

technical update

Anti-Cardiolipin: Proposal for Interpretive Ranges

For in vitro diagnostic use

Interpretive ranges are intended to assist physicians in the assessment of test results for better treatment options. DiaPharma Anti-Cardiolipin (aCL) ELISAs are semi-quantitative tests that measure IgG, IgM and IgA antibody isotypes in GPL, MPL, APL units, respectively. While the assay cutoff can be used to determine whether a patient has elevated levels of aCL antibodies, additional information can be useful to indicate the clinical relevance of actual test results. How high does a patient's test result need to be in order to be considered a strong positive, or how low can it be to still be considered relevant? These are the questions to which both laboratories and doctors need answers. A large population of patients from various groups (n=230) has been tested, including normal, infectious disease, non-related autoimmune, and relevant diseases associated with antiphospholipid syndrome. Listed below are the patient groups that were tested in this study.*

- Healthy blood donors (n=40)
- Syphilis (n=41)
- Progressive Systemic Sclerosis (PSS) (n=42)
- Rheumatoid Arthritis (RA) (n=42)
- Unselected SLE (n=40)
- SLE with thrombosis (Secondary APS) (n=12)
- Primary antiphospholipid syndrome (APS) (n=13)

Samples were tested for IgG, IgM, and IgA autoantibodies using DiaPharma aCL ELISA test kits. Assays were performed per package insert instructions. Results were reported in GPL, MPL, and APL units respectively, with assays cutoffs of 23, 11, and 22 units. Based on the results from this testing, the following interpretive ranges are proposed:

Ranges	IgG GPL	IgM MPL	IgA APL
Normal	<23	<11	<22
Low Positive (+)	23 - 35	11 - 20	22 - 35
Moderate Positive (+)	36 - 50	21 - 30	36 - 45
High Positive (+)	>50	>30	>45

The results for each isotype, including the number of positive patients in each test population are presented in the tables in the next column.

IgG aCL population	Mean Value GPL	Total % positive	Recovery (%) by Range			
			normal	low positive	moderate positive	high positive
Healthy	11	3%	97%	2%	0	1%
Syphilis	28	48%	52%	19%	19%	10%
PSS	14	2%	98%	2%	0	0
RA	18	29%	71%	24%	5%	0
Uns. SLE	18	23%	77%	13%	0	10%
SLE w/	34	59%	41%	17%	17%	25%
Primary APS	43	64%	36%	8%	33%	25%

IgM aCL population	Mean Value MPL	Total % positive	Recovery (%) by Range			
			normal	low positive	moderate positive	high positive
Healthy	5	8%	92%	7%	1%	0
Syphilis	9	30%	60%	26%	2%	2%
PSS	6	10%	90%	10%	0	0
RA	5	2%	98%	0	0	2%
Uns. SLE	11	43%	57%	20%	20%	3%
SLE w/	8	16%	84%	8%	0	8%
Primary APS	14	50%	50%	25%	17%	8%

IgA aCL population	Mean Value APL	Total % positive	Recovery (%) by Range			
			normal	low positive	moderate positive	high positive
Healthy	13	13%	87%	13%	0	0
Syphilis	27	51%	49%	32%	12%	7%
PSS	20	22%	78%	14%	0	8%
RA	20	34%	66%	27%	5%	2%
Uns. SLE	26	50%	50%	20%	20%	10%
SLE w/	30	75%	25%	42%	8%	25%
Primary APS	23	46%	54%	8%	30%	8%

Though positive samples were seen in all groups with each of the isotypes, the relevant disease groups demonstrated more positive samples in both the moderate and high positive ranges. Also the recovered "mean values" were highest in the clinically relevant populations. In this study, test results demonstrate the strongest clinical association with the IgG aCL isotype, which is consistent with current literature and previous studies.

The data presented and the proposed interpretive ranges provide additional guidelines for the clinical interpretation of aCL results.

**Data available upon request.*