AVISE SLE Monitor

Order ID B26368
Provider Sample Provider MD

Specimen
Collected 09/23/2024
Received 09/24/2024

Test Order
Created 09/24/2024
Reported 09/27/2024

Patient
Sample, Susan
Gender - DOB Female - 01/01/2001
MRN MRN12345

AVISE SLE Monitor Test Report

	Value	Interpretation	Reference Range
Complement Component			
EC4d - Erythrocyte-bound C4d	6 Net MFI	Negative	FACS: <15 - Negative | ≥15 - Positive
Complement C3	107.600 mg/dL	Normal	Turbidimetry: 81 - 157 - Normal
Complement C4	27.000 mg/dL	Normal	Turbidimetry: 13 - 39 - Normal
Antibody Component			
+ Anti-dsDNA IgG	59.9 IU/mL	POSITIVE	CIA: <27 - Negative | 27 - 35 - Indeterminate | >35 - Positive
Anti-C1q IgG	18.1 Units	Negative	ELISA: <20 - Negative | ≥20 - Positive
Therapy Monitoring			
Hydroxychloroquine	1284.4 ng/mL	Supratherapeutic	
Methotrexate	63.4 nmol/L	Therapeutic	

Analyte Descriptions

EC4d

Erythrocyte-bound C4d (EC4d) measured by flow cytometry has been shown to significantly correlate with disease activity as measured by clinical SELENA-SLEDAI [1,2]. Furthermore, reductions in EC4d levels have been shown to correlate with improvements in SF-36 score and BILAG-2004 index [2].

Complement C3/C4

Normalization of complement C3 and C4 proteins has been shown to correlate with disease improvements in SLE [1-3].

Anti-dsDNA IgG

Anti-dsDNA is quantified using a bead-based chemiluminescence immunoassay method. Relative to other methods, values produced by this method have superior correlation with disease activity [3,4].

Anti-C1q IgG

Autoantibodies to C1q have been shown to significantly correlate with clinical SELENA-SLEDAI values and are superior to 3 other biomarkers in their association with lupus nephritis and proteinuria [2,3,5].

Test Method Description

Results were obtained using Flow Cytometry for complement C4d fragment bound to erythrocytes (EC4d). Results were obtained by Immunoturbidimetry for determination of soluble complement C3c and C4 proteins. Results were obtained by Enzyme Linked Immunosorbent Assay (ELISA) for determination of anti-double stranded DNA and anti-C1q IgG.

References

1. Merrill J, et al. Lupus Sci Med. 2018 Apr;5(1):e000263. doi:10.1136/ lupus-2018-000263.
2. Mahler M, et al. J Immunol Res. 2017;2017:1720902. doi: 10.1155/2017/1720902.
3. Buyon J, et al. Lupus Sci Med. 2016 Sept ;3(1) : e000165. doi: 10.1136/lupus-2016-000165.
4. Orbai A, et al. Lupus. 2015 Jan;24(1):42–49. doi: 10.1177/0961203314547791.
5. Kao A, et al. Arthritis Rheum. 2010 Mar; 62(3):837-844. doi: 10.1002/art.27267.

