Complete Blood Count with Differential and Automated Reticulocyte Count Using Sysmex XN-1000

Test Name: Complete Blood Count with Differential and Automated Reticulocyte Count Using Sysmex XN-1000

Method Name: The Sysmex XN-1000 is a multi-parameter quantitative automated hematology analyzer for in vitro diagnostic use in determining 25 whole blood diagnostic parameters. The analyzer performs hematology analysis according to the hydrodynamic focusing (DC Detection), flow cytometry method (semiconductor laser), and SLS-hemoglobin method.

Results: All parameter results are quantitative

Reference Ranges:

PEDIATRIC RBC ($x10^6/\mu l$)		
	MALE	**FEMALE**
0-14 DAYS	4.10-5.55	4.12-5.74
15days-4 weeks	3.16-4.63	3.32-4.80
5weeks-7weeks	3.02-4.22	2.93-3.97
8weeks-5months	3.43-4.80	3.45-4.75
6months-23months	4.03-5.07	3.97-5.01
24months-35months	3.89-4.97	3.84-4.92
3-5 years	4.00-5.20	4.00-5.10
6-10 years	4.10-5.20	4.10-5.20
11-14 years	4.20-5.50	4.10-5.10
15-17 years	4.30-5.70	3.80-5.00

PEDIATRIC WBC ($x10^3/\mu l$)		
	MALE	**FEMALE**
0-14 DAYS	8.0-15.4	8.2-14.6
15days-4 weeks	7.8-15.9	8.4-14.4
5weeks-7weeks	8.1-15.0	7.1-14.7
8weeks-5months	6.5-13.3	6.0-13.3
6months-23months	6.0-13.5	6.5-13.0
24months-35months	5.1-13.4	4.9-13.2
3-5 years	4.4-12.9	4.4-12.9
6-17 years	3.8-10.4	3.8-10.4

PEDIATRIC HGB (g/dl)					
MALE			**FEMALE**		
0-14 DAYS	15.9-19.1		0-14 DAYS	13.4-20.0
15 DAYS-4 WEEKS	10.0- 15.3		15 DAYS-4 WEEKS	10.8-24.6
5 WEEKS- 7 WEEKS	8.9-17.7		5 WEEKS- 7 WEEKS	9.2-11.4
8 WEEKS- 5 MONTHS	9.6-12.4		8 WEEKS- 5 MONTHS	9.9-12.4
6 MONTHS- 23 MONTHS	10.1-12.5		6 MONTHS-35 MONTHS	10.2-12.7
24 MONTHS- 35 MONTHS	10.2-12.7		3-5 YEARS	11.4-14.3
3-5 YEARS	11.4-14.3		6-8 YEARS	11.5-14.3
6-11 YEARS	11.8-14.7		9-10 YEARS	11.8-14.7
12-14 YEARS	12.4-15.7		11- 17 YEARS	11.9-14.8
15-17 YEARS	15.5-16.9			

PEDIATRIC HCT (%)				
MALE			FEMALE	
0-14 DAYS	39.8-53.6		0-14 DAYS	39.6-57.2
15 DAYS-4 WEEKS	30.5-45.0		15 DAYS-4 WEEKS	32.0-44.5
5 WEEKS- 7 WEEKS	26.8-37.5		5 WEEKS- 7 WEEKS	27.7-35.1
8 WEEKS- 5 MONTHS	28.6-37.2		8 WEEKS- 5 MONTHS	29.5-37.1
6 MONTHS- 23 MONTHS	30.8-37.8		6 MONTHS-23 MONTHS	30.9-37.9
24 MONTHS- 35 MONTHS	31.0-37.7		24 MONTHS- 35 MONTHS	31.2-37.8
3-7 YEARS	34-42		3-7 YEARS	34-42
8-11 YEARS	35-43		8-17 YEARS	35-43
12-15 YEARS	38-47			
16-17 YEARS	40-50			

