



## Predicting the risk of repetition after self harm: cohort study

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## Comment

Mothers waiting for longer than one year to conceive their first child gave birth to babies with a higher risk of neonatal death compared with children conceived sooner. We restricted the analysis to primiparae (73.5% of whom reported no previous pregnancies) because death of a previous baby may influence both the decision to conceive again and its outcome.

Infertility treatment was self reported and was only asked of women taking longer than six months to conceive, but there was little difference in risk between treated and untreated, although the causes of death may differ between the two groups.

Only about 35% of eligible women participated in the cohort,<sup>5</sup> and this could cause bias if participants with a long time to pregnancy were at a different level of risk compared to the non-participants. Furthermore, we could not distinguish the length of infertility beyond one year, which limits our ability to identify a dose-response, if it exists.

We collected information on time to pregnancy and confounders before delivery, reducing the potential for other types of bias. The mother's job title may be a poor proxy for social class, but the adjustment appeared to have little effect on our estimates.

A long time to pregnancy per se is not commonly considered a marker of increased risk, and untreated women with a history of infertility may seek (or receive) inadequate prenatal care.

Even though neonatal death was a rare event in this population, it is a serious outcome and any potential risk marker should be considered. Our finding needs, however, to be corroborated elsewhere before it can be stated that a long time to pregnancy increases the risk of neonatal death.

If infertility itself is associated with adverse outcomes, an appropriate comparison group should be used when assessing effect of infertility treatment on pregnancy outcomes, lest adverse effects of treatment be overestimated.

### What is already known on this topic

Infertility treatment is correlated to adverse pregnancy outcomes, and evidence indicates that subfertility per se is also associated with adverse pregnancy outcomes

### What this study adds

Subfertility may be associated with an increased risk of neonatal death and should be included as a risk indicator in neonatal care

Contributors: OB and JO had the idea for this study and formulated the hypothesis to be tested. OB analysed the data and both authors contributed to the interpretation of the findings. OB drafted the manuscript, and JO provided critical comments. JO is guarantor.

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Competing interests: None declared.

Ethical approval: National Scientific Ethics Committee.

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## Predicting the risk of repetition after self harm: cohort study

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About one in six people repeat self harm within a year of an episode.<sup>1</sup> Identifying people who are at risk of repetition is a key objective of assessment.<sup>2</sup> We investigated the predictive value of risk assessments after an episode of self harm and compared assessments made by emergency department staff with those made by psychiatric staff.

### Participants, methods, and results

Four hospitals provide emergency care in the cities of Manchester and Salford. As part of the Manchester and Salford self harm project (MASSH) we collected data on all people aged at least 16 who presented with self harm in 1997-2001.<sup>3</sup> Doctors in the emergency department and, for those patients who received a psychiatric assess-

ment, mental health staff completed comprehensive assessment forms (which included demographic items as well as details of the self harm episode, past history, and current mental state). The assessor was also asked for a global clinical assessment of the risk of repetition of self harm (low, moderate, or high). We used the MASSH database to determine whether people repeated self harm within 12 months of their first presentation. We calculated sensitivity, specificity, and positive predictive value for emergency department and specialist mental health risk assessments.

Overall, 7612 individuals presented with self harm (10 173 episodes). Emergency department staff were

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## Risk assessment and repetition of self harm within 12 months in 7612 patients in Manchester and Salford, 1997-2001

	Emergency department staff assessments		Mental health staff assessments	
<b>Risk of repetition of self harm (repeats/total (%))</b>				
Low	113/1624 (7.0)		165/1721 (9.6)	
Moderate	326/2284 (14.3)	$\chi^2$ for trend 113.0, P<0.001	289/1738 (16.6)	$\chi^2$ for trend 77.5, P<0.001
High	207/971 (21.3)		95/369 (25.7)	
Total	646/4879 (13.2)*		549/3828 (14.3)†	
<b>Predictive value of assessments (% (95% confidence interval))</b>				
Sensitivity‡	32.0 (28.4 to 35.6)		17.3 (14.1 to 20.5)	
Specificity§	82.0 (80.8 to 83.1)		91.6 (90.7 to 92.6)	
Positive predictive value¶	21.3 (18.7 to 23.9)		25.7 (21.3 to 30.2)	

\*Includes 28 cases of suicide (number in each category: low=6, moderate=12, high=10).

†Includes 18 cases of suicide (number in each category: low=3, moderate=13, high=2).

‡Sensitivity—if someone repeats self harm within 12 months, how likely are they to have been identified as at "high risk" at the initial assessment?

§Specificity—if someone does not repeat self harm within 12 months, how likely are they to have been identified as at "low" or "moderate risk" at the initial assessment?

¶Positive predictive value—what proportion of those identified as at "high risk" at the initial assessment actually go on to harm themselves again within the next 12 months?

more likely than psychiatric staff to assess the risk of repetition as high (proportion of individuals rated as high risk 19.9% (971/4879) *v* 9.6% (369/3828)). The higher the assessed risk, the greater the likelihood of repetition (table). For both groups, however, most repetitions were among people assessed as at low or moderate risk. Psychiatric assessments had a lower sensitivity but higher specificity and positive predictive value. Repeating the analyses on the 1402 people who received both assessments made little difference to these results. The agreement between assessments done by the two groups was modest ( $\kappa=0.17$ ). The sensitivity and positive predictive value of assessments by both staff groups was higher for subjects with previous episodes compared with first time presenters (for example, for emergency department assessments sensitivity 37.8% *v* 14.2%).

## Comment

The predictive value of risk assessments after self harm was low. Emergency department staff were more cautious in their assessment of risk, rating more people as at high risk of repetition. Consequently, they identified a greater proportion of people who repeated (higher sensitivity), but fewer of those assessed as at high risk actually went on to repeat (lower positive predictive value). This may reflect different processes of assessment but could also be due to the consequences of making a high risk assessment. For emergency department staff such an assessment may necessitate a

referral to psychiatric services. For psychiatric staff it generally means attempting to access relatively scarce interventions (such as psychiatric admission).

Risk assessments may have influenced subsequent management. This is unlikely to have had a serious effect on our findings because only a few people receive specialist follow up or admission after self harm,<sup>4</sup> and the effect of even quite intensive interventions on repetition is small.<sup>5</sup> Although case ascertainment for the database is good (about 80%), men and those who did not wait for treatment were under-represented in our sample. This study investigated clinical assessment but actuarial risk assessment tools are unlikely to be much better at identifying those who go on to repeat self harm.<sup>2</sup>

Exclusively high risk approaches to management after self harm are unlikely to be worth while. Restricting intervention to people identified as at high risk, even assuming a completely effective intervention, would prevent fewer than one fifth of repeat episodes. Also, we need further work to improve our understanding of the factors (both individual and organisational) that influence the assessment of risk after self harm.

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Contributors: The initial idea for the study arose from discussions between NK, JC, EG, and KM-J. NK designed the study with input from all authors. JC supervised data collection. CR, JK, and NK did the final data preparation and analyses. NK produced the initial draft of the paper, and all authors commented on drafts. NK is guarantor.

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Competing interests: None declared.

Ethical approval: Not needed.

### What is already known on this topic

Identification of those who are at risk of repetition is considered a key objective of assessment after self harm, but it is unclear how good emergency department and mental health staff are at predicting risk

### What this study adds

Emergency department staff may be more cautious in their assessment than specialist staff, rating more people as at high risk of repetition

Exclusively high risk approaches to intervention are unlikely to succeed because of the large numbers of repeaters in the low and moderate risk groups

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