

Section 11: Immune Function

FBCA & Immune Dysfunction

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The Big Ideas to Improve Immune Function

- Identify and remove stressors that impact immune system
- Strengthen the weaknesses
- Optimize GI function
- Optimize digestion and absorption of all nutrients
- Optimize blood sugar regulation
- Optimize neuro-ndocrine function

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Immune Dysfunction

Signs and Symptoms Analysis

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Signs and Symptoms

- Runny or drippy nose
- Catch colds at the beginning of winter
- Mucus producing cough
- Frequent infections
- Itchy ears
- Acne (adult)
- Itchy skin / dermatitis
- Cysts, boils, rashes
- History of chronic viral conditions

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Nutritional PE Findings

- Eczema
- Itchy ears
- White matter on tympanic membrane
- Follicular hyperkeratosis
- Slow wound healing
- Hang nails and cuticle inflammation
- White spots on finger nails
- Conjunctivitis

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Primary FDM Testing

*Findings on Blood Chemistry
Analysis: Immune Function Score*

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Immune Function Score

- Total WBC Count
- Neutrophils - % and Absolute
- Lymphocytes - % and Absolute
- Globulin
- Monocytes - % and Absolute
- Albumin
- Alk Phos
- Bands

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Immune Function Score

96%

Dysfunction Highly Likely.
Much improvement
required.

IMMUNE FUNCTION 📄

The Immune Function score allows us to assess the functional health of your patient's immune system. A high Immune Function score indicates that there is dysfunction within your patient's immune system and further assessment is needed to pinpoint exactly what that dysfunction is. Some of the factors to consider include **Immune Insufficiency, Bacterial or Viral Infections, or GI dysfunction** associated with immune function: abnormal mucosal barrier function, secretory IgA dysfunction or dysbiosis.

Rationale

Total WBCs \uparrow , Globulin - Total \downarrow , Neutrophils - % \uparrow , Lymphocytes - % \downarrow , Monocytes - % \uparrow , Monocytes - Absolute \uparrow , Neutrophils - Absolute \uparrow , Alk Phos \downarrow

Biomarkers considered

Total WBCs, Globulin - Total, Neutrophils - %, Lymphocytes - %, Monocytes - %, Monocytes - Absolute, Lymphocytes - Absolute, Neutrophils - Absolute, Albumin, Alk Phos, Ferritin

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Immune Dysfunctions

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Immune Insufficiency

- Decreased albumin levels (<4.0 or 40g/L)
- A decreased total globulin (< 2.0 or 20 g/L)
- A decreased total white blood cell count (<5.5)
- A decreased Alk phos (<70)

Immune Activation

- An increased level of total globulins (>2.8 or 28 g/L)
- Decreased albumin/globulin ratio (<1.5)

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Thymus Abnormality

- Elevated bilirubin (>1.2 or >20.5 $\mu\text{mol/dL}$)
- Increased HGB (>14.5 or 145 g/L in women or 15 or 150 g/L in men)
- Increased HCT (>44 or 0.44 in women and >48 or 0.48 in men)
- Increased RBCs (>4.5 in women and >4.9 in men)

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Thymus Abnormality – S/Sx

- Delayed healing time
- Immune insufficiency
- Frequent colds and flu
- Chemical sensitivities

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Zinc and The Immune System

- Promotes destruction of antigenic matter
- Protects against free radical damage
- Acts synergistically with vitamin A
- Is required for proper WBC function
- Antiviral properties by inhibiting viruses
- A necessary cofactor for activating serum thymic factor
- Zinc is an essential nutrient for cell-mediated and generalized host defense

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Zinc Deficiency/Insufficiency

- Decreased levels of Alkaline Phosphatase (<70) have been associated with zinc deficiency.
- Serum zinc < 80 µg/dL or <12 µmol/L
- RBC zinc levels may also be decreased
- Low normal or decreased total WBC (<5.0).
- Follow-up with a zinc taste test.