PEDIATRIC MVC (fL)		
	MALE	FEMALE
0-14 DAYS	91.3-103.1	92.7-106.4
15days-4 weeks	89.4-99.7	90.1-103.0
5weeks-7weeks	84.3-94.2	83.4-96.4
8weeks-5months	74.2-87.5	74.8-88.3
6months-23months	69.5-81.7	71.3-82.6
24months-35months	71.3-84.0	72.3-85.0
3-5 years	77.2-89.5	77.2-89.5
6-11 years	77.8-91.3	77.8-91.3
12-14 years	79.9-93.0	79.9-93.0
15-17 years	82.5-98.0	82.5-98.0

PEDIATRIC MCHC (g/dl)	
	Combined
0 < 6 months	28-36
6 month < 13 years	32-36

PEDIATRIC MCH (pg)	
	COMBINED
0<1 MONTH	31-37
1 MONTH < 3 MONTHS	27-36
3 MONTH < 5 MONTHS	25-35
6 MONTHS < 5 YEARS	23-31
5 YEAR < 11 YEARS	25-33
11 YEAR < 18 YEARS	25-35

PEDIATRIC PLATELET ($x10^3$/µl)		
	MALE	FEMALE
0-14 DAYS	218-419	144-449
15days-4 weeks	248-586	279-571
5weeks-7weeks	229-562	331-597
8weeks-5months	244-529	247-580
6months-23months	206-445	214-459
24months-35months	202-403	189-394
3-5 years	187-445	187-445
6-9 years	187-400	187-400
10-13 years	177-381	177-381
14-17 years	139-320	158-362

PEDIATRIC RDW (%)		
	MALE	FEMALE
0-14 DAYS	14.8-17.0	14.6-17.3
15days-4 weeks	14.3-16.8	14.4-16.2
5weeks-7weeks	13.8-16.1	13.6-15.8
8weeks-5months	12.4-15.3	12.2-14.3
6months-23months	12.9-15.6	12.7-15.1
24months-35months	12.5-14.9	12.4-14.9
3-5 years	11.3-13.4	11.3-13.4
6-17 years	11.4-13.5	11.4-13.5

PEDIATRIC NEUTROPHILS ($x10^3/\mu l$)				
MALE			FEMALE	
0-14 days	1.60-6.06		0-14 days	1.73-6.75
15 days-4 weeks	1.18-5.45		15 days-4 weeks	1.23-4.80
5 weeks-7 weeks	0.83-4.23		5 weeks-7 weeks	1.00-4.68
8 weeks-5 months	0.97-5.45		8 weeks-5 months	1.04-7.20
6 months-23 months	1.19-7.21		6 months-23 months	1.27-7.18
24 months-35 months	1.54-7.92		24 months-35 months	1.60-8.29
3-5 years	1.60-7.80		3-5 years	1.60-7.80
6-16 years	1.40-6.10		6-14 years	1.50-6.50
17 years	1.80-7.20		15-17 years	2.00-7.40

PEDIATRIC LYMPHOCYTES ($x10^3/\mu l$)			
MALE		FEMALE	
0-14 days	2.07-7.53	0-14 days	1.75-8.00
15 days-4 weeks	2.11-8.38	15 days-4 weeks	2.42-8.20
5 weeks-7 weeks	2.47-7.95	5 weeks-7 weeks	2.29-9.14
8 weeks-5 months	2.45-8.89	8 weeks-5 months	2.14-8.99
6 months-23 months	1.56-7.83	6 months-23 months	1.52-8.09
24 months-35 months	1.13-5.52	24 months-35 months	1.25-5.77
3-5 years	1.60-5.30	3-5 years	1.60-5.30
6-11 years	1.40-3.90	6-11 years	1.40-3.90
12-17 years	1.00-3.20	12-17 years	1.00-3.20

PEDIATRIC MONOCYTES ($x10^3/\mu l$)			
MALE		FEMALE	
0-14 days	0.52-1.77	0-14 days	0.57-1.72
15 days-4 weeks	0.28-1.38	15 days-4 weeks	0.42-1.21
5 weeks-7 weeks	0.28-1.05	5 weeks-7 weeks	0.28-1.21
8 weeks-5 months	0.28-1.07	8 weeks-5 months	0.24-1.17
6 months-23 months	0.25-1.15	6 months-23 months	0.26-1.08
24 months-35 months	0.19-0.94	24 months-35 months	0.24-0.92
3-5 years	0.30-0.90	3-5 years	0.30-0.90
6-17 years	0.20-0.80	6-17 years	0.20-0.80