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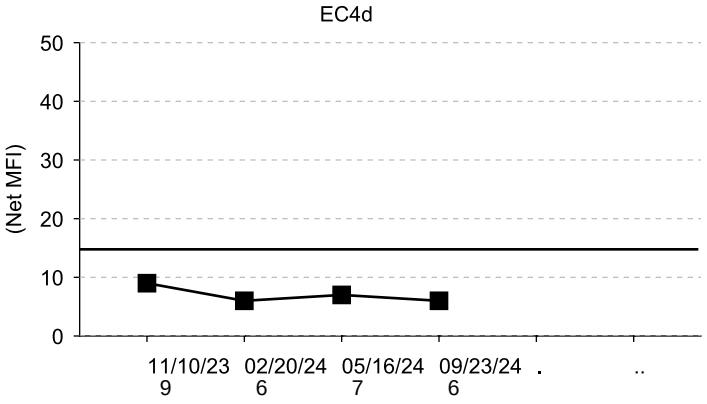
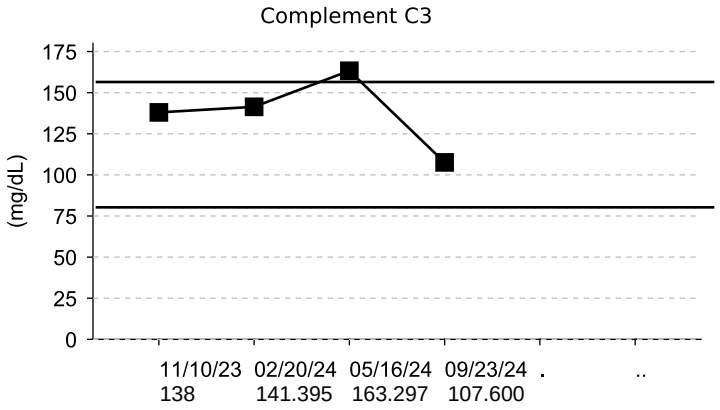
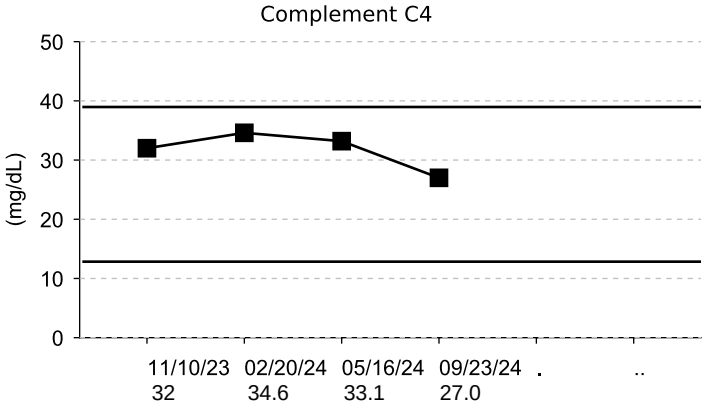
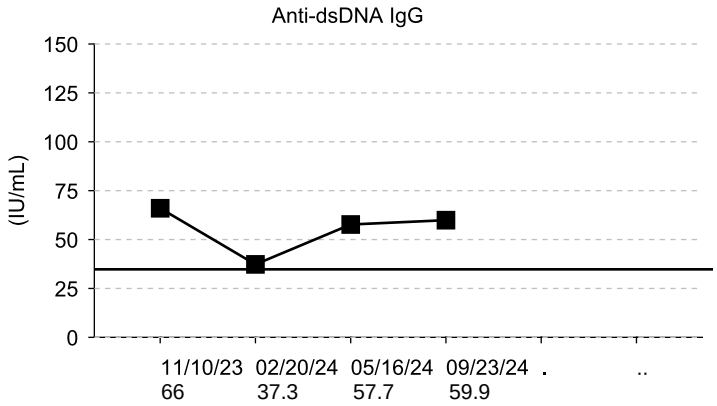
Complement Component