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Blood Test Patterns for Infections

Acute Bacterial Infection

- Neutrophil % will tend to be increased (>60%)
- Absolute neutrophils will be increased (>4.2 k/cumm)
- % lymphocytes may be decreased (<24%) but may be normal
- Total WBC count may be elevated (>7.5 k/cumm)
- Bands may be increased (>1%)

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Blood Test Patterns for Infections

Childhood Illnesses

- **Early in the infection**
 - **Neutrophils Increased:** >60% & Absolute Count >4.2 k/cumm
 - **Lymphocytes Decreased:** <24% & Absolute Count <0.95 k/cumm
- **Later in infection:**
 - **Neutrophils Decreased:** <40% & Absolute count <1.9 k/cumm
 - **Lymphocytes Increased:** >44% & Absolute Count > 34.1 k/cumm

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Blood Test Patterns for Infections

Chronic Bacterial Infection

- An increased neutrophil % (>60%)
- Decreased WBC count (<5.5 k/cumm)
- Lymphocytes may be decreased (<24%)
- Increased monocyte count (>7%) in the recovery phase.

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Blood Test Patterns for Infections

Acute Viral Infection

- Lymphocyte % will be increased (>44%)
- Lymphocyte count will be increased (>3.1 k/cumm)
- Increased total WBC count (>7.5 k/cumm)
- Possible increased ESR (>5 men, >10 women)
- Possible increased LDH (>200)
- Decreased or normal neutrophil% (<40%) and/or neutrophil count (<1.9 k/cumm)

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Blood Test Patterns for Infections

Chronic Viral Infection

- Increased lymphocyte % (>44%) and/or absolute count >3.1k/cumm
- Decreased total WBC count (<5.5 k/cumm)
- Expect to see decreased neutrophil % (<40%) and/or absolute count <1.9 k/cumm
- May see a decreased lymphocyte % (<24%) and/or absolute count <0.95 k/cumm in very chronic infections

Recovery Phase of Infection

- Monocyte% will often be elevated (>7) along with an increased monocyte count (>0.95 k/cumm)

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Blood Test Patterns for Infections

Infectious Mononucleosis

- Increased lymphocyte % (>46%)
- Very increased lymphocyte count (often as high as 10.5 k/cumm)
- Expect to see the presence of "Downey Cells" or atypical lymphocytes
- LDH levels are usually elevated in about 95% of cases of infectious mononucleosis and Epstein Barr infection (EBV)
- Decreased WBC count in 1st week but increased WBC count by 2nd week
- Increased Alk Phos and AST (about 5-14 days after onset of illness)
- Increased GGTP (about 7-21 days after onset of illness)

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Blood Test Patterns for Infections

Relative Lymphocytosis

- Lymphocytosis = a Lymphocyte Absolute count > 4.0 K/cumm in adults
- This finding, along with a greatly elevated Total WBC count and very low neutrophils, may suggest a need for further investigation into acute and chronic lymphatic leukemia lymphoma.

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Primary FDM Assessment

Allergies, Sensitivities and Intolerances

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Miscellaneous Sxs of Food Allergies

- Arrhythmia
- Edema
- Fainting
- Fatigue
- Headache
- Hypoglycemia
- Itchy nose or throat
- Migraines
- Sinusitis
- Dizziness
- Canker sores
- Constipation
- Hemorrhoids
- Hypertension
- Gallbladder pain
- Colitis
- Weight gain

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Symptoms Associated with Food Allergies

