QuidelOrtho™

ThermoFisher SCIENTIFIC

QC Solutions SmartNote - VITROS® MicroWell Guide

Your ultimate go-to for all things QuidelOrtho QC

For RiliBÄK users, please reach out to your local QO team to obtain the RiliBÄK-specific MAS SmartNote.

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MAS Quality Controls SmartNote

Estimation of within-lab SD for MAS™ Quality Controls on VITROS Systems

Quality control (QC) in the core laboratory is a complex process. This involves looking at several processes to ensure both precision and accuracy of patient sample results.

The integrity of quality control samples is crucial for management of overall quality and patient management. Addressing quality issues is crucial in the identification of laboratory and requires statistical calculations that include determining mean and establishing standard deviation. The CLIA recommendations require the laboratory to establish their own mean and standard deviation for each lot of reagents that are used.

$$\bar{x}(mean) = \left(\sum x_i\right)/n$$

As expressed above, the **Σ** translates to the summation of the number of measurements represented by the sign x_i and n is the number of measurements included.

Calculating the standard deviation (SD)

The SD is calculated using the mathematical formula below:

$$SD = \sqrt{\frac{\sum (x_i - \bar{x})^2}{(n-1)}}$$

n = number of data points
x_i = an individual data point
$\bar{x}$ = mean of the data points
SD = standard deviation

- Calculate the mean of all measurements
- For each measurement, subtract the mean from the measurement and square the result
- Calculate the mean of the squared differences
- Square root of that will give you the SD

To calculate the within-lab reproducibility, it is necessary to estimate the within-lab SD.

The within-lab reproducibility standard deviation characterizes how well the measurement procedure can reproduce the same results on different days with the same sample. If the sample is not the same (as in this self-test) then if you just calculate the SD of the results, then the obtained SD includes both the reproducibility of the procedure and the difference between the samples. The difference between the samples is, in the case of this self-test, much larger than the within-lab reproducibility.

So, if you simply calculate the standard deviation over all the results then you will not obtain within-lab reproducibility but the variability of analyte concentrations in samples, with a (small) within-lab reproducibility component added.

The recommended baseline statistics on the SmartNote were extrapolated for the Thermo Scientific™ MAS™ Quality Controls using data from QuidelOrtho VITROS MicroWell assays. An internal value assignment exercise is conducted, and SD values are established using an assigned mean and an estimate of expected error (%CV).

The published within-lab SD includes the variability associated with performing replicate measurements within a day and measurements from one day to the next. The day-to-day variability includes the small variation introduced by different reagent lots, different vials of control material, multiple calibration events, environmental influences and preventive maintenance events.

MAS Quality Controls SmartNote

Why is within-lab SD important for QuidelOrtho customers?

A within-lab SD can be calculated from your daily quality control results and compared to the SmartNote within-lab SD. A calculated laboratory SD larger than the SmartNote within-lab SD indicates that system troubleshooting may be necessary.

If the calculated SD is much smaller than the SmartNote within-lab SD, you may not have included all the expected sources of variability or valid QC results may have been excluded from the calculation. If you use this calculated SD as your baseline SD, valid data points may be rejected, and troubleshooting may be performed more frequently than needed.

Expected Ranges: How 3SD ranges are used

When evaluating the performance of a VITROS chemistry system using MAS Quality Controls, the mean based on two or more replicate measurements of these fluids must be assessed for acceptability prior to the assessment of patient specimens.

Since MAS Quality Controls are manufactured fluids, they do not have the same physical and chemical characteristics or "matrix" as fresh patient specimens. These differences may cause the results on different reagent lots to vary. The term "matrix effects" is commonly used to describe this phenomenon. However, reagent lot-to-lot variability is considered when assigning the baseline statistics provided.

- The baseline statistics provided in the SmartNote are the recommended values which each analyte should be evaluated against.
- Expected ranges should be devised from the mean +/- an appropriate multiplication of the SD, for example mean +/- 3SD. This ensures that individual results exceeding medically acceptable guidelines are flagged and helps ensure that valid results are not unduly flagged.
- For calibration verification, the individual replicate measurements of MAS Quality Controls should fall within the 3SD Range obtained from the baseline statistics listed on the assay sheet.