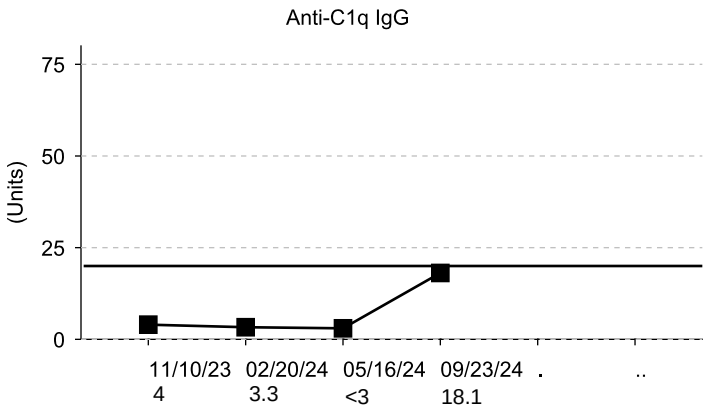






Antibody Component





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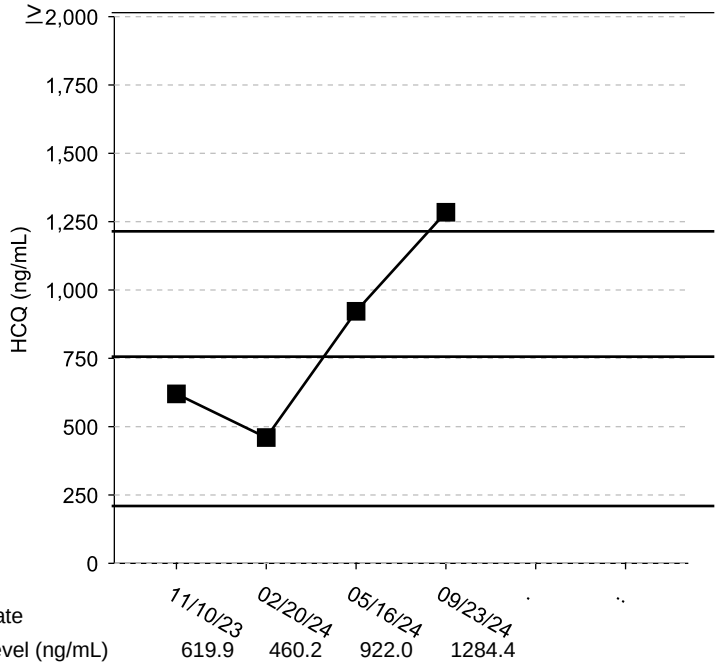
AVISE HCQ Test Report

Current Hydroxychloroquine (HCQ) Level:

1284.4 ng/mL - Supratherapeutic

Current HCQ Dose (mg/day)
400

Current and Prior 5 HCQ Levels



Date	11/10/23	02/20/24	05/16/24	09/23/24
Level (ng/mL)	619.9	460.2	922.0	1284.4
Dose (mg/day)	200	200	400	400

HCQ Level	*Interpretation & Considerations*
Supratherapeutic (>1200 ng/mL):	**Level associated with clinical efficacy. HCQ is likely absorbed effectively. However, levels >1200 ng/ml have a minimal added benefit compared to levels in the therapeutic range (750 ng/ml - 1200 ng/ml). Thus, adjusting HCQ doses to maintain blood levels in the therapeutic range may maximize efficacy while limiting toxicity.**
Therapeutic (750-1200 ng/mL):	Levels associated with clinical efficacy. HCQ is likely to be absorbed effectively.
Subtherapeutic (200-<750 ng/mL):	Patient may be partially adherent to therapy. Patients with HCQ < 750 ng/mL can be at greater risk for disease flare. Thus, adjusting HCQ doses and/or discussing barriers to compliance may maximize efficacy.
Underexposed (<200 ng/mL):	Patient is likely non-adherent to HCQ therapy.

Risk Factors

Supratherapeutic: Excessive HCQ levels may arise from **(1) chronic kidney disease stage** (≥3 associated with higher odds), **(2) HCQ dose** (400 mg/day associated with higher odds compared to 200mg/day) and **(3) substantial weight loss**[7].

Test Method Description

HCQ concentration is determined by Liquid Chromatography coupled with Mass Spectrometry (LC/MS/MS).
Test limitations: This test has not been validated in pediatric populations. This test should not be performed on patients receiving HCQ therapy for less than 6 months. This test cannot be used to assess the risk of HCQ toxicity.

