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A Novel Counseling Tool: AMH as a Predictor of Oocyte Yield and Livebirth Rate with Oocyte Cryopreservation

B.L. Maslow MD MSCTR,[1] L. Ramirez PhD, [1] C. Stefanacci BA, [1] J.U. Klein MD [1]

[1] Center for Fertility Research and Education – Extend Fertility Medical Practice, New York, NY

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INTRODUCTION

Data related to AMH levels in non-infertile women are scarce, making interpretation for this population difficult. Methods for counseling women regarding candidacy for oocyte cryopreservation are limited.

AIM

This study aims to provide a novel evidence-based tool to interpret serum AMH as a predictor of oocyte yield and livebirth rate in non-infertile women considering oocyte cryopreservation.

METHOD

All OC cycles performed at Extend Fertility Medical Practice from 4/2016 through 8/2018 were included. The study was granted IRB exempt status. AMH levels were performed at an independent laboratory using Gen-II ELISA platform. Using published data,[1-2] the number of oocytes needed for a 50% LBR were calculated per age group. ROC curves for each age group were used to select appropriate cutoffs based on accuracy and simplicity. Associations were made using X^2.

RESULTS

# of cycles	Age Mean±SD	AMH (ng/mL) Median [IQR]
1385	36.1±3.2	1.83 [1.11-3.12]

Table 1 (left): *Mean age and median AMH for entire cohort.*

Age Group	n	Oocyte # Predicted for 50% Livebirth Rate*	AMH to Achieve Predicted 50% Livebirth Rate	p-value (OR 95% CI)
≤34	366	7	**1.25**	<0.001 (OR 4.54 CI 2.61-7.899)
35-37	590	9	**1.50**	<0.001 (OR 5.23 CI 3.67-7.44)
38-40	303	11	**1.75**	<0.001 (OR 7.97 CI 4.4-14.38)
≥41	61	20	**2.25**	0.002 (OR 1.27 1.01-1.60)

Table 2 (above): *AMH levels needed to achieve predicted 50% live birth rate with single cycle of oocyte cryopreservation.*

** Number of oocytes estimated based on data published by Doyle et al.[1] and Goldman et al.[2]*

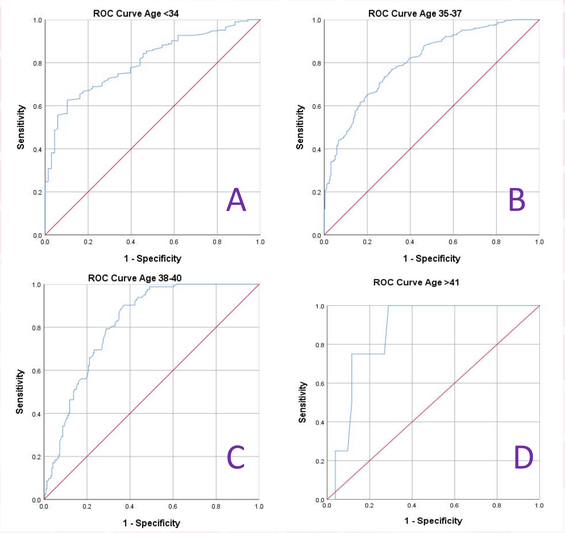

Figure 1 A-D (right): *ROC curves utilized to determine estimated cutoffs for AMH levels by which an estimated 50% predicted livebirth rate.*
A: AUC 0.80 p<0.001
B: AUC 0.81 p<0.001
C: AUC 0.82 p<0.001
D: AUC 0.87 p=0.16

CONCLUSIONS

Appropriate estimates of per cycle oocyte yield and predicted livebirth rates based on age at cryopreservation are critical for enabling women to make informed decisions about their reproductive goals.

These data provide a novel evidence-based, easy to remember, method with which to counsel women about their anticipated outcomes with oocyte cryopreservation.

REFERENCES

[1] Doyle et al. Successful elective and medically indicated oocyte vitrification and warming for autologous in vitro fertilization, with predicted birth probabilities for fertility preservation according to number of cryopreserved oocytes and age at retrieval. Fertility & Sterility 2016

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Contact Information: Bat-Sheva L. Maslow, MD bmaslowmd@extendfertility.com
CFRE/Extend Fertility 200 W. 57th Street New York, NY 10019 212.810.2828

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