



INE | INSTITUTE OF
NUTRITIONAL
ENDOCRINOLOGY

Blood Chemistry: Immune Function

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Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.



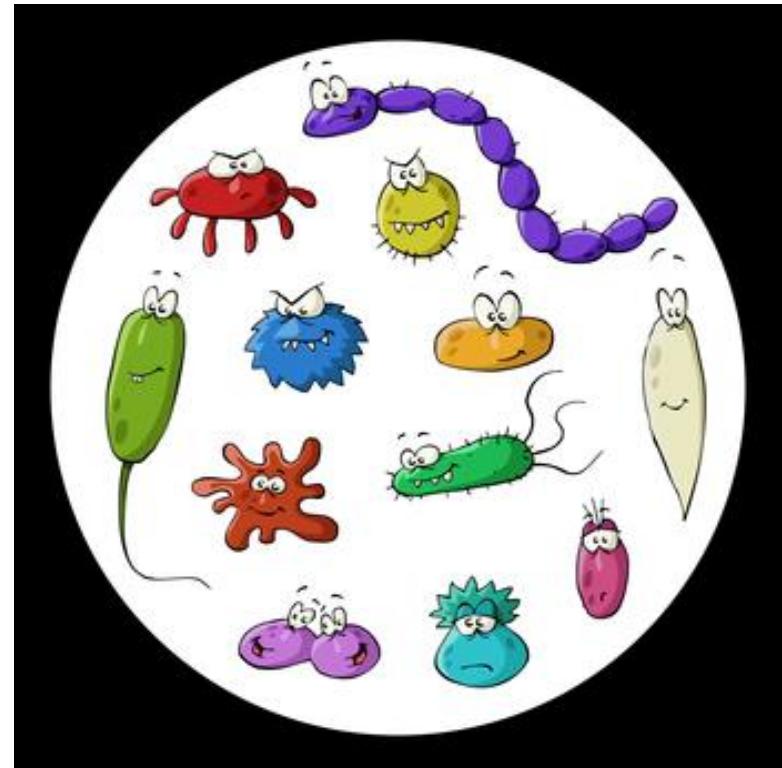
CBC: Immune System Markers

- ✓ **WBC:** White blood cells – primary defense against disease
- ✓ **Neutrophils:** Often elevated in bacterial infection
- ✓ **Lymphocytes:** Often elevated in viral infection
- ✓ **Monocytes:** Second line of defense – elevated in recovery stage and chronic infection
- ✓ **Basophils:** Related to histamines and allergy
- ✓ **Eosinophils:** Parasites and allergies



Immune System: Bacterial Infection

- ✓ WBC (high or low)
- ✓ Neutrophil (high)
- ✓ Lymphocytes (low)



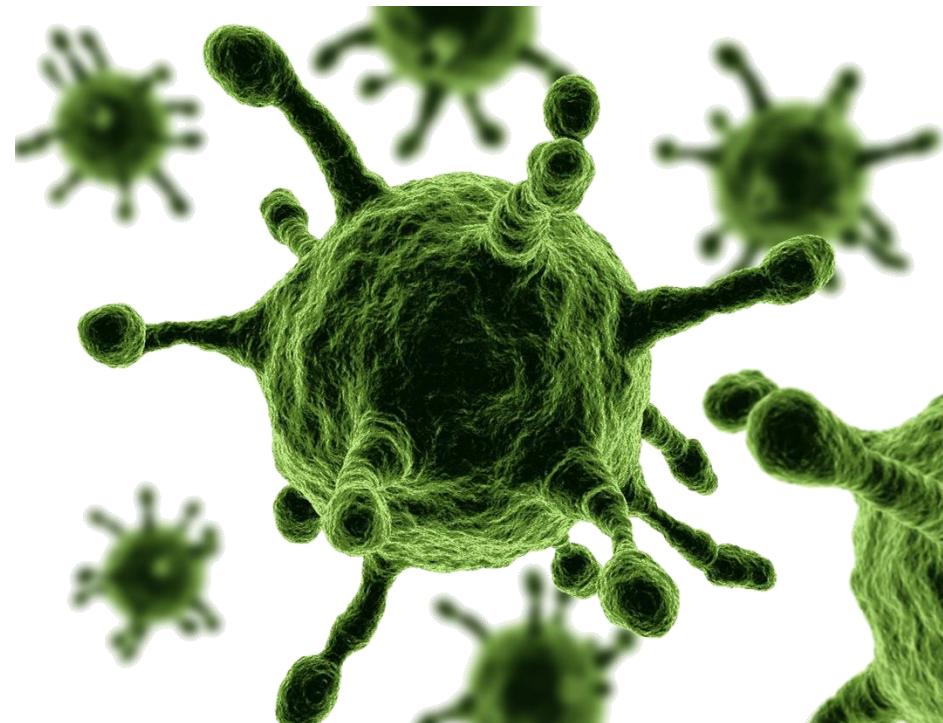
Immune System: Viral Infection

- ✓ WBC (high or low)
- ✓ Neutrophil (low)
- ✓ Lymphocytes (high)