PEDIATRIC EOSINOPHILS (x10^3/µl)			
MALE		**FEMALE**	
0-14 days	0.12-0.66	0-14 days	0.09-0.64
15 days-4 weeks	0.08-0.80	15 days-4 weeks	0.06-0.75
5 weeks-7 weeks	0.05-0.57	5 weeks-7 weeks	0.04-0.63
8 weeks-5 months	0.03-0.61	8 weeks-5 months	0.02-0.74
6 months-23 months	0.02-0.82	6 months-23 months	0.02-0.58
24 months-35 months	0.03-0.53	24 months-35 months	0.03-0.46
3-11 years	0.00-0.50	3-11 years	0.00-0.50
12-17 years	0.10-0.20	12-17 years	0.10-0.20

PEDIATRIC BASOPHILS (x10^3/µl)			
MALE		**FEMALE**	
0-14 days	0.02-0.11	0-14 days	0.02-0.07
15 days-7 weeks	0.01-0.07	15 days-4 weeks	0.01-0.06
8 weeks-35 months	0.01-0.06	5 weeks-7 weeks	0.01-0.05
3-17 years	0.00-0.10	8 weeks-5 months	0.01-0.07
		6 months-35 months	0.01-0.06
		3-17 years	0.00-0.10

ADULT REFERENCE RANGE			
WBC	3.87-9.10 x 10^3/µl	NEUT %	40.77-73.71 %
RBC	Male: 4.33-5.44 x 10^6/µl	LYMPH %	15.19-45.41 %
	Female:3.92-4.97 x 10^6/µl		
HGB	Male: 13.4-16.1 g/dl	MONO %	5.07-12.55 %
	Female: 12.1-14.8 g/dl		
HCT	Male: 40.1-49.2 %	EOS %	0.00-5.72 %
	Female: 37.1-45.1%		
MCV	82-99 fl	BASO %	0.12-1.35 %
MCH	28.5-32.1 pg	IG%	0.00-0.70 %
MCHC	31.4-34.5 g/dl	NEUT #	1.57-6.01 x 10^3/µl
RDW	11.4-14.0 %	LYMPH #	0.92-2.93 x 10^3/µl
NRBC abs	0.00-0.00 x 10^3/µl	MONO#	0.26-0.87 x 10^3/µl
NRBC	0/100 WBC	EO#	0.00-0.35 x 10^3/µl
PLT	150-400 x 10^3/µl	BASO#	0.01-0.09 x 10^3/µl
MPV	8.8-12.2 fl	IG #	0.00-0.05 x 10^3/µl

Clinical Significance: A Complete Blood Count with Differential and Automated Reticulocyte Count is analyzed on the Sysmex XN-1000. Examination of the numerical and/or morphological findings of the complete blood count by the physician are useful in the diagnosis of disease states such as anemias, leukemias, allergic reactions, viral, bacterial, and parasitic infections.

Submission Criteria: Specimen types include whole blood EDTA-2K or EDTA-3K anticoagulant with a minimum volume of 1 mL in a 12 X 75 mm tube. Also acceptable EDTA microtube with a minimum volume of 160 uL and EDTA raised bottom tubes with a minimum 250 uL.

Rejection Criteria: Rejection criteria include but are not limited to those with:

1. Mismatched requisitions
2. Specimens without patient identifiers

3. Specimens stored or shipped incorrectly
4. Specimens collected using expired collection tubes
5. Specimens submitted without approval
6. Specimens containing fibrin or clots
7. Specimens containing excessive platelet clumping
8. Substandard mixing or collection
9. Specimens contaminated with IV fluid
10. Specimens not analyzed within the appropriate time frame

Authorization: Diagnostic testing can only be performed with approval from an authorized provider/agency.

Turn Around Time: Within 24 hours. Additional time may be required for confirmatory testing.