MAS Quality Controls SmartNote

MAS™ CardioImmune · XL

MAS QC lot	QO short name	LabLink analyte name	Conventional								SI								Units	
			Level L		Level 1		Level 2		Level 3		Level L		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
CXL2504	CK-MB	Creatine Kinase-MB	N/A	N/A	4.64	0.441	18.8	1.79	49.1	3.78	N/A	N/A	4.64	0.441	18.8	1.79	49.1	3.78	ng/mL	µg/L
	CKMB2	CKMB2	N/A	N/A	4.21	0.40	17.2	1.63	45.4	3.50	N/A	N/A	4.21	0.40	17.2	1.63	45.4	3.50	ng/mL	µg/L
	hsTnI	Troponin I, High Sensitivity	56.69	6.179	269.5	26.68	1114	110.3	16960	1679	56.69	6.179	269.5	26.68	1114	110.3	16960	1679	ng/L	pg/mL
	Myog	Myoglobin	37.7	2.90	61.6	4.74	324.0	25.60	733.1	59.38	37.7	2.90	61.6	4.74	324.0	25.60	733.1	59.38	ng/mL	µg/L
	NBNP2	N-Terminal Pro B-type Natriuretic Peptide II	43.8	4.34	239.0	19.8	1260.0	93.2	6110	452	5.17	0.512	28.2	2.34	149.0	11.0	721.0	53.3	pg/mL	pmol/L
	TrpES	Troponin I ES	0.082	0.0106	0.393	0.0497	1.58	0.170	24.6	1.89	0.082	0.0106	0.393	0.0497	1.58	0.170	24.6	1.89	ng/mL	µg/L

MAS QC lot	QO short name	LabLink analyte name	Conventional								SI								Units	
			Level L		Level 1		Level 2		Level 3		Level L		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
CXL2602	CK-MB	Creatine Kinase-MB	N/A	N/A	5.16	0.49	20.3	1.75	56.3	4.34	N/A	N/A	5.16	0.49	20.3	1.75	56.3	4.34	ng/mL	µg/L
	CKMB2	CKMB2	N/A	N/A	4.51	0.437	18.3	1.74	52.8	4.07	N/A	N/A	4.51	0.437	18.3	1.74	52.8	4.07	ng/mL	µg/L
	hsTnI	Troponin I, High Sensitivity	112.1	11.1	514.7	50.96	1575	155.9	20450	2270	112.1	11.1	514.7	50.96	1575	155.9	20450	2270	ng/L	pg/mL
	Myog	Myoglobin	35.2	2.71	63.7	4.9	306.6	24.22	693.8	56.2	35.2	2.71	63.7	4.9	306.6	24.22	693.8	56.2	ng/mL	µg/L
	NBNP2	N-Terminal Pro B-type Natriuretic Peptide II	63.0	6.24	297	24.7	1550	115	7260	537	7.43	0.736	35.0	2.91	183.0	13.6	857.0	63.4	pg/mL	pmol/L
	TrpES	Troponin I ES	0.120	0.0139	0.597	0.0693	1.87	0.174	25.1	1.86	0.120	0.0139	0.597	0.0693	1.87	0.174	25.1	1.86	ng/mL	µg/L

MAS Quality Controls SmartNote

MAS CardioImmune · XL

MAS QC lot	QO short name	LabLink analyte name	Conventional								SI								Units	
			Level L		Level 1		Level 2		Level 3		Level L		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
CXL2704	CK-MB	Creatine Kinase-MB	N/A	N/A	4.64	0.450	18.6	1.77	53.4	4.11	N/A	N/A	4.64	0.450	18.6	1.77	53.4	4.11	ng/mL	µg/L
	CKMB2	CKMB2	N/A	N/A	3.84	0.372	16.2	1.54	48.4	3.73	N/A	N/A	3.84	0.372	16.2	1.54	48.4	3.73	ng/mL	µg/L
	hsTnI	Troponin I, High Sensitivity	143.6	14.22	477.4	47.26	1658	164.1	23430	2601	143.6	14.22	477.4	47.26	1658	164.1	23430	2601	ng/L	pg/mL
	Myog	Myoglobin	34.3	2.64	67.5	5.20	292	23.07	670.8	54.33	34.3	2.64	67.5	5.20	292.0	23.07	670.8	54.33	ng/mL	µg/L
	NBNP2	N-Terminal Pro B-type Natriuretic Peptide II	41.4	4.10	341.0	28.3	1720.0	127.0	7510	556.0	4.89	0.484	40.2	3.34	203.0	15.0	886.0	65.6	pg/mL	pmol/L
	TrpES	Troponin I ES	0.160	0.0186	0.607	0.0704	2.08	0.193	29.3	2.17	0.160	0.0186	0.607	0.0704	2.08	0.193	29.3	2.17	ng/mL	µg/L

