SQAII Reported Parameters vs. WHO 5th Edition Manual

Applies to the following: SQAII systems only (based on WHO 3rd edition manual) | Issue date: March 2, 2011

The SQAII tests semen based on the **3rd Edition WHO Manual**. The system relies on motility parameters such as SMI to report the presence of sperm in the ejaculate and provides a general assessment of motility, morphology and concentration. More complex semen analysis requires the advanced technology and precision of the SQA-V. The table below defines how the SQAII differs from WHO 5th and provides guidance for how to implement WHO 5th recommendations.

WHO 5th / WHO 3rd Laboratory Guidance for SQA II Users			
Parameter	**WHO 5th**	**WHO 3rd**	**Laboratory Guidance for SQAII Users**
Sample collection to test time	Between 30 and 60 min of collection	Within 1 hour	Work to process sample as close to 30 minutes as possible.
Testing Temperature	RT or 37^{0}C	RT or 37^{0}C	SQA II runs samples at (RT) room temp only. Do not pre-heat the samples.
Representative sampling and thorough mixing	Emphasized (p. 17)	N/A	Refer to 5th Edition (p. 17) for updated mixing procedures.
Agglutination	Grade 1: isolated Grade 2: moderate Grade 3: large Grade 4: gross	-, +, ++, +++	Update worksheet to "grading system" from "+" system if this parameter is reported
Number of sperm to be counted per replicate (manual assessment only)	200	200	No change (SQAII automatically measures over 10,000 cells)
Categories of sperm movement	Progressive Motility (PR) Non-progressive motility (NP) Immotility (IM)	Grades a,b,c,d	SQA II reports Progressive Motility only (a+b). Update lower reference limit to **32%** per WHO 5th Edition
Percentage parameters reporting	Rounded to the nearest whole number	N/A	SQAII percentage (%) results are rounded to the nearest whole number
Total # of spermatozoa per ejaculate (term – "total sperm number")	Lower reference changed to **39 M.** See recommendations for reporting this parameter (p. 2, 7, 32-33, 44, 51)	Lower reference limit: 40 Million	SQAII parameter: All Sperm. Update lower reference limit to **39 M** per WHO 5th Edition
Total # of progressively motile spermatozoa/ejaculate	Biological significance of this parameter emphasized (p. 26)	N/A	SQAII parameter – Motile Sperm. Update lower reference limit to **12.5 Million per ejaculate** (32% x 39M) (MES recommends based on WHO 5th)
Total # of morphologically normal sperm/ejaculate	Biological significance of this parameter emphasized (p.100)	N/A	Not reported by SQAII. Reports % Normal Morphology only.
Total # of membrane-intact spermatozoa/ejaculate	Biological significance of this parameter emphasized (p.29-30, 32)	N/A	Not reported by SQAII. Report % Normal Morphology only.
Low sperm numbers	Sufficient to report concentration as <2 x 10^6/ml (p. 45)	Sufficient to report conc. as <2 x 10^6/ml (p.9)	No Change
	Absence of sperm (total or motile) from the aliquot tested does not necessarily indicate azoospermia in the entire sample (p. 46-47, 51, 54).	N/A	No Change

	WHO 5th	WHO 3rd	Laboratory Guidance for SQAII Users
Low sperm numbers (continued)	In a PV sample, high speed centrifugation must be avoided. Scanning the undiluted 40 µl sample aliquot covered by 24 mm x 50 mm coverslip is recommended (p. 46).	N/A	Avoid high speed centrifugation on SQAII "high sensitivity mode".
Morphology criteria	Strict criteria: All borderline forms considered abnormal. Reference WHO 5th manual.	WHO 3rd edition: borderline forms considered "Normal".	SQAII measures morphology by WHO 3rd edition only. Note on test report: WHO 3rd Criteria used. All borderline forms are considered "normal".

Semen Parameters and Reference Values*

Parameter	WHO 5th	WHO 3rd	Laboratory Guidance for SQAII Users
Semen volume (ml)	1.5 (1.4-1.7)	2.0	Update lower reference limit to **1.5 ml** (WHO 5th edition).
Total sperm number (10^6 per ejaculate)	39 (33-46)	40	Lower reference limit should be updated to **39 Million** per WHO 5th edition.
Sperm concentration (10^6 per ml)	15 (12-16)	20	Lower reference limit should be updated to **15 Million** per WHO 5th edition.
Total motility (PR + NP, %)	40 (38-42)	N/A	Total motility not reported by SQAII. Note on report that only progressive motility is reported that complies with WHO 5th Edition reference criteria.
Progressive motility (PR, %)	32 (31-34)	50	Lower reference limit should be updated to **32%** per WHO 5th Edition.
Non-progressive motility (NP, %)	Reference WHO 5th edition for details	N/A	Non-progressive motility not reported by SQAII. Note on report that only progressive motility is reported that complies with WHO 5th edition reference criteria.
Immotile (IM, %)		N/A	Immotile sperm not reported by SQAII. Note on report that only progressive motility is reported that complies with WHO 5th edition reference criteria.
Vitality: (live spermatozoa, %)		N/A	Vitality not reported by SQAII. Note on report that only progressive motility is reported that complies with WHO 5th edition reference criteria.
Sperm morphology (normal forms, %)	4 (3.0-4.0)	30	SQAII measures morphology by the WHO 3rd edition criteria only. Note on the report that borderline forms are still considered "normal" per WHO 3rd edition.
Abnormal heads (%)	Reference WHO 5th edition for details	N/A	Morphological abnormalities are not broken down by SQAII. SQAII measures morphology by the WHO 3rd edition only. Note on the report that borderline forms are still considered "normal" per WHO 3rd edition.
Abnormal midpieces (%)		N/A	
Abnormal principle pieces (%)		N/A	
Excess residual cytoplasm (%)		N/A	
pH	>=7.2	>=7.2	No Change
Peroxidase-positive leukocytes / White blood cells in WHO 4th ed. (10^6 per ml)	<1.0	<1.0	QwikCheck Test Strips read WBC <1.0 and >=1.0 M/ml – no change

*** Note:** Immunological and biochemical parameters are not included.

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