## **Supplementary Online Content**

Ballard ED, Cui L, Vandeleur C, et al. Familial aggregation and coaggregation of suicide attempts and comorbid mental disorders in adults. *JAMA Psychiatry*. Published online March 27, 2019. doi: 10.1001/jamapsychiatry.2019.0248

## **eMethods**

**eTable 1**. Adjusted Odds Ratios (95% CI) of Associations Between Suicide Attempts in Probands and Relatives

**eTable 2**. Lifetime Suicide Attempts in Relatives by Lifetime Mental Disorders and Suicide Attempts in Probands

This supplementary material has been provided by the authors to give readers additional information about their work.

## **eMethods**

NIMH: Probands and their relatives were directly interviewed by trained clinicians using standard family study methodology. Diagnostic assessments were conducted via an adaptation of the Schedule for Affective Disorders and Schizophrenia/ Diagnostic Interview for Genetic Studies (SADS/DIGS)<sup>1,2</sup> that was expanded to collect subthreshold symptoms and phenomenology through collection among those who endorse the core phenomenology irrespective of duration or severity.<sup>3</sup> A Global Assessment of Functioning score was rated by the clinical interviews for lifetime, current and worst episodes.<sup>4</sup> A team of experienced clinicians provided best estimate diagnoses using standard procedures that included direct interview and multiple family history reports.<sup>5</sup> Family history information on probands and all first-degree relatives was collected from all participants using a semi-structured version of the Family History-Research Diagnostic Criteria (FH-RDC). <sup>6</sup> 28% of the relatives were interviewed directly, whereas family history information was collected on non-interviewed and deceased relatives. The mean number of relative interviews per family was 1.3 (S.D. 1.2) and an average of 3.4 (S.D 2.2) family history reports per participant.

Lausanne: Probands and their relatives were directly interviewed by master's level psychologists using standard family study methodology. Information on psychiatric disorders was collected using the French translation of the semi-structured Diagnostic Interview for Genetic Studies (DIGS)<sup>7</sup> which collects information according to DSM-IV criteria with established inter-rater and week test-retest reliability. In addition, family history information on probands and all first-degree relatives was collected from all participants using the FH-RDC, with established reliability. History of suicide attempts, and the number and age at attempt were assessed in a separate interview module for interviewed subjects, whereas family history reports (FH-RDC) were used for non-interviewed relatives. Among relatives, 32% were interviewed directly, and family history reports were collected regarding both interviewed and non-interviewed relatives. The mean number of interviews per family was 1.6 (S.D. 0.96) and of family history reports was 1.7 (S.D. 0.99). There was good inter-informant agreement for suicide attempts (Yule's Y=0.70); the sensitivity of family history was relatively low (0.4) but the specificity was high (0.98). The only diagnosis in informants associated with an elevated likelihood of reporting suicidal behaviour was a lifetime history of a major depressive episode (OR = 2.2; 95 Cl 1.2-4.1).

## References

- 1. Merikangas KR, Stevens DE, Fenton B, et al. Co-morbidity and familial aggregation of alcoholism and anxiety disorders. *Psychol Med.* 1998;28(4):773-788.
- 2. Merikangas KR, Stolar M, Stevens DE, et al. Familial transmission of substance use disorders. *Archives of general psychiatry*. 1998;55(11):973-979.
- 3. Angst J, Dobler-Mikola A, Binder J. The Zurich study--a prospective epidemiological study of depressive, neurotic and psychosomatic syndromes. I. Problem, methodology. *European archives of psychiatry and neurological sciences.* 1984;234(1):13-20.
- 4. Endicott J, Spitzer RL, Fleiss JL, Cohen J. The global assessment scale. A procedure for measuring overall severity of psychiatric disturbance. *Archives of general psychiatry*. 1976;33(6):766-771.