MAS Quality Controls SmartNote

MAS Omni•Cardio Ultra Low

MAS QC lot	QO short name	LabLink analyte name	Conventional								SI								Units	
			Level L		Level 1		Level 2		Level 3		Level L		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OCRD2503U	hsTnI	Troponin I, High Sensitivity	6.13	0.895	N/A	N/A	N/A	N/A	N/A	N/A	6.13	0.895	N/A	N/A	N/A	N/A	N/A	N/A	ng/L	pg/mL

MAS Quality Controls SmartNote

MAS Omni•IMMUNE

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2411	AFP	Alpha-Fetoprotein	10.7	0.792	62.4	4.56	130	9.49	11.1	0.824	64.9	4.74	135	9.87	IU/mL	ng/mL
	AFP2	AFP2	10.7	0.792	62.4	4.56	130	9.49	12.9	0.958	75.5	5.52	157	11.48	IU/mL	ng/mL
	B12	Vitamin B12	160	20.6	491	87.6	824	106.3	118	15.2	362	64.6	608	78.4	pg/mL	pmol/L
	B-hCG	BHCG	4.99	0.898	36.26	3.046	705.62	57.861	4.99	0.898	36.26	3.046	705.62	57.86	mIU/mL	IU/L
	BhCG2	BHCG2	4.99	0.898	36.26	3.046	705.62	57.861	4.99	0.898	36.26	3.046	705.62	57.86	mIU/mL	IU/L
	CA125	Cancer Antigen 125	8.7	0.65	50.1	3.76	130	9.9	8.7	0.65	50.1	3.76	130	9.9	U/mL	U/mL
	C125a	C125a	8.7	0.65	50.1	3.76	130	9.9	8.7	0.65	50.1	3.76	130	9.9	U/mL	U/mL
	CA153	Cancer Antigen 15-3	13.6	1.44	33.7	3.57	71.5	6.94	13.6	1.44	33.7	3.57	71.5	6.94	U/mL	U/mL
	CA19-9	Cancer Antigen 19-9	14.3	1.37	34.7	3.40	163	15.8	14.3	1.37	34.7	3.40	163	15.8	U/mL	U/mL
	CEA	Carcinoembryonic Antigen	0.87	0.086	12.4	1.00	20.9	1.69	0.87	0.086	12.4	1.00	20.9	1.69	ng/mL	µg/L
	CEA2	CEA2	0.97	0.095	13.9	1.13	23.1	1.87	0.97	0.095	13.9	1.13	23.1	1.87	ng/mL	µg/L
	Cort	Cortisol	107	11.0	567	41.4	1020	76.5	3.88	0.40	20.6	1.50	37.0	2.78	nmol/L	µg/dL
	E2	Estradiol	344.34	70.59	1307.3	160.80	2789.6	306.86	93.798	19.229	356.11	43.802	759.89	83.589	pmol/L	pg/mL