References

1. Garg S, et al. Arthritis Care Res. 2024 Feb;76(2):241-250. doi: 10.1002/acr.25228.
2. Petri M, et al. Arthritis Rheumatol. 2020 Mar; 72(3):448-453. doi: 10.1002/art.41121.
3. Costedoat-Chalumeau N, et al. Ann Rheum Dis. 2013 Nov;72(11):1786-1792. doi: 10.1136/annrheumdis-2012-202322.
4. Costedoat-Chalumeau N, et al. Best Pract Res Clin Rheumatol. 2013 Jun;27(3):329-340. doi: 10.1016/j.berh.2013.07.001.
5. Frances C, et al. Arch Dermatol. 2012 Apr;148(4):479-84. doi: 10.1001/archdermatol.2011.2558.
6. Costedoat-Chalumeau N, et al. Ann Rheum Dis. 2007 Jun;66(6):821-4. doi: 10.1136/ard.2006.067835.
7. Costedoat-Chalumeau N, et al. Arthritis Rheum. 2006 Oct;54(10):3284-90. doi: 10.1002/art.22156.

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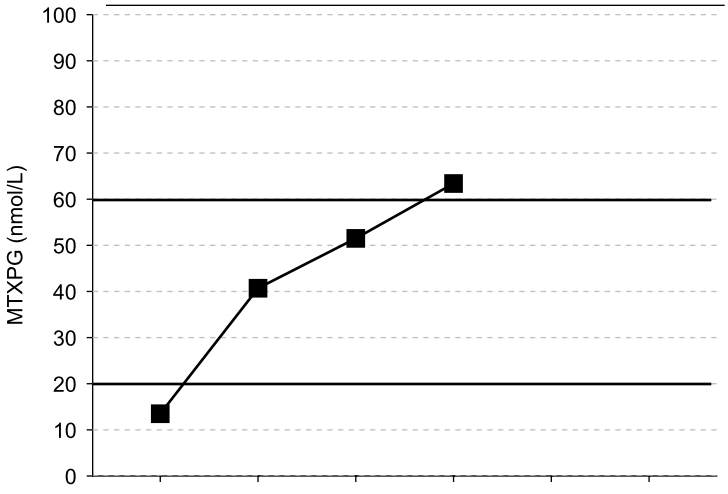
AVISE MTX Test Report

Current Methotrexate Polyglutamate (MTXPG) Level:

63.4 nmol/L - Therapeutic

Current MTX Dose (mg/week)
25

Current and Prior 5 MTXPG Levels



Date	11/10/23	02/20/24	05/16/24	09/23/24	.	..
Level (nmol/L)	13.5 †	40.7 †	51.5 †	63.4 †		
Dose (mg/week)	15	20	25	25		

MTXPG Level	*Interpretation & Consideration*
Therapeutic (>60 nmol/L)	Patient is metabolizing MTX effectively. Level is consistent with clinical efficacy
Intermediate (20-60 nmol/L)	Patient may need more exposure to MTX
Sub-therapeutic (<20 nmol/L)	Patient may not be metabolizing MTX effectively or patient may be non-compliant with therapy

†nmol/L RBC
‡nmol/L RBC equivalent

Test Method Description

MTXPG concentration is determined by Liquid Chromatography coupled with Mass Spectrometry (LC/MS/MS).
Test limitations: Studies supporting the clinical utility of this test are based on patients receiving methotrexate for at least 3 months. Caution should be used in interpreting results for patients on therapy for less than three months.

References

1. Dervieux T, et al. Arthritis Rheum. 2006 Oct;54(10):3095-103. doi: 10.1002/art.22129.
2. Dervieux T, et al. Ann Rheum Dis 2005 Aug;64(8):1180-1185. doi: 10.1136/ard.2004.033399.
3. Dervieux T, et al. Arthritis Rheum. 2004 Sep;50(9):2766-74. doi: 10.1002/art.20460.
4. Kremer J, et al. Arthritis Rheum. 2004 May;50(5):1370-1382. doi: 10.1002/art.20278.

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