Instructions for CBC Whole Blood Submission

General Information

A Complete Blood Count with Differential and Automated Reticulocyte Count is analyzed on the Sysmex XN-1000. Whole blood EDTA specimens are the only acceptable specimens for CBC on the Sysmex XN-1000. The specimen must be analyzed within 48 hours of venipuncture.

Specimens must be collected and stored at 2-8°C (36-46°F) if not analyzed withing 24 hours. Please be aware that storing specimens at ≤ -70°C (≤ -94°F) is **not** permissible.

Specimens MUST be *received* at Reditus Laboratories within 48 hours of collection.

Collection Instructions for EDTA Whole Blood Specimen

1. Do not use expired collection tubes. Store collection tubes as per manufacturers recommendations. Use standard venipuncture practices for collecting samples. Filled 12 x 75 mm EDTA tubes are preferred. EDTA microtubes and raised bottom tubes are also acceptable.
2. Ensure that the patient's name, date-of-birth, and time/date of collection are recorded on the specimen tube along with the name or initials of the individual collecting the sample.
3. Complete all the demographic information on a sample requisition form through the approved electronic submission process
4. Refrigerate the specimen between 2-8°C (36-46°F) and ship or courier the specimen(s) within 48 hours.
5. The specimen(s) *must* be received at the laboratory **no later than** 48 hours *from the time of collection*.
    a. **Avoid shipping specimens over weekends or holidays** as they may not be received at the laboratory and cold-packs will not maintain the required 2-8°C (36-46°F) specimen temperature.
    b. Ensure that specimens shipped by commercial carrier are shipped with **overnight delivery**. If shipping on a Friday for Saturday delivery, ***you must include Saturday Delivery*** during shipment or the specimens will not be received until the following non-holiday business day. Failure to receive specimens within 24 hours of shipment will result in specimens being rejected from testing.
6. For any questions pertaining to sample collection, storage, or shipping, please contact the Reditus Laboratories using the below contact information.

Instructions for Specimen Transport

7. **Messenger/Courier by ground transport.** Place specimen(s) into a biohazard labeled bag and seal securely**.** Place the test requisition(s) on the outside of the biohazard labeled bag. Place the sealed biohazard bag and test requisition(s) inside the shipping container. Place cold packs, which have been frozen for at least 24 hours, in the leak-proof outer container. The shipping container must be rigid, such as a Styrofoam cooler, and labeled with the UN 3373 Biological Substance Category B marking. Close securely.
8. **Commercial carrier by ground/air transport.** Place the specimen(s) inside a biohazard labeled bag and seal securely. Place the test requisition(s) on the outside of the biohazard labeled bag. Place the sealed bag and completed test requisitions(s) inside the outer shipping container. Place cold packs, which have been frozen for at least 24 hours, in the leak-proof outer container. Label the outer shipping container with Reditus Laboratories address listed below. Complete the return address section to include the name of the person shipping the package, business name and address, and a business phone number. The shipping container must include the UN3373 Biological Substance Category B marking.
9. *Ship specimens by overnight delivery* to the attention of Molecular Diagnostics at Reditus laboratories. This can be accomplished by use of local courier, shipping corporations or U.S. Postal Service.
    a. **If specimens are shipped on a Friday for Saturday delivery, *you must include/indicate Saturday delivery*** during shipment or the specimens will not be received until the following non-holiday business day. Failure to receive specimens within 24 hours of shipment will result in specimens being rejected from testing.
10. The specimen(s) must be received at the laboratory **no later than** 48 hours *from the time of collection* and 24 hours from the time of shipment. Do not ship specimens over weekends or holidays as they will not be received, and cold-packs will not maintain the required 2-8°C (36-46°F) specimen temperature.

NOTE: Testing may be delayed, or specimens may be considered UNSATISFACTORY if the above instructions are not followed or the requisition form is not filled out completely. If there are any questions about specimen collection, handling, or shipping please contact the Reditus Laboratories to speak with laboratory personnel.

Ship specimens by a local courier or overnight by commercial carrier to the designated laboratories indicated below.

Send to: Reditus Laboratories
200 Enterprise Drive
Pekin, IL 61554

Phone: (469) 498-0222

Website: https://www.redituslabs.com/