	Ferr	Ferritin	14.2	1.14	119	9.52	246	21.9	N/A	N/A	N/A	N/A	N/A	N/A	ng/mL	ng/mL
	Fol	Folate (Folic Acid)	1.78	0.247	4.45	0.556	7.05	0.783	4.03	0.559	10.1	1.26	16.0	1.77	ng/mL	nmol/L
	fPSA	Prostate Specific Antigen, Free	0.051	0.0095	1.07	0.095	2.52	0.219	0.051	0.0095	1.07	0.095	2.52	0.219	ng/mL	µg/L
	FSH	Follicle-Stimulating Hormone	3.03	0.251	41.1	2.96	72.4	5.21	3.03	0.251	41.1	2.96	72.4	5.21	mIU/mL	IU/L
	FT3	Free Triiodothyronine (FT3)	7.20	0.746	26.8	2.41	N/A	N/A	4.69	0.486	17.4	1.57	N/A	N/A	pmol/L	pg/mL
	FT3II	Free T3 II	9.14	1.538	27.0	2.43	N/A	N/A	5.95	1.001	17.6	1.58	N/A	N/A	pmol/L	pg/mL
	FT4	Thyroxine, Free (FT4)	12.9	1.01	71.9	4.89	N/A	N/A	1.00	0.078	5.59	0.380	N/A	N/A	pmol/L	ng/dL
	INS	Insulin	6.65	0.811	53.4	5.45	102	10.1	39.9	4.87	320	32.7	612	60.6	uIU/mL	pmol/L
	iPTH	Intact Parathyroid Hormone	28.8	4.14	87.2	11.62	1548.8	201.4	3.0	0.44	9.2	1.23	164.2	21.35	pg/mL	pmol/L
	LH	Luteinizing Hormone	5.04	0.564	48.7	4.680	68.9	6.610	5.04	0.564	48.7	4.680	68.9	6.610	mIU/mL	IU/L
	PCT	Procalcitonin	0.448	0.0470	2.78	0.200	22.0	1.43	0.448	0.0470	2.78	0.200	22.0	1.43	ng/mL	µg/L
	Prog	Progesterone	3.08	0.462	35.8	3.04	63.1	4.86	0.969	0.145	11.3	0.956	19.8	1.53	nmol/L	ng/mL
	Prol	Prolactin	176.9	18.22	467.8	40.23	805.5	69.27	8.3	0.86	22.0	1.89	37.9	3.26	mIU/L	ng/mL
	Prol2	Prol2	157.4	17.79	452.9	32.16	813.8	57.78	7.4	0.84	21.3	1.51	38.2	2.72	mIU/L	ng/mL
	PSA	Prostate Specific Antigen	0.811	0.0819	2.70	0.273	22.8	2.01	0.811	0.0819	2.70	0.273	22.8	2.01	ng/mL	µg/L
	tPSA	Prostate Specific Antigen, Total	0.909	0.0809	3.86	0.344	32.1	2.86	0.909	0.0809	3.86	0.344	32.1	2.86	ng/mL	µg/L