- 5. Leckman JF, Sholomskas D, Thompson WD, Belanger A, Weissman MM. Best estimate of lifetime psychiatric diagnosis: a methodological study. *Archives of general psychiatry*. 1982;39(8):879-883.
- 6. Andreasen NC, Endicott J, Spitzer RL, Winokur G. The family history method using diagnostic criteria. Reliability and validity. *Archives of general psychiatry*. 1977;34(10):1229-1235.
- 7. Nurnberger JI, Jr., Blehar MC, Kaufmann CA, et al. Diagnostic interview for genetic studies. Rationale, unique features, and training. NIMH Genetics Initiative. *Archives of general psychiatry*. 1994;51(11):849-859; discussion 863-844.
- 8. Preisig M, Fenton BT, Matthey ML, Berney A, Ferrero F. Diagnostic interview for genetic studies (DIGS): inter-rater and test-retest reliability of the French version. *Eur Arch Psychiatry Clin Neurosci.* 1999;249(4):174-179.
- 9. Berney A, Preisig M, Matthey ML, Ferrero F, Fenton BT. Diagnostic interview for genetic studies (DIGS): inter-rater and test-retest reliability of alcohol and drug diagnoses. *Drug Alcohol Depend*. 2002;65(2):149-158.
- 10. Vandeleur CL, Rothen S, Jeanpretre N, et al. Inter-informant agreement and prevalence estimates for substance use disorders: direct interview versus family history method. *Drug Alcohol Depend.* 2008;92(1-3):9-19.
- 11. Rougemont-Buecking A, Rothen S, Jeanpretre N, et al. Inter-informant agreement on diagnoses and prevalence estimates of anxiety disorders: direct interview versus family history method. *Psychiatry Res.* 2008;157(1-3):211-223.
- 12. Vandeleur CL, Rothen S, Lustenberger Y, Glaus J, Castelao E, Preisig M. Inter-informant agreement and prevalence estimates for mood syndromes: direct interview vs. family history method. *Journal of affective disorders*. 2015;171:120-127.

eTable 1. Adjusted Odds Ratios<sup>1</sup> (95% CI) of Associations Between Suicide Attempts in Probands and Relatives

Suicide Attempts in Relatives							
	NIMH (n=2193)		Lausanne (n=3162)		Combined (n=5355)		
	OR (95% CI)	p-value	OR (95%CI)	p-value	OR (95%CI)	p-value	
PROBANDS							
Suicide Attempts	2.6 (1.5,4.7)	0.000958	3.1 (1.6,6.0)	0.0010	2.9 (1.9,4.5)	<.0001	
RELATIVES							
Age	0.99 (0.98,1.0)	0.0380	0.99 (0.98,1.0)	0.0082	0.99 (0.98,0.99)	0.0007	
Female vs. Male	1.9 (1.2,2.9)	0.0055	1.9 (1.3,2.9)	0.0026	1.9 (1.4,2.6)	<.0001	

<sup>&</sup>lt;sup>1</sup>Age and Sex of Relative

**eTable 2.**Lifetime Suicide Attempts in Relatives by Lifetime Mental Disorders and Suicide Attempts in Probands

PROBAN	Suicide Attempts in RELATIVES % (n)	Chi-square (p)	
Bipolar I	Suicide Attempts		
	Yes	12.4 (18)	0.00
	No	12.4 (22)	
Bipolar II			
	Yes	4.4 (2)	0.02
	No	4.9 (15)	
MDD			
	Yes	9.0 (12)	12.00***
	No	3.3 (70)	
Panic			
	Yes	9.9 (9)	1.09
	No	6.7 (26)	
<b>Generalized Anxiety</b>			
	Yes	9.6 (14)	3.94*
	No	5.3 (40)	
Social Anxiety			
	Yes	14.7(20)	8.2**
	No	7.3 (57)	
Substance Use			
	Yes	10.4 (16)	5.19*
	No	5.6 (55)	

© 2019 American Medical Association. All rights reserved.