

New Test **3002216** **B Cell Subset Analysis** **B SUBSETS**

Methodology: Flow Cytometry
Performed: Sun-Sat
Reported: 1-3 days

Specimen Required: Collect: Lavender (K₂EDTA) or Pink (K₂EDTA).
Specimen Preparation: Transport 4 mL whole blood. (Min: 2 mL) Specimens must be analyzed within 48 hours of collection.
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Clotted or hemolyzed specimens.
Stability (collection to initiation of testing): Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: Unacceptable

Reference Interval:

Components	Reference Interval				
CD19+ B cells percent	Age	Percent	CD19+ B cells	Age	Cells/μL
	0-7 days	6.2-25.0		0-7 days	200-800
	8 days-1 month	10.0-31.0		8 days-1 month	700-1800
	2-4 months	18.0-38.0		2-4 months	700-2400
	5-8 months	16.0-34.0		5-8 months	700-2800
	9-14 months	14.0-28.0		9-14 months	400-2900
	15-23 months	16.0-34.0		15-23 months	600-1900
	2-4 years	14.0-29.0		2-4 years	400-1700
	5-9 years	10.0-24.0		5-9 years	300-600
	10-15 years	9.4-23.0		10-15 years	200-600
16 years and older	6.4-22.0	16 years and older	110-450		
CD20+ percent	Age	Percent	CD20+	Age	Cells/μL
	0-15 years	N/A		0-15 years	N/A
	16 years and older	96.0-100.0		16 years and older	110-450
Total Memory CD27+ percent	Age	Percent	Total Memory CD27+	Age	Cells/μL
	0-7 days	3.6-14.0		0-7 days	20-70
	8 days-1 month	3.1-11.0		8 days-1 month	30-100
	2-4 months	3.2-12.0		2-4 months	40-230
	5-8 months	5.3-12.0		5-8 months	50-270
	9-14 months	4.1-21.0		9-14 months	40-190
	15-23 months	9.5-27.0		15-23 months	50-330
	2-4 years	7.8-37.0		2-4 years	50-390
	5-9 years	18.6-47.0		5-9 years	60-230
	10-15 years	13.3-48.0		10-15 years	50-200
16 years and older	10.0-33.0	16 years and older	23-110		
Non switched CD27+IgD+IgM+ percent	Age	Percent	Non switched CD27+IgD+IgM+	Age	Cells/μL
	0-7 days	2.6-12.0		0-7 days	10-40
	8 days-1 month	1.7-6.5		8 days-1 month	20-50
	2-4 months	2.5-8.7		2-4 months	20-200
	5-8 months	2.8-7.4		5-8 months	30-120
	9-14 months	3.0-11.0		9-14 months	20-140
	15-23 months	4.1-14.0		15-23 months	30-170
	2-4 years	2.7-20.0		2-4 years	20-180
	5-9 years	5.2-20.0		5-9 years	20-100
	10-15 years	4.6-18.0		10-15 years	20-70
16 years and older	2.4-15.0	16 years and older	5-46		
Class-switched CD27+IgD-IgM- percent	Age	Percent	Class-switched CD27+IgD-IgM-	Age	Cells/μL
	0-7 days	1.0-7.2		0-7 days	0-30
	8 days-1 month	1.5-7.1		8 days-1 month	10-90
	2-4 months	0.3-9.0		2-4 months	10-170
	5-8 months	1.6-7.0		5-8 months	20-140
	9-14 months	1.4-12.0		9-14 months	10-100
	15-23 months	3.9-14.0		15-23 months	30-180
	2-4 years	4.7-21.0		2-4 years	20-220
	5-9 years	11.0-30.0		5-9 years	40-140
	10-15 years	8.7-26.0		10-15 years	30-110
16 years and older	5.1-22.0	16 years and older	11-61		