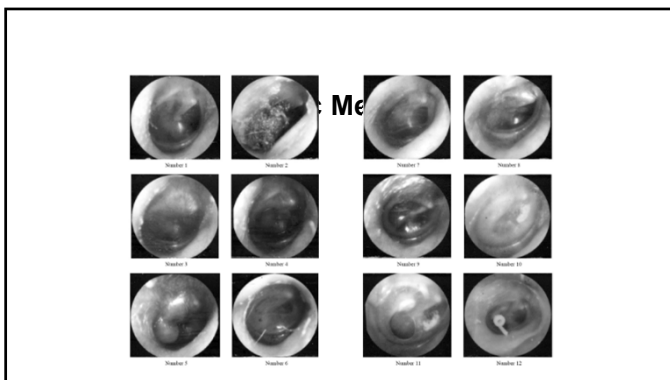
SYSTEM	SYMPTOMS and DISEASE
GI	Canker sores, celiac disease, chronic diarrhea, duodenal ulcer, gastritis, IBS, malabsorption, UC.
Genitourinary	Bed-wetting, chronic bladder infection, nephrosis
Immune	Chronic infections, frequent ear infections
Mental/Emotional	Anxiety, depression, hyperactivity, inability to concentrate, insomnia, irritability, mental confusion, personality changes, seizures
Musculoskeletal	Bursitis, joint pain, low back pain
Respiratory	Asthma, chronic bronchitis, wheezing
Skin	Acne, eczema, hives, itching, skin rash

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Nutritional Exam Findings

<ul style="list-style-type: none"> ■ Adult acne and Acne rosacea ■ Scars on tympanic membrane ■ Generalized itching ■ Discoloration of nails ■ Dark circles under eyes ■ Conjunctivitis ■ Recurrent styes 	<ul style="list-style-type: none"> ■ Sores inside the nose ■ Salute sign ■ Intranasal polyps ■ Red rash over nose and under eyes ■ Geographic tongue ■ Scalloped tongue
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Nutritional Exam Findings

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Allergic Shiners



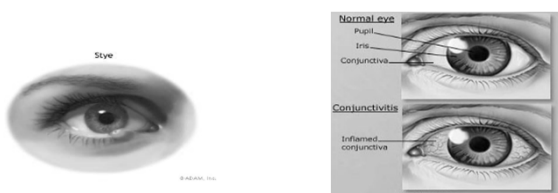
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Nutritional Exam Findings

- Adult acne and Acne rosacea
- Sores inside the nose
- Scars on tympanic membrane
- Salute sign
- Generalized itching
- Intranasal polyps
- Discoloration of nails
- Red rash over nose and under eyes
- Dark circles under eyes
- Geographic tongue
- **Conjunctivitis**
- Scalloped tongue
- **Recurrent styes**

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Styes and Conjunctivitis





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Nutritional Exam Findings

▪ Adult acne and Acne rosacea	▪ Sores inside the nose
▪ Scars on tympanic membrane	▪ Salute sign
▪ Generalized itching	▪ Intranasal polyps
▪ Discoloration of nails	▪ Red rash over nose and under eyes
▪ Dark circles under eyes	▪ Geographic tongue
▪ Conjunctivitis	▪ Scalloped tongue
▪ Recurrent styes	

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Tongue Signs

	
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Allergic Tension

- A pulse-count taken standing is greater than that taken sitting is a sign that the body is under an allergic burden

Directions

- Take a full one-minute pulse sitting, then stand, wait 15 seconds and take another full minute pulse.
- If the standing pulse goes up by more than six beats, this is an indication of "allergic tension" or that the body is under an allergenic burden.

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Asthma

- An increased Eosinophils - Absolute count (>0.3) and/or an increased Eosinophils - % (>3%) are often seen in asthma
- This is due to the connection between allergies and asthma.
- A digestive stool analysis will frequently indicate dysbiosis in an asthmatic, and a liver detoxification panel will often indicate liver dysfunction

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Allergies

- An increased Eosinophil Absolute count (>0.3 k/cumm)
- Increased Eosinophil % (>3%)
- An increased Basophil Absolute count (>0.1 k/cumm)
- Increased Basophil % (>1.0%)

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Assessing for Food Allergies

- There are two basic methods of assessing for food allergies:
 - Food challenge method
 - Laboratory methods
- Each has its advantages.
 - Food challenge is inexpensive, gives the patient a direct connection to the foods in question and can be helpful in identifying food intolerances.
 - Laboratory methods provide an immediate identification but are expensive. They will only give the foods one is truly allergic to.
- Coca Pulse Testing

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Summary