MAS Quality Controls SmartNote

MAS Omni•IMMUNE

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2612	AFP	Alpha-Fetoprotein	12.0	0.888	68.5	5	139	10.1	12.5	0.924	71.2	5.20	145	10.50	IU/mL	ng/mL
	AFP2	AFP2	12.0	0.888	68.5	5	139	10.1	14.5	1.074	82.9	6.05	168	12.22	IU/mL	ng/mL
	B12	Vitamin B12	213	27.5	416	53.7	699	88.1	157	20.3	307	39.6	516	65.0	pg/mL	pmol/L
	BhCG2	BHCG	6.99	1.118	40.17	3.374	796.32	65.298	6.99	1.118	40.17	3.374	796.32	65.30	mIU/mL	IU/L
	CA125	Cancer Antigen 125	13.0	0.95	67.7	5.08	154	11.7	13.0	0.95	67.7	5.08	154	11.7	U/mL	U/mL
	C125a	C125a	13.0	0.95	67.7	5.08	154	11.7	13.0	0.95	67.7	5.08	154	11.7	U/mL	U/mL
	CA153	Cancer Antigen 15-3	11.2	1.18	41.1	4.36	82.7	8.02	11.2	1.18	41.1	4.36	82.7	8.02	U/mL	U/mL
	CA19-9	Cancer Antigen 19-9	13.2	1.27	36.1	3.54	154	14.9	13.2	1.27	36.1	3.54	154	14.9	U/mL	U/mL
	CEA	Carcinoembryonic Antigen	0.75	0.0775	11.6	0.94	20.2	1.64	0.75	0.078	11.6	0.94	20.2	1.64	ng/mL	µg/L
	CEA2	CEA2	0.82	0.080	14.2	1.19	23.6	1.91	0.82	0.080	14.2	1.19	23.6	1.91	ng/mL	µg/L
	Cort	Cortisol	107	11	558	40.7	1140	85.5	3.88	0.40	20.3	1.48	41.4	3.10	nmol/L	µg/dL
	E2	Estradiol	255.74	52.427	1285.2	158.08	2267.7	278.93	69.664	14.281	350.09	43.061	617.72	75.981	pmol/L	pg/mL
	Ferr	Ferritin	12.8	1.02	148	11.8	280	24.9	N/A	N/A	N/A	N/A	N/A	N/A	ng/mL	ng/mL
	Fol	Folate (Folic Acid)	2.18	0.368	4.50	0.563	8.20	0.902	4.94	0.83	10.2	1.28	18.6	2.04	ng/mL	nmol/L
	fPSA	Prostate Specific Antigen, Free	0.094	0.0154	1.17	0.104	3.24	0.282	0.094	0.0154	1.17	0.104	3.24	0.282	ng/mL	µg/L
	FSH	Follicle-Stimulating Hormone	4.51	0.374	41.2	2.97	76.0	5.47	4.51	0.374	41.2	2.97	76.0	5.47	mIU/mL	IU/L
	FT3	Free Triiodothyronine (FT3)	8.96	0.69	26.3	2.37	N/A	N/A	5.83	0.45	17.1	1.54	N/A	N/A	pmol/L	pg/mL
	FT3II	Free T3 II	7.13	0.649	19.7	1.24	N/A	N/A	4.64	0.42	12.8	0.81	N/A	N/A	pmol/L	pg/mL
	FT4	Thyroxine, Free (FT4)	11.7	0.91	54.5	3.71	N/A	N/A	0.91	0.07	4.23	0.29	N/A	N/A	pmol/L	ng/dL
	INS	Insulin	10.8	1.32	58.6	5.98	128	12.7	64.8	7.92	352	35.9	768	76	uIU/mL	pmol/L
	LH	Luteinizing Hormone	5.70	0.638	51.1	4.91	75.6	7.26	5.70	0.638	51.1	4.91	75.6	7.26	mIU/mL	IU/L
	PCT	Procalcitonin	0.542	0.0564	1.93	0.16	23.8	1.55	0.542	0.0564	1.93	0.160	23.8	1.55	ng/mL	µg/L
	Prog	Progesterone	3.19	0.479	30.7	2.61	61.0	4.7	1.00	0.151	9.66	0.821	19.2	1.48	nmol/L	ng/mL
	Prol	Prolactin	152.1	15.67	488.5	42.01	709.4	61.01	7.1	0.7	23.0	2.0	33.3	2.9	mIU/L	ng/mL
	Prol2	Prol2	127.5	14.41	476.5	33.83	702.0	49.84	6.0	0.7	22.4	1.6	33.0	2.3	mIU/L	ng/mL
	PSA	Prostate Specific Antigen	0.784	0.0705	2.44	0.289	21.1	2.31	0.784	0.0705	2.44	0.289	21.1	2.31	ng/mL	µg/L
	tPSA	Prostate Specific Antigen, Total	0.792	0.0705	3.25	0.289	26.0	2.31	0.792	0.0705	3.25	0.289	26.0	2.31	ng/mL	µg/L