HOTLINE: Effective February 18, 2020

Transitional CD38+IgM+ percent	Age	Cells/μL	Transitional CD38+IgM+	Age	Cells/μL
	0-7 days	1.2-42.0		0-7 days	0-210
	8 days-1 month	4.1-44.0		8 days-1 month	50-570
	2-4 months	11.0-38.0		2-4 months	130-940
	5-8 months	7.2-20.0		5-8 months	100-300
	9-14 months	3.6-13.0		9-14 months	20-210
	15-23 months	3.3-17.0		15-23 months	30-200
	2-4 years	3.1-12.0		2-4 years	20-200
	5-9 years	4.6-8.3		5-9 years	10-40
	10-15 years	1.4-13.0		10-15 years	10-60
16 years and older	0.7-5.9	16 years and older	1-17		
Plasmablasts CD38+IgM- percent	Age	Percent	Plasmablasts CD38+IgM-	Age	Cells/μL
	0-7 days	0.2-3.2		0-7 days	0-10
	8 days-1 month	0.2-2.7		8 days-1 month	0-30
	2-4 months	0.4-3.3		2-4 months	0-40
	5-8 months	0.2-4.0		5-8 months	0-60
	9-14 months	0.4-5.5		9-14 months	0-30
	15-23 months	0.5-3.0		15-23 months	10-40
	2-4 years	0.6-4.0		2-4 years	10-50
	5-9 years	0.6-5.3		5-9 years	0-30
	10-15 years	0.6-6.5		10-15 years	0-20
16 years and older	0.4-4.1	16 years and older	1-8		
Activated CD21 low CD38- percent	Age	Percent	Activated CD21 low CD38-	Age	Cells/μL
	0-7 days	0.5-22.0		0-7 days	0-80
	8 days-1 month	0.4-2.2		8 days-1 month	0-20
	2-4 months	0.5-2.9		2-4 months	0-50
	5-8 months	0.4-3.3		5-8 months	0-50
	9-14 months	0.5-4.5		9-14 months	0-40
	15-23 months	1.0-5.7		15-23 months	10-60
	2-4 years	1.7-5.4		2-4 years	10-60
	5-9 years	2.3-10.0		5-9 years	10-40
	10-15 years	2.7-8.7		10-15 years	10-30
16 years and older	1.2-9.0	16 years and older	3-26		

Interpretive Data: This panel identifies B cell dysregulation. B cells start development in the bone marrow (stem-cell, pro-B, pre-B), then transition to the spleen and lymph nodes where some mature by acquiring CD27 and switching immunoglobulin class from IgD and IgM to IgG or IgA. Class-switched B cells may further progress to plasmablasts and finally plasma cells. Different disorders may block different parts of this pathway, disrupting immunoglobulin production.

This panel can also be used to monitor B cell reconstitution after bone marrow transplantation or targeted B cell depletion therapy.

This panel can assist in the diagnosis and subclassification of Common Variable Immune Deficiency (CVID). CVID is a heterogeneous group of disorders characterized by low antibody production, defective antibody responses, and recurrent infections. Most cases of CVID have a severe reduction in class switched memory B cells (CD27+, IgD-, IgM-) that correlates with granulomatous disease. Many also have an expanded population of CD21low, CD38low B cells that correlates with splenomegaly. Increased transitional B cells (CD38+, IgM+) in CVID correlates with lymphadenopathy. Most CVID patients have a low percentage of plasmablasts (CD38+, IgM-) that has a correlation with autoimmune cytopenia.

Class switched memory B cells are also low in ALPS, but are typically increased in SLE and infection.

Please note, reference intervals for CD20+ B cells were not established for patients less than 16 years of age. For all other B cell subsets, reference intervals for populations younger than 16 years are adopted from literature. Piatoša B, Wolska-Kusnierz B, Pac M, Siewiera K, Galkowska E, Bernatowska E. B cell subsets in healthy children: Reference values for evaluation of B cell maturation process in peripheral blood. Cytometry Part B 2010; 78B: 372381.

See Compliance Statement A: www.aruplab.com/CS

CPT Code(s): 86355; 86356 x6

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.