY:** Systematically identify and assess suicide risk. Standardized screening and risk assessment.

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- **ENGAGE:** Ensure every person has a suicide care management plan, or pathway to care, that is both timely and adequate to meet his or her needs. Include collaborative safety planning and restriction of lethal means.
- **TREAT:** Use effective, evidence-based treatments that directly target suicidality.
- **TRANSITION:** Provide continuous contact & support, esp. after acute care. Follow-up during care transitions.
- **IMPROVE:** Apply a data-driven quality improvement approach to inform system changes that will lead to improved patient outcomes and better care. Ongoing quality improvement and data collection.

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Do the interventions that make up the elements of Zero Suicide work?

- Covington (2017) “They all have research-based efficacy.
- Erlangsen’s 2015 *Lancet* study showed a lower risk of deliberate self-harm and general mortality for those who received psychosocial therapy.
- Direct treatment of suicide is more effective and cost-efficient than statins are for heart disease.
- Findings are similar for routine screening for suicide risk. In 2015, Dr. Greg Simon and team concluded in *Psychiatric Services* that the PHQ-9 question 9 “identifies outpatients at increased risk for suicide attempt or death.” with an accuracy about twice as predictive of future suicide as cholesterol scores are of future heart attack death.
- While there are few studies of safety planning, Craig Bryan’s findings in *The Journal of Affective Disorders* is promising.
- Logic and the literature base on quality improvement suggest that we need a systematic, leadership-driven quality improvement approach for a wicked and complex problem like suicide.
- As a scientific matter, we need more data. As a public health and quality of care matter, the evidence is already in.”

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“It is critically important to design for zero even when it may not be theoretically possible…It’s about purposefully aiming for a higher level of performance.”

Thomas Priselac
President and CEO of Cedars-Sinai Medical Center

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Thanks….

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