MAS Quality Controls SmartNote

MAS Omni•IMMUNE

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2703	AFP	Alpha-Fetoprotein	8.88	0.657	59.0	4.31	111	8.10	9.24	0.683	61.4	4.48	115	8.42	IU/mL	ng/mL
	AFP2	AFP2	8.88	0.657	59.0	4.31	111	8.10	10.7	0.795	71.4	5.22	134	9.80	IU/mL	ng/mL
	B12	Vitamin B12	175	22.6	394	50.8	724	105.1	129	16.7	291	37.5	534	77.6	pg/mL	pmol/L
	BhCG2	BHCG	8.38	1.341	24.50	2.426	660.20	54.140	8.38	1.341	24.50	2.426	660.20	54.140	mIU/mL	IU/L
	CA125	Cancer Antigen 125	26.6	2.00	89.7	6.73	144	10.9	26.6	2.00	89.7	6.73	144	10.9	U/mL	U/mL
	C125a	C125a	26.6	2.00	89.7	6.73	144	10.9	26.6	2.00	89.7	6.73	144	10.9	U/mL	U/mL
	CA153	Cancer Antigen 15- 3	17.2	1.82	43	4.56	95.2	9.23	17.2	1.82	43.0	4.56	95.2	9.23	U/mL	U/mL
	CA19-9	Cancer Antigen 19-9	15.7	1.51	39.9	3.91	161.00	15.6	15.7	1.51	39.9	3.91	161	15.6	U/mL	U/mL
	CEA	Carcinoembryonic Antigen	1.15	0.113	10.8	0.87	19.3	1.56	1.15	0.113	10.8	0.87	19.3	1.56	ng/mL	µg/L
	CEA2	CEA2	1.26	0.123	12.4	1.00	21.5	1.74	1.26	0.123	12.4	1.00	21.5	1.74	ng/mL	µg/L
	Cort	Cortisol	111	11.4	800	59.2	1090	81.8	4.03	0.414	29.0	2.15	39.6	2.97	nmol/L	µg/dL
	E2	Estradiol	273.21	56.008	1272.2	156.48	2075.6	255.30	74.422	15.2566	346.55	42.625	565.39	69.544	pmol/L	pg/mL
	Ferr	Ferritin	14.3	1.14	138	11.0	290	25.8	N/A	N/A	N/A	N/A	N/A	N/A	ng/mL	ng/mL
	Fol	Folate (Folic Acid)	1.92	0.267	4.48	0.560	7.95	0.882	4.35	0.605	10.1	1.27	18.0	2.00	ng/mL	nmol/L
	fPSA	Prostate Specific Antigen, Free	0.094	0.0154	1.22	0.109	3.04	0.264	0.094	0.0154	1.22	0.109	3.04	0.264	ng/mL	µg/L
	FSH	Follicle-Stimulating Hormone	5.20	0.432	28.7	1.81	56.2	4.05	5.20	0.432	28.7	1.81	56.2	4.05	mIU/mL	IU/L
	FT3	Free Triiodothyronine (FT3)	7.10	0.646	30.8	2.77	N/A	N/A	4.62	0.421	20.1	1.80	N/A	N/A	pmol/L	pg/mL
	FT3II	Free T3 II	6.76	0.615	25.1	2.26	N/A	N/A	4.40	0.400	16.3	1.47	N/A	N/A	pmol/L	pg/mL
	FT4	Thyroxine, Free (FT4)	18	1.4	72.4	4.92	N/A	N/A	1.3986	0.109	5.625	0.382	N/A	N/A	pmol/L	ng/dL
	INS	Insulin	10.5	1.28	90	8.91	175	17.9	63.0	7.68	540	53.5	1050	107	uIU/mL	pmol/L
	iPTH	Intact Parathyroid Hormone	28.0	4.03	76.3	10.30	1229	159.8	3.0	0.43	8.1	1.09	130.3	16.94	pg/mL	pmol/L
	LH	Luteinizing Hormone	4.34	0.486	46.4	4.450	66.0	6.34	4.34	0.486	46.4	4.450	66.0	6.34	mIU/mL	IU/L
	PCT	Procalcitonin	0.505	0.0525	3.03	0.218	22.4	1.46	0.505	0.0525	3.03	0.218	22.4	1.46	ng/mL	µg/L
	Prog	Progesterone	3.08	0.462	33.0	2.81	65.1	5.01	0.969	0.1453	10.4	0.884	20.5	1.58	nmol/L	ng/mL
	Prol	Prolactin	133.9	13.79	491.1	42.23	827.9	71.20	6.3	0.65	23.1	1.98	38.9	3.35	mIU/L	ng/mL
	Prol2	Prol2	112.1	13.34	491.7	34.91	846.1	60.07	5.3	0.63	23.1	1.64	39.8	2.82	mIU/L	ng/mL
	PSA	Prostate Specific Antigen	0.909	0.0918	2.20	0.222	23.8	2.09	0.909	0.0918	2.20	0.222	23.8	2.09	ng/mL	µg/L
	tPSA	Prostate Specific Antigen, Total	0.738	0.0657	2.38	0.212	25.3	2.25	0.738	0.0657	2.38	0.212	25.3	2.25	ng/mL	µg/L