Immune System: Viral Infection

- ✓ **Hematocrit (lo)**
- ✓ **WBC (hi)**
- ✓ **Eosinophil's (hi)**
- ✓ **Basophils (hi)**
- ✓ **Monocytes (hi)**
- ✓ **MCV (hi)**



Other Immune System Markers

- ✓ **Uric Acid (hi):** RA, gout
- ✓ **Globulin (lo):** infections (low antibodies)
- ✓ **Globulin (hi):** autoimmune, allergy, chronic infection
- ✓ **Bilirubin (hi) :** liver inflammation
- ✓ **Alkaline Phosphatase (hi):** shingles
- ✓ **LDH (hi):** inflammation, viral
- ✓ **AST (hi):** mono, EBV, CMV, hepatitis
- ✓ **Iron (hi):** viral
- ✓ **Cholesterol or LDL (lo):** autoimmune
- ✓ **HDL (hi):** autoimmune
- ✓ **Thyroid Antibodies (hi):** autoimmune
- ✓ **Other Autoimmune Antibodies,**
i.e. ANA, RA, intrinsic factor, etc.



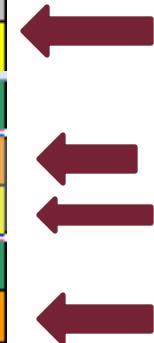
Inflammatory Markers

- CRP, CRP-hs: C Reactive Protein
- Erythrocyte Sedimentation rate (Sed rate) aka ESR
- Homocysteine
- Blood Spot Fatty Acid
- ANA: Anti-nuclear antibodies
- Rheumatoid factor (RF)
- Interleukins and cytokines (advanced testing)
- Cardiovascular advanced testing: i.e. apolipoprotein B, A1, ratio



CBC Immune System Case 1

CATEGORIES	Units	PATHOLOGICAL RANGE		FUNCTIONAL RANGE		CURRENT 1/14/10
		Min	Max	Min	Max	
CBC MARKERS						
WBC		4.0	10.5	5.0	8.0	4.5
Platelets	(K)	150.0	400.0	150.0	450.0	291
Neutrophils	%	40.0	78.0	40.0	60.0	32
Lymphs	%	15.0	50.0	25.0	40.0	43
Monocytes	%	0.0	13.0	0.0	7.0	7
Eos	%	0.0	5.0	0.0	3.0	18
Basos	%	0.0	5.0	0.0	1.0	0



CBC Immune System Case 1

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Eos	%	0.0	5.0	0.0	3.0	18
Basos	%	0.0	5.0	0.0	1.0	0

- ❖ Allergies
- ❖ Parasites (correlates with metabolic assessment high score on colon)
- ❖ Chronic viral infection – History of EBV and Mono
- ❖ Action: Anti-parasitic herbs support immune system with herbs and foods that decrease viral load – oregano, thyme, garlic, oil of oregano, olive leaf extract, reishi mushroom, astragalus, echinacea, and berberine-containing herbs
- ❖ Testing follow-up: stool analysis for parasites



CBC Immune System Case 2

WBC		4.0	10.5	5.0	8.0	3.3	←
Neutrophils	%	40.0	78.0	40.0	60.0	40	←
Lymphs	%	15.0	50.0	25.0	40.0	43	←
Monocytes	%	0.0	13.0	0.0	7.0	10	←
Eos	%	0.0	5.0	0.0	3.0	6	
Basos	%	0.0	5.0	0.0	1.0	1	
RBC (Female)	-	3.9	5.1	3.9	4.5	4.41	
Platelets	(K)	150.0	400.0	150.0	450.0	200	



CBC Immune System Case 2

WBC		4.0	10.5	5.0	8.0	3.3	←
Neutrophils	%	40.0	78.0	40.0	60.0	40	←
Lymphs	%	15.0	50.0	25.0	40.0	43	←
Monocytes	%	0.0	13.0	0.0	7.0	10	←
Eos	%	0.0	5.0	0.0	3.0	6	
Basos	%	0.0	5.0	0.0	1.0	1	
RBC (Female)	-	3.9	5.1	3.9	4.5	4.41	
Platelets	(K)	150.0	400.0	150.0	450.0	200	

- ❖ Recovery from acute illness
- ❖ Viral
- ❖ Allergy or parasites
- ❖ Action: Support immune system with herbs and foods that decrease viral load
 - ❖ Oregano, thyme, garlic, oil of oregano, olive leaf extract, reishi mushroom, astragalus, echinacea, berberine containing herbs
 - ❖ Diet: Avoid sugars and processed fats
 - ❖ Exercise
- ❖ Testing follow-up: Repeat CBC in 3 - 4 months, stool analysis for parasites

