Comprehensive fertility/IVF portfolio on one platform

Investigation of infertility on one platform

- Opportunity for consolidation with >230 parameters on one **cobas**® platform, including those highly relevant for fertility testing or IVF setting (fertility, endocrinology/ thyroid testing, infectious disease, pregnancy care)
- Different analyzer models are available to suit different workload requirements (ranging from <50 to >2,000 samples per day)

Fertility/IVF assays on cobas e analyzers (Elecsys®)	
Fertility	AMH, DHEA-S, Progesterone, Prolactin, SHBG, Testosterone, HCG +B, HCG STAT, LH, FSH, Estradiol, Androstendione*, 17 OH progesterone*
Thyroid Function	FT4, TSH, FT3, Anti TPO, Anti TSHR
Infectious Disease	CMV, Toxo, Hep B, Hep C, HIV, Rubella, Syphilis
Ovarian Markers	CA 125, HE4
Bone Health	Vitamin D
… and pregnancy care	PAPP-A, free Beta HCG, sFlt-1, PIGF

** In development*

Confidence in clinical decision making.

References

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Fully automated Elecsys® Anti-Müllerian Hormone (AMH) Plus assay

Providing reliable AMH measurements for the management of women considering an Assisted Reproductive Technology program

Roche

cobas®
Life needs answers

Elecsys® AMH Plus

Electrochemiluminescence immunoassay (ECLIA) for the in vitro quantitative determination of anti-Müllerian Hormone in human serum and plasma

AMH plays a fundamental role in the regression of Müllerian ducts in male embryo and in its absence, Müllerian ducts develop into female inner reproductive organs.[1,2] In females, it is secreted by the granulosa cells of pre-antral and small antral ovarian follicles. AMH regulates follicle recruitment and growth of small ovarian follicles while preventing exhaustion of follicular pool.[3,4]

Serum levels of AMH correlate with the number of primordial follicles in a woman's ovaries (true ovarian reserve).[3,8,4] The determination of AMH is used for the assessment of the ovarian reserve and prediction of response to controlled ovarian stimulation (COS) in conjunction with other clinical and laboratory findings.

AMH is the marker of choice for the management of women considering an Assisted Reproductive Technology program

Circulating AMH concentration is reflective of ovarian reserve and therefore the capacity to provide eggs for fertilization. Serum AMH levels have been shown to remain relatively stable during the menstrual cycle and may be measured on any day of the cycle.[6,7]

AMH is a reliable marker for prediction of response to controlled ovarian stimulation and can therefore add prognostic information to the counseling and planning process for infertile couples seeking treatment.[8]

Fully automated, fast, sensitive and robust measurement of AMH[1,9]

Testing time	18 min
Measuring range	0.07 – 164 pmol/L (0.01 – 23 ng/mL)
LoB, LoD, LoQ*	0.049 pmol/L (0.007 ng/mL), 0.07 pmol/L (0.0010 ng/mL), 0.21 pmol/L (0.030 ng/mL)
Repetability	1.0 – 1.8 % CV (1.6 – 140 pmol/L; 0.232 – 19.6 ng/mL)
Intermediate Precision	2.7 – 4.4 % CV (1.6 – 140 pmol/L; 0.232 – 19.6 ng/mL)

** LoB = Limit of Blank; LoD = Limit of Detection; LoQ = Limit of Quantitation (20 % total error)*

High precision over entire measuring range for reliable results[1,10,11]

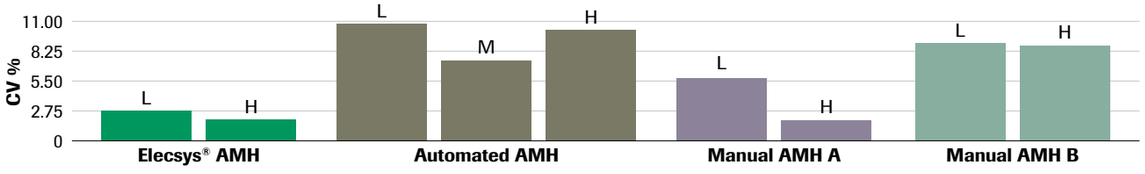

Figure 1: Results of an independent study demonstrate that Elecsys AMH provides superior precision at clinically relevant levels[10]
L: low level control; M: medium level control; H: high level control

Reliable AMH measurements for the management of women considering an Assisted Reproductive Technology program

Clinical agreement with Antral-Follicle-Count (AFC)[1,12]

- Providing reassurance when concordant results confirm expected level of ovarian reserve
- High agreement with AFC (Spearman's rank coefficient=0.68)
- Performed in a 7 sites multicenter evaluation
- Lower variability of results between sites and operators with AMH in comparison to AFC
- The data was obtained in a prospective study with n = 451 women between 18 – 44 years old, where AMH values were correlated to the antral follicle count (AFC) of the women (Roche study No. RD001542)

	Poor	Normal	High	
	AFC 0 – 7	**AFC 8 – 15**	**AFC >15**	**N**
AMH ≤4.86 pmol/L (0.681 ng/mL)	63.2 %	32.4 %	4.4 %	68
4.86 pmol/L (0.681 ng/mL) <AMH ≤16.2 pmol/L (2.27 ng/mL)	12.0 %	56.9 %	31.1 %	167
AMH >16.2 pmol/L (2.27 ng/mL)	1.4 %	24.1 %	74.5 %	216
N	66	169	216	451

Figure 2: Elecsys® AMH/AFC agreement table

Prediction of response to controlled ovarian stimulation

- AMH was determined in 149 women undergoing an antagonist treatment protocol while receiving a standard FSH stimulation dose of 150 IU/day. Prediction of hyper-response was significant with an AUC (area under the curve) of 82.1 % (Roche study No. CIM RD 001695)

Hyper-response		
AMH cutoff	15.0 pmol/L (2.10 ng/mL)	
	Estimate	**95 % CI**
Sensitivity	81.3 %	54.4 – 96.0 %
Specificity	64.7 %	55.9 – 72.8 %
PPV	21.7 %	12.1 – 34.2 %
NPV	96.6 %	90.5 – 99.3 %

Figure 3: Use of Elecsys® AMH for the prediction of hyper-response to controlled ovarian stimulation[1]

Use of AMH for the individual daily dose determination of follitropin delta of Ferring

- Follitropin delta is a human recombinant follicle stimulating hormone (rFSH) produced in a human cell line (PER. C6) by recombinant DNA technology
- The AMH concentration (in pmol/L) determined by the Elecsys AMH Plus assay, in combination with body weight was validated for the individual daily dose determination of follitropin delta in controlled ovarian stimulation for the development of multiple follicles in women undergoing an assisted reproductive technology program
- The AMH-based individualised dosing regimen of follitropin delta was validated in the prospective phase 3 clinical study ESTHER-1, a randomised, controlled, assessor-blind trial comparing the efficacy and safety of follitropin delta with follitropin alfa[13]

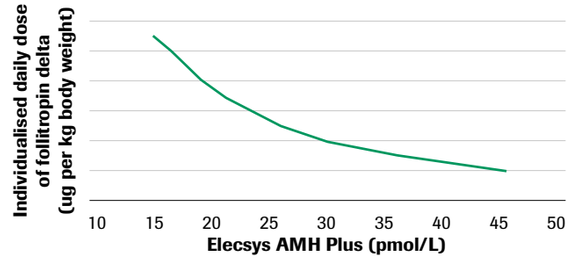

Figure 4: Representative dosing graph for follitropin delta