MAS Quality Controls SmartNote

MAS Omni•IMMUNE

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2411	T3U	T3/T-Uptake %	35.8	1.97	41.2	2.27	N/A	N/A	35.8	1.97	41.2	2.27	N/A	N/A	%Uptake	N/A
	Testo	Testosterone	1.24	0.190	13.0	1.34	30.7	2.92	35.8	5.48	375	38.6	885.4	84.2	nmol/L	ng/dL
	TSH	Thyroid Stimulating Hormone	0.203	0.0292	20.7	1.82	46.5	3.77	0.203	0.0292	20.7	1.82	46.5	3.77	mIU/L	µIU/mL
	TSH3	TSH3G	0.1456	0.01587	15.30	1.132	35.86	2.654	0.1456	0.01587	15.30	1.132	35.86	2.654	µIU/mL	mIU/L
	TT3	Total Triiodothyronine (T3)	0.926	0.0806	3.80	0.228	4.87	0.278	0.603	0.0525	2.47	0.148	3.17	0.181	nmol/L	ng/mL
	TT4	Total Thyroxine (T4)	37.9	3.03	175	10.2	140	8.12	2.94	0.235	13.6	0.793	10.9	0.631	nmol/L	µg/dL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2612	T3U	T3/T-Uptake %	31.9	1.75	46.1	2.54	N/A	N/A	31.9	1.75	46.1	2.54	N/A	N/A	%Uptake	N/A
	T3U-2	T3U-2	33.2	2.52	54.1	4.00	N/A	N/A	33.2	2.52	54.1	4.00	N/A	N/A	%Uptake	N/A
	Testo	Testosterone	1.29	0.197	14.4	1.48	28.0	2.66	37.2	5.70	415	42.7	808	76.7	nmol/L	ng/dL
	TSH	Thyroid Stimulating Hormone	0.842	0.0825	21.7	1.91	40.4	3.27	0.842	0.0825	21.7	1.91	40.4	3.27	mIU/L	µIU/mL
	TSH3	TSH3G	0.6480	0.05184	16.36	1.211	28.92	2.14	0.6480	0.05	16.36	1.21	28.92	2.14	µIU/mL	mIU/L
	TT3	Total Triiodothyronine (T3)	1.32	0.103	3.21	0.193	5.06	0.288	0.859	0.067	2.09	0.126	3.29	0.187	nmol/L	ng/mL
	TT3-2	TT3-2	1.55	0.157	3.76	0.335	5.82	0.518	1.01	0.102	2.45	0.218	3.79	0.337	nmol/L	ng/mL
	TT4	Total Thyroxine (T4)	34.5	2.76	88.3	5.56	45.6	2.87	2.68	0.214	6.86	0.432	3.54	0.223	nmol/L	µg/dL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2703	T3U	T3/T-Uptake %	33.9	1.86	50.2	2.96	N/A	N/A	33.9	1.86	50.20	2.96	N/A	N/A	%Uptake	N/A
	Testo	Testosterone	3.07	0.375	15.6	1.61	25.9	2.46	88.5	10.82	450	46.4	747	70.9	nmol/L	ng/dL
	TSH	Thyroid Stimulating Hormone	0.130	0.0173	18.5	1.63	37.1	3.26	0.130	0.0173	18.5	1.63	37.1	3.26	mIU/L	µIU/mL
	TSH3	TSH3G	0.1150	0.01254	13.06	0.966	25.85	1.913	0.1150	0.01254	13.06	0.966	25.85	1.913	µIU/mL	mIU/L
	TT3	Total Triiodothyronine (T3)	1.11	0.097	3.98	0.239	5.69	0.319	0.723	0.0631	2.59	0.156	3.70	0.208	nmol/L	ng/mL
	TT4	Total Thyroxine (T4)	67.1	4.23	124	7.2	83.4	5.25	5.21	0.329	9.63	0.559	6.48	0.408	nmol/L	µg/dL

MAS Quality Controls SmartNote

MAS Omni•IMMUNE (Amnio)

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2411	AFP	Alpha-Fetoprotein (AFP1)	10.7	0.792	62.4	4.56	130	9.49	11.1	0.82	64.9	4.74	135	9.87	IU/mL	ng/mL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2612	AFP	Alpha-Fetoprotein (AFP1)	12.0	0.888	68.5	5.0	139	10.1	12.5	0.92	71.2	5.20	145	10.50	IU/mL	ng/mL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2703	AFP	Alpha-Fetoprotein (AFP1)	8.88	0.657	59.0	4.31	111	8.1	9.24	0.683	61.4	4.48	115	8.42	IU/mL	ng/mL

MAS Quality Controls SmartNote

MAS Omni•IMMUNE (Urine)

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2411	Cort	Cortisol	107	11.0	567	41.4	1020	76.5	3.88	0.399	20.6	1.50	37.0	2.78	nmol/L	µg/dL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2612	Cort	Cortisol	107	11.0	558	40.7	1140	85.5	3.88	0.399	2.03	1.48	41.4	3.10	nmol/L	µg/dL

MAS QC lot	QO short name	LabLink analyte name	Conventional						SI						Units	
			Level 1		Level 2		Level 3		Level 1		Level 2		Level 3			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	CONV	SI
OIM2703	Cort	Cortisol	111	11.4	800	59.2	1090	81.8	4.03	0.414	29.0	2.15	39.6	2.97	nmol/L	µg/dL

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