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## CHRONOLOGICAL AGING VS BIOLOGICAL AGING: AN AGE RELATED NORMOGRAM FOR ANTRAL FOLLICLE COUNT, FSH AND ANTI MULLERIAN HORMONE

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### **Background:**

As a woman aged, her ability to produce ovum with good quality and quantity will be decreased. This has been related to chronological age of the ovaries calculated since intra uterine life, with the ovarian biological age, representing the ovarian reserve and its response to ovarian stimulation.

### **Objective:**

To evaluate the correlation between the chronological age and ovarian biological age with a graph model and normogram of AFC, AMH, and FSH as well as to see the decreasing pattern of each variable based on women's age.

### **Method:**

A retrospective cohort study with AFC, FSH, and AMH serum level data taken from medical records of IVF patients at Yasmin Clinic, dr.Cipto Mangunkusumo Hospital between January 2008 to December 2010.

### **Results:**

Correlation between 3 variables, AFC, AMH, and FSH, related to the age is statistically significant. AFC numbers and AMH serum level as observed in graph with percentile 3, 10, 25, 50, 75, 90, and 97 has decreased following age, whereas FSH increased following age. There is relatively lower sloping degree of FSH showed that it is increased in older age when compared with AFC and AMH, therefore FSH is observed to be a later predictor for evaluating ovarian reserve, whilst AMH is an earlier predictor. AFC showed a biphasic pattern describing a different follicle loss rate after the switching age, whereas AMH and FSH level change with a linear fashion.

### **Conclusion:**

Age-related normograms in infertile women demonstrate a biphasic pattern of decreased antral follicles while AMH and FSH transformed with a linear pattern. AMH found to be an earlier predictor for ovarian biological age assessment. These curve models and normograms could provide a reference guide for physicians to counsel women with infertility. However, future validation with longitudinal data is still needed.

### **Keywords:**

Normogram, Anti Mullerian Hormone, Antral Follicle Count, Follicle-Stimulating